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TO THE ISSUE OF FINDING THE STOICHIOMETRIC COEFFICIENTS IN THE CHEMICAL REACTIONS

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Abstract. *In the present paper, on the basis of the theory of inverse and ill-posed problems, an algorithm is proposed that allows to unambiguously determine the stoichiometric coefficients in the equations of chemical reactions of any type, including redox reactions and acid-base reactions, and, regardless of whether the constructed system of linear algebraic equations for the desired stoichiometric coefficients is underdetermined (i.e. there are fewer equations than unknowns) or overdetermined (i.e. there are more equations than unknowns). The proposed algorithm is a regularized algorithm (according to Tikhonov), which ensures that, in a computer implementation, possible computational errors will not make the comprised system of linear algebraic equations to be incapable of solving.*
Keywords: *chemical reaction equation; inverse problem; Tikhonov's regularization method; stoichiometric coefficients; system of linear algebraic equations.*

Introduction

A chemical reaction is a process of chemical transformation of some substances (starting substances called reagents) with a specific composition and unique physical and chemical properties into other substances (final substances called products) with a different composition and other properties (for instance, see Sommer, 1975; Pimentel et al., 1963). For ordering and systematization of heterogeneous chemical reactions, there are several classification methods that allow them to be divided into types: by the number and composition of reagents and products; by thermal effect – endothermic (heat is absorbed) and exothermic (heat is released) reactions; by the direction of the reaction – irreversible and reversible reactions; by the presence of a catalyst – non-catalytic and catalytic reactions; by changes in oxidation states – redox reactions and reactions that are not redox. If we restrict ourselves to considering only the first of the above five main methods of classification, then the following four types of chemical reactions are distinguished: composition reaction; decomposition reaction; exchange reaction; substitution reaction. It should be emphasized that the above

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four types do not cover the entire variety of chemical reactions: for example, many important chemical reactions from the so-called redox- and acid-base reactions cannot be attributed to any of the above four types. Finally, we note that there are many chemical reactions that can simultaneously be a redox reaction and a composition reaction, or a decomposition reaction, or a substitution reaction, but no chemical reaction can simultaneously be an exchange reaction and a redox reaction – all exchange reactions are included to the set of reactions proceeding without changing the oxidation states of the elements that form reagents and reaction products. To record chemical reactions, it is convenient to use abbreviated formulas of substances (both reagents and products). If the substances participating in a chemical reaction consist of molecules, then such formulas of substances are called not just abbreviated formulas, but molecular formulas. For example, H_2 is the molecular formula of hydrogen, Cl_2 – of chlorine, CO_2 – of carbon dioxide, N_2 – of nitrogen, H_2O – of water, N_2H_4 – of hydrazine, etc. The number below to the right of the symbol of a chemical element is called an index, it shows how many atoms of a given element are contained in a molecule (index 1 is not written).

A chemical reaction equation is a conditional notation of a chemical reaction using abbreviated formulas for substances, numerical coefficients called stoichiometric coefficients, and some mathematical symbols, in particular, the arithmetic operation of addition. The composition of the equation of a chemical reaction is based on the laws of stoichiometry, first of all, on the law of conservation of the mass of substances in chemical reactions. As a rule, the left side of the chemical reaction equation consists of the formulas of the reagents, and the right side of the formulas of the reaction products. Thus, the equation of a chemical reaction provides qualitative and quantitative information about the chemical reaction, reagents and reaction products. In general, the chemical reaction equation has the form

$$\sum_{j=1}^{N} s_j R_j \to \sum_{j=1}^{M} s_{n+j} P_j, \tag{1}$$

in which by $N \in \mathbb{N}$ and $M \in \mathbb{N}$ we denote natural numbers, representing respectively the total number of reactants R_j, $j = \overline{1,N}$ involved in the reaction and the total number of products P_j, $j = \overline{1,M}$ formed in the reaction; s_j, $j = \overline{1,N+M}$ denote the so-called stoichiometric coefficients, which are natural numbers, the essence of which is to ensure the equality of the number of atoms of each chemical element in the left and right sides of the chemical equation, because according to the law of conservation of mass, the number of identical atoms in different parts

of the chemical equation must coincide (if the stoichiometric coefficient equals 1, then it is not written).

One of the tasks in a chemistry course is to determine the stoichiometric coefficients s_j, $j=\overline{1,N+M}$ in equations of the form (1) of chemical reactions of all types. There are various approaches for determining stoichiometric coefficients (for instance, see Abkin, 1971, that is a guide for teachers, where these approaches are expounded sufficiently). As far as the authors of this paper are aware, the so-called algebraic method of drawing up the equations of chemical reactions was first described in detail in the posthumous work (Krapivin, 1929) of Krapivin Sergei Gavrilovich (03.16.1868 – 09.05.1927), the professor of the Department of Chemistry of the Physics and Mathematics Faculty of Lomonosov Moscow State University, who was a follower (main area of scientific interests: organic and physical chemistry, chemical kinetics) of the world famous Russian-Soviet scientist, organic chemist, member of the Academy of Sciences Nikolai Dmitrievich Zelinsky (25.01.1861 – 31.07.1953). It should be noted that Professor S.G.Krapivin was sceptical about the catholicity of this method for determining the stoichiometric coefficients in the equations of chemical reactions, especially in relation to redox reactions and acid-base reactions. Roughly within the next 30 years, this method of drawing up the equations of chemical reactions was rarely discussed in the methodological literature, and mainly in a negative way. However, starting from the 60s of the XX century, some authors – both chemistry scientists and school teachers have made active attempts to revive this method (for instance, see Berg et al., 1959; Khrustalev, 1968; Polyakova, 1969; Kuznetsova & Adrienko, 1976; Blakley, 1982; Adamishvili & Gambashidze, 1984). Along with these attempts, there have appeared serious works, including those of a polemical nature (for instance, see Abkin, 1971), in which numerous examples were given to illustrate the significant limitations of this method (counterexamples were constructed in which the algebraic method gives incorrect results even when applied to substitution reactions). It was summed up that if in the considered equation of a chemical reaction the number of desired stoichiometric coefficients (i.e. the number of molecules – the number of substances) is 4 more than the number of equations (i.e. the number of participating chemical elements – reagents and products), then the algebraic method of drawing up the balance becomes rather time consuming or even crippled. And, therefore, a natural question arises: why are formal complex calculations needed being divorced from the chemical contents?

The aim of the present paper is as follows: on the basis of the theory of inverse and ill-posed problems (Tikhonov & Arsenin, 1977; Andreyev & Guseynov, 2013), to propose an algorithm that makes it possible to unambiguously determine the stoichiometric coefficients in the equations of

chemical reactions of any type, including redox reactions and acid-base reactions, and, regardless of whether the constructed system of algebraic equations for the desired stoichiometric coefficients is underdetermined (i.e. there are fewer equations than unknowns) or overdetermined (i.e. there are more equations than unknowns). Here, we would like to emphasize that, in contrast to the algorithms from relatively recent works (Michałowska-Kaczmarczyk et al., 2015; Marinichev et al., 2014; Turchen, 2012; Sen et al., 2006; Rash & Zurbach, 2004), the proposed algorithm is a regularized algorithm (according to Tikhonov), which ensures that, in a computer implementation, possible computational errors will not make the comprised system of algebraic equations to be incapable in solution.

Remark 1. To conclude this section, the authors would like to emphasize that this work is intended primarily for teachers teaching a traditional chemistry course, and for secondary school students studying such a course (at least within framework of the topic "Chemical Reaction Equations"). Therefore, authors of this work tried to present its scientific content in such a way that it was quite accessible for students to understand within framework of the knowledge acquired in a typical secondary school. In view of this, some complex mathematical calculations, which, as a rule, are studied within framework of the general course of higher mathematics (namely, linear algebra) and a special section of higher mathematics (namely, the theory of inverse and ill-posed problems), we will adapt and/or simplify (in general, without significant damage to mathematical completeness and rigor) to the level of algorithms (for manual or computer implementation), i.e. to the level of a finite set of precisely defined rules describing the order of actions of the performer to solve the problem. However, it should be noted that it is quite possible that not in all secondary schools in Latvia (or other countries) senior students are familiar with the elements of higher mathematics, in particular, with systems of linear algebraic equations, methods for solving them, and problems that arise. Nevertheless, authors of the present paper surely know that in the 1st Riga State Gymnasium (Riga, Latvia), within framework of the course "Algebra", systems of algebraic equations are studied, in addition, a compulsory specialized course "Mathematical Analysis" is taught for students in grades 11-12; in Azerbaijan (it takes place an 11-year educational system) for students in grades 9-11 of secondary schools within framework of the subject "Mathematics", elements of higher mathematics are studied at a fairly complete level: linear algebra, analytical geometry, complex numbers, theory of limits, differential and integral calculus, etc. A similar situation takes place in Russian general educational schools (there is also an 11-year educational system). End of Remark (EOR).

System of Linear Algebraic Equations: Normal-, Underdetermined-, and Overdetermined Systems

System of m independent linear algebraic equations (for instance, see Il'in & Poznyak, 1999)

$$\begin{cases} a_{11} \cdot z_1 + a_{12} \cdot z_2 + \ldots + a_{1n} \cdot z_n = u_1, \\ a_{21} \cdot z_1 + a_{22} \cdot z_2 + \ldots + a_{2n} \cdot z_n = u_1, \\ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \\ a_{m1} \cdot z_1 + a_{m2} \cdot z_2 + \ldots + a_{mn} \cdot z_n = u_m, \end{cases} \quad (2)$$

where $a_{ij},\ i = \overline{1,m},\ j = \overline{1,m},$ called coefficients of the system (2), and $u_i,\ i = \overline{1,m},$ called absolute terms of the system (2), are known, while $z_j,\ j = \overline{1,n}$ are n unknown numbers to be determined, is called normal, underdetermined or overdetermined system, if $m = n,\ m < n$ or $m > n,$ respectively.

If we introduce the matrix $A = \left\{a_{ij}\right\}_{i=\overline{1,m}}^{j=\overline{1,n}}$ of size $m \times n,$ which consists of the coefficients of the system (2); column vector $U = \left\{u_i\right\}_{i=\overline{1,m}}$ of size $m \times 1,$ which consists of absolute terms of the system (2); vector $Z = \left\{z_j\right\}_{j=\overline{1,n}}$ of size $n \times 1,$ which consists of the unknown coefficients of the system (2), then system (2) can be written in a more compact form:

$$AZ = U. \quad (3)$$

If system (3) is a normal system (the number of independent equations of system (2) coincides with the number of unknown variables, i.e. $m = n$ and, therefore, matrix A of the system (3) is a square and nondegenerate matrix: $\det\left(A\right) \neq 0$), then any direct analytical method can be applied to system (3) in order to find its solution, for example (for instance, see Il'in & Poznyak, 1999; Anton & Rorres, 2014), Gaussian elimination method, or Cramer's rule, or inverse matrix solution (i.e. $Z = A^{-1}U,$ where A^{-1} is the inverse of the matrix $A,\ A^{-1}A = I,$ I is the identity matrix). Since all these direct methods can be easily studied and manually implemented by high school students, we will not describe them in this section (see the above-listed two textbooks, whose language is easy to understand even to high school students). However, here we just note that the matrix A of the normal system (3) can appear to be an ill-conditioned matrix, i.e. condition

number of matrix A can be quite big: $\mu(A)=\frac{\lambda_{\max}}{\lambda_{\min}}\gg 1$, where $\lambda_{\max}$ and $\lambda_{\min}$ are maximum and minimum eigenvalues of the matrix A. In this case, application of direct analytical or numerical methods to the system (3) can lead to incorrect results because of two reasons: first, due to the instability of the system (3) – when solving ill-conditioned system (3) by direct methods (including the well-known the Moore-Penrose pseudoinversion method, for instance, see Gantmacher, 1967) any small errors in the initial data A and/or U (for example, computational errors) can lead to a situation where the found solution differs to arbitrary extent from the exact solution; secondly, if calculations are performed with finite accuracy, then in some cases it is not possible to establish whether system (3) is a degenerate, or ill-conditioned, or even inconsistent system, in other words, ill-conditioned, degenerate and inconsistent systems can be indistinguishable within the specified accuracy.

If $m\neq n$, i.e. if system (3) is underdetermined $(m<n)$ or overdetermined $(m>n)$, then without using the fundamental concept of Tikhonov regularization, no numerical methods (there are obviously no direct methods), including neither the Moore-Penrose pseudoinversion method, nor the least squares method, can provide a guaranteed stable normal solution (in the sense of the solution with the minimum norm) of system (3). Below, immediately after Remark 3, we propose an algorithm for finding a stable normal pseudosolution of system (3) in the case $m\neq n$. The proposed algorithm was first developed and justified in (Andreyev & Guseynov, 2013) (see also the following articles, in which this algorithm was successfully applied to various economic and technical problems: Guseynov et al., 2017; Guseynov et al., 2015). The proposed algorithm is based on the fundamental ideas of Tikhonov's regularization method for solving ill-posed problems (for instance, see Tikhonov & Arsenin, 1977).

Remark 2. Unlike direct analytical or numerical methods for solving system (3) in the case when it is a normal system and has a relatively small size (in fact, when finding stoichiometric coefficients in the equations of chemical reactions, we are dealing, as will be seen from the next section of this work, systems of linear algebraic equations of relatively small size: $m\sim 2\div 10, n\sim 2\div 10$), the regularizing algorithm proposed below requires a computer implementation: for this purpose, it seems to us, the most convenient is Mathcad software (the authors of this work implemented the proposed algorithm in Mathcad, version 14.0.0.163), which has an intuitive and easy-to-use user interface, and in which almost all mathematical symbols and operators have images familiar to all of us, which greatly facilitates the implementation (solution and analysis) of engineering and scientific calculations of various levels of complexity EOR.

Remark 3. For the convenience of the readers, Fig. 1 shows a listing of the program in Mathcad, version 14.0.0.163, which implements the Gaussian elimination method for solving normal systems of the form (3) EOR.

The proposed algorithm for finding a stable normal pseudosolution of the joint system (3) in the case $m \neq n$ (in fact, the proposed algorithm is also applicable to the case $m = n$) consists of the following steps:

Step 1. In the initial data of system (3) we introduce small random or deterministic errors $\Delta = \{0 \le h \ll 1; 0 < \delta \ll 1\}$ (Mathcad 14 software has special built-in functions for generating random errors with various probability distributions: for instance, see Maxfield, 2009) that the resulting perturbed matrix A^h and vector U^δ must satisfy the conditions $\|A^h - A\| \le h$, $\|U^\delta - U\| \le \delta$, where by $\|\bullet\|$ we denote Schur norm, $\|matrix\|_{1,2} \le \sqrt{\sum_i \sum_j matrix_{ij}^2}$, $\|vector\|_2 \le \sqrt{\sum_k vector_k^2}$.

```
ORIGIN := 1
Gaussian_elimination (Matrix, Vector) :=
    Number_of_rows ← rows(Matrix)
    Number_of_columns ← cols(Matrix)
    Temp1 ← 0
    for i ∈ 0.. Number_of_columns − 1
        Pivotal_element ← 1
        for j ∈ i + 1.. Number_of_rows − 1                    if [i + 1 ≤ (Number_of_rows − 1)]
            Pivotal_element ← 1
            Line_constant ← −Matrix_{j,i} / Matrix_{i,i}
            for k ∈ i.. Number_of_columns − 1
                Matrix_{j,k} ← Matrix_{j,k} + Matrix_{i,k} · Line_constant
            Vector_j ← Vector_j + Line_constant · Vector_i
    for i ∈ Number_of_rows − 1.. 0
        Sum ← 0
        for j ∈ i + 1.. Number_of_columns − 1  if (i + 1 ≤ Number_of_columns − 1)
            sum ← Matrix_{i,j} · Solution_j
        Solution_i ← (Vector_i − Sum) / Matrix_{i,i}
    Solution
```

Figure 1 ***Listing of the Gaussian Elimination Method Implementation for Solving Normal Systems of the Kind (3)***

Step 2. Instead of the original system (3), the following system is solved with respect to the unknown column vector Z^α:

$$\left(\left(A^h\right)^T A^h + \alpha \cdot I\right) Z^\alpha = \left(A^h\right)^T U^\delta, \tag{4}$$

where I is the identity matrix sized as A^h; $\alpha = \alpha(\Delta) > 0$ is the regularization parameter, which is defined as the solution of the following equation:

$$\left\| A^h Z^\alpha - U^\delta \right\|^2 = \frac{\left(\delta + h \cdot \left\| Z^\alpha \right\|\right)^2}{\Phi(m_\varepsilon)}, \tag{5}$$

where

$$\left.\begin{aligned} \Phi(m_\varepsilon) = 6 \cdot 10^{-6} + (11 - m_\varepsilon) \cdot [0.110999 + (1 - m_\varepsilon) \\ \times [-0.00179988 + (6 - m_\varepsilon) \cdot [-0.00521256 + (9 - m_\varepsilon) \\ \times [-0.718663 + (3 - m_\varepsilon) \cdot [-0.102426 + (10 - m_\varepsilon) \\ \times [-0.841212 + (2 - m_\varepsilon) \cdot [-0.163198 + (7 - m_\varepsilon) \\ \times [-0.071326 + (4 - m_\varepsilon) \cdot [-0.0112364 - 0.00310896 \cdot (8 - m_\varepsilon)]]]]]]]], \\ m_\varepsilon = -\log_{10}\left(\frac{\delta}{\sqrt{m}}\right). \end{aligned}\right\} \tag{6}$$

In Fig. 2 shows a listing of the program in Mathcad, version 14.0.0.163, which implements the above algorithm for finding a stable normal pseudosolution of the joint system (3) in the case $m \neq n$ (as mentioned above, the algorithm is also applicable for the case $m = n$).

Exercise 1. Consider a simple normal system $AZ = U$, where $A = \begin{pmatrix} 2 & -3 \\ -1.33 & 2 \end{pmatrix}$, $U = \begin{pmatrix} 3 \\ -1.99 \end{pmatrix}$. It can be verified directly that vector $Z = \begin{pmatrix} 3 \\ 1 \end{pmatrix}$ is the exact solution to this system. Note that the matrix A is an ill-conditioned matrix: $\mu(A) \approx 1877$. We perturb only the right side of this system by $\delta = \begin{pmatrix} 10^{-2} \\ 10^{-2} \end{pmatrix}$: we get the system $AZ^\delta = U^\delta$, where $U^\delta = \begin{pmatrix} 3.01 \\ -1.98 \end{pmatrix}$. Therefore, the absolute and relative errors of the introduced deviations are $\left\| U - U^\delta \right\| \approx 0.014$ and $\frac{\left\| U - U^\delta \right\|}{\left\| U^\delta \right\|} \approx 3.93 \cdot 10^{-3}$, respectively, i.e. the original and perturbed systems are very close. It would seem that their solutions should also be close. However, the standard packages of applied programs Mathcad 14, MATLAB R2007, MAPLE

16 and MATEMATICA 8 (only these softwares were available to the authors of this work) find that the solution of the perturbed system is the vector $Z^{\delta} \approx \begin{pmatrix} 8 \\ 4.33 \end{pmatrix}$.

ORIGIN:= 1

Schur norm

$$\text{norm}(\text{Matrix}) := \left| \begin{array}{l} a \leftarrow \text{rows}(\text{Matrix}) \\ b \leftarrow \text{cols}(\text{Matrix}) \\ \text{Temp} \leftarrow \sqrt{\sum_{i=1}^{a} \sum_{j=1}^{b} \left(\text{Matrix}_{i,j}\right)^2} \end{array} \right.$$

Perturbation of the right-hand side

$$U\_\delta := \left| \begin{array}{l} \text{for } i \in 1..\text{rows}(U) \\ \quad U\_\delta_i \leftarrow U_i + \text{rnd}(0.2) \\ U\_\delta \end{array} \right.$$

Perturbation of the main matrix

$$A\_h := \left| \begin{array}{l} \text{for } i \in 1..\text{rows}(A) \\ \quad \text{for } j \in 1..\text{cols}(A) \\ \quad\quad A\_h_{i,j} \leftarrow A_{i,j} + \text{rnd}(0.2) \\ A\_h \end{array} \right.$$

Absolute and Relative Errors

$$\text{Abs\_error\_Matrix} := \text{norm}(A - A\_h) \qquad \text{Rel\_error\_Matrix} := \frac{\text{Abs\_error\_Matrix}}{\text{norm}(A\_h)}$$

$$\text{Abs\_error\_RHS} := \text{norm}(U - U\_\delta) \qquad \text{Rel\_error\_RHS} := \frac{\text{Abs\_error\_RHS}}{\text{norm}(U\_\delta)}$$

Guaranteeing of inequalities ||u_exact – u_δ||<=δ and ||A_exact – A_h||<=h

$$\delta\_max := \text{Abs\_error\_RHS} \cdot \left(1 + 10^{-10}\right) \qquad h\_max := \text{Abs\_error\_Matrix} \cdot \left(1 + 10^{-10}\right)$$

Regularization algorithm

Given

$$A\_h\alpha(\alpha) := A\_h^{T} \cdot A\_h + \alpha \cdot \text{identity}(\text{cols}(A\_h))$$

$$z\_\alpha(\alpha) := \text{lsolve}\left(A\_h\alpha(\alpha), A\_h^{T} \cdot U\_\delta\right)$$

$$m\_\varepsilon := -\log\left(\frac{\delta\_max}{\text{rows}(U\_\delta)}\right)$$

$$\Phi(m\_\varepsilon) := \left[6 \cdot 10^{-6} + (11 - m\_\varepsilon) \cdot [0.110999 + (1 - m\_\varepsilon) \cdot [-0.00179988 + (6 - m\_\varepsilon) \cdot [-0.00521256 + \right.$$

$$F1(\alpha) := \left(\text{norm}(A\_h \cdot z\_\alpha(\alpha) - U\_\delta)\right)^2 - \frac{\left(\delta\_max + h\_max \cdot \text{norm}(z\_\alpha(\alpha))\right)^2}{\Phi(m\_\varepsilon)}$$

$$\alpha := (\text{root}(F1(\alpha), \alpha, 0, 1))$$

Figure 2 ***Listing of the Proposed Regularizing Algorithm for Finding a Stable Normal Pseudosolution of the System (3) in the Case*** $n \neq m$

A similar result is obtained by using the Gaussian elimination method. Consequently, the absolute and relative errors of the solution caused by introduction of a sufficiently small inaccuracy in the right-hand side (with a relative error $3.93\cdot10^{-3}$), are $\left\|Z-Z^{\delta}\right\|\approx 6.007$ and $\dfrac{\left\|Z-Z^{\delta}\right\|}{\left\|Z^{\delta}\right\|}\approx 0.66,$ respectively. Application of the above-described regularizing algorithm (4)-(6) gives the following results (implemented in Mathcad, version 14.0.0.163): stable normal pseudosolution is a vector $Z^{\alpha}_{\text{Reg.}}\approx\begin{pmatrix}2.99997\\0.99921\end{pmatrix}$ (which is solution of the system (4)) which is achieved with the regularization parameter $\alpha\approx 1.0492659355210154\cdot10^{-5}$ (which is root of the equation (5)). In this case, the absolute and relative errors of the found pseudosolution are $\left\|Z-Z^{\alpha}_{\text{Reg.}}\right\|\approx 7.9\cdot10^{-4}$ and $\dfrac{\left\|Z-Z^{\alpha}_{\text{Reg.}}\right\|}{\left\|Z^{\alpha}_{\text{Reg.}}\right\|}\approx 72.51\cdot10^{-4},$ respectively

Exercise 2. Now consider the system $AZ=U$ with a strongly sparse matrix, where

$$A=\begin{pmatrix}0&6&0&0&8&0&5&0&8&0\\0&0&0&0&0&0&9&3&10&0\\0&0&0&4&7&3&0&0&0&0\\0&0&0&0&0&5&6&0&9&0\\0&0&0&0&0&0&0&4&0&0\\0&0&0&0&0&0&7&0&10&0\\0&9&0&0&7&0&0&5&0&0\\0&0&6&0&0&0&0&0&0&0\\0&4&0&0&0&0&0&7&0&1\\0&9&0&0&0&0&0&0&7&0\end{pmatrix},\ U=\begin{pmatrix}159\\177\\69\\153\\32\\139\\93\\18\\74\\81\end{pmatrix},\ Z=\begin{pmatrix}p\\2\\3\\4\\5\\6\\7\\8\\9\\10\end{pmatrix}.$$

The parameter p present in the exact solution indicates that the first component Z_1 the solution of this system is free (as Z_1 one can choose any number: we chose $Z_1=1$), in other words, in fact, in the considered system the number of variables $Z=\left\{z_j\right\}_{j=\overline{1,n}}$ equals 10 (i.e. $n=10$), and the number of independent equations is 9 (i.e. $m=9$), that is, the system under consideration is a latently underdetermined system. Obviously, the determinant of the matrix A

equals $\left(\det\left(A\right)=0\right)$ and, therefore, no direct methods can be applied to this system, and it is impossible to solve this system on the same standard application packages listed above. We perturb the main matrix and the right side of this system by $h=0.07$ and $\delta=0.1$, respectively: then, instead of the original underdetermined system, we will have a normal system $A^hZ^{h,\delta}=U^\delta$, where $A^h=A+h,\ U^\delta=U+\delta$, moreover, $\det\left(A^h\right)\approx$ -80208 and $\mu\left(A^h\right)\approx 646$. It is easy to verify that the absolute and relative errors of the deviations introduced into the main matrix and the right side of the system are $\left\|A-A^h\right\|\approx 0.7,\ \left\|U-U^\delta\right\|\approx 0.316,$ $\frac{\left\|A-A^h\right\|}{\left\|A^h\right\|}\approx 0.02067,\quad \frac{\left\|U-U^\delta\right\|}{\left\|U^\delta\right\|}\approx 0.00089.$ Application of our regularizing algorithm (4)-(6) gives the following results (implemented in Mathcad, version 14.0.0.163):

– normal pseudosolution of system: $Z^\alpha_{\text{Reg.}}\approx\begin{pmatrix}1.00144\\1.99999\\2.99996\\3.99999\\4.99999\\5.99999\\7.00003\\8.00001\\8.99997\\9.99947\end{pmatrix}$;

– regularization parameter: $\alpha\approx 2.4857076795214805\cdot 10^{-5}$;

– absolute and relative errors:

$$\left\|Z-Z^\alpha_{\text{Reg.}}\right\|\approx 1.54\cdot 10^{-3},\ \frac{\left\|Z-Z^\alpha_{\text{Reg.}}\right\|}{\left\|Z^\alpha_{\text{Reg.}}\right\|}\approx 7.8\cdot 10^{-5}.$$

Reduction of the Determining Stoichiometric Coefficients Problem to Solving a System of Linear Algebraic Equations

As mentioned in the Introduction, if we classify chemical reactions by the number and composition of reagents $\left\{R_j\right\}_{j\in\mathbb{N}}$ and products $\left\{P_j\right\}_{j\in\mathbb{N}}$, then chemical

reactions can refer to: the type of composition reaction, when the reagents involved in a chemical reaction combine into one product $\left(\sum_{j=1}^{N} s_j R_j \to s \cdot P\right)$; to the type of decomposition reaction, when only one reagent is involved in a chemical reaction, which decomposes to form several products $\left(s \cdot R \to \sum_{j=1}^{M} s_j P_j\right)$; to the type of exchange reaction (the "reverse exchange" is excluded), when the reactants exchange atoms with each other and even the whole constituent parts of their molecules, resulting in the formation of products, the amount of which, as a rule, coincides with the amount of reagents $\left(\sum_{j=1}^{N} s_j R_j \to \sum_{j=1}^{N} s_{n+j} P_j\right)$; to the type of substitution reaction, when the atoms of some reagents, which are simple substances, replace the atoms of other reagents, which are complex substances, as a result of which new products are formed – a new complex substance and a new simple substance $\left(\sum_{j=1}^{N} s_j R_j \to \sum_{j=1}^{M} s_{n+j} P_j\right)$.

Reagents $\left\{R_j\right\}_{j\in\mathbb{N}}$ and products $\left\{P_j\right\}_{j\in\mathbb{N}}$ in a chemical reaction (1) mathematically/symbolically are represent as $R_j = \left(E^R_{j_1}\right)_{R_{j_1}} \left(E^R_{j_2}\right)_{R_{j_2}} \ldots \left(E^R_{j_k}\right)_{R_{jk}}$ and $P_j = \left(E^P_{j_1}\right)_{P_{j_1}} \left(E^P_{j_2}\right)_{P_{j_2}} \ldots \left(E^P_{j_\ell}\right)_{P_{j\ell}}$, respectively, where

– $j_k \in \mathbb{N}$, $R_{j_k} \in \mathbb{N}$ for any $k \in \mathbb{N}$ and $j_\ell \in \mathbb{N}$, $P_{j_\ell} \in \mathbb{N}$ for any $\ell \in \mathbb{N}$;

– $\left(E^R_{j_k}\right)_{R_{jk}}$ is j_k-th structural unit (atoms, ions, radicals, etc.) of the reagent $R_j, j = \overline{1,N}$ with index R_{j_k} (as already noted in the Introduction, index shows how many atoms of a given structural unit are contained in a molecule: index 1 is not written);

– $\left(E^P_{j_\ell}\right)_{P_{j\ell}}$ is j_ℓ-th structural unit of the product $P_j, j = \overline{1,M}$ with index P_{j_ℓ};

– $\bigcup_{j_k}\left(E^R_{j_k}\right)_{R_{jk}}$ forms a set of unique structural units of a substance (reagents and products) in a chemical reaction, and, moreover, one can write the equality $\bigcup_{j_k}\left(E^R_{j_k}\right)_{R_{jk}} = \bigcup_{j_\ell}\left(E^P_{j_\ell}\right)_{P_{j\ell}}$, which means that the aggregate structural unit of reagents and the aggregate structural unit of products coincide.

Example 1. In order to correctly understand the chemical meaning of just the introduced designations, consider a simple chemical exchange reaction in which the reagents $\left\{R_j\right\}_{j=1,2}$ are Na_2CO_3 and HCl, but products $\left\{P_j\right\}_{j=\overline{1,3}}$ are $NaCl$, H_2O and CO_2, those. Consider a chemical reaction, equation (1) of which has the form:

$$s_1Na_2CO_3 + s_2HCl \to s_3NaCl + s_4H_2O + s_5CO_2. \quad (7)$$

Then, bearing in mind that the number of unique structural units in a given chemical reaction (in reagents and products) is equal to 5 $\left(\bigcup_{j_k}\left(E^R_{j_k}\right)_{R_{jk}} = \bigcup_{j_\ell}\left(E^P_{j_\ell}\right)_{P_{j_\ell}} = \left\{Na,Cl,H,O,C\right\}\right)$, the chemical meaning of the above mathematical/symbolic representations $R_j = \left(E^R_{j_1}\right)_{R_{j1}}\left(E^R_{j_2}\right)_{R_{j2}}\ldots\left(E^R_{j_k}\right)_{R_{jk}}$ and $P_j = \left(E^P_{j_1}\right)_{P_{j1}}\left(E^P_{j_2}\right)_{P_{j2}}\ldots\left(E^P_{j_\ell}\right)_{P_{j\ell}}$ is as follows:

$$R_1 = Na_2CO_3,\ \left(E^R_{1_1}\right)_{R_{1_1}} = \underbrace{\left(Na\right)_2}_{E^R_{1_1}=Na;\ R_{1_1}=2} = Na_2,\ \left(E^R_{1_2}\right)_{R_{1_1}} = \underbrace{\left(C\right)_1}_{E^R_{1_2}=C;\ R_{1_2}=1} = C,\ \left(E^R_{1_3}\right)_{R_{1_3}} = \underbrace{\left(O\right)_3}_{E^R_{1_3}=O;\ R_{1_3}=3} = O_3;$$

$$R_2 = HCl,\ \left(E^R_{2_1}\right)_{R_{2_1}} = \underbrace{\left(H\right)_1}_{E^R_{2_1}=H;\ R_{2_1}=1} = H,\ \left(E^R_{2_2}\right)_{R_{2_2}} = \underbrace{\left(Cl\right)_1}_{E^R_{2_2}=Cl;\ R_{2_2}=1} = Cl;$$

$$P_1 = NaCl,\ \left(E^P_{1_1}\right)_{P_{1_1}} = \underbrace{\left(Na\right)_1}_{E^R_{1_1}=Na;\ P_{1_1}=1} = Na,\ \left(E^P_{1_2}\right)_{P_{1_2}} = \underbrace{\left(Cl\right)_1}_{E^R_{1_2}=Cl;\ P_{1_2}=1} = Cl;$$

$$P_2 = H_2O,\ \left(E^P_{2_1}\right)_{P_{2_1}} = \underbrace{\left(H\right)_2}_{E^R_{2_1}=H;\ P_{2_1}=2} = H_2,\ \left(E^P_{2_2}\right)_{P_{2_2}} = \underbrace{\left(O\right)_1}_{E^R_{2_2}=O;\ P_{2_2}=1} = O;$$

$$P_3 = CO_2,\ \left(E^P_{3_1}\right)_{P_{3_1}} = \underbrace{\left(C\right)_1}_{E^R_{3_1}=C;\ P_{3_1}=1} = C,\ \left(E^P_{3_2}\right)_{P_{3_2}} = \underbrace{\left(O\right)_2}_{E^R_{3_2}=O;\ P_{3_2}=2} = O_2;$$

$$\bigcup_{j_k}\left(E^R_{j_k}\right)_{R_{jk}} = \bigcup\left\{E^R_{1_1},E^R_{1_2},E^R_{1_3},E^R_{2_1},E^R_{2_2}\right\} = \bigcup\left\{Na,C,O,H,Cl\right\} = \left\{Na,C,O,H,Cl\right\};$$

$$\bigcup_{j_\ell}\left(E^P_{j_\ell}\right)_{P_{j_\ell}} = \bigcup\left\{E^P_{1_1},E^P_{1_2},E^P_{2_1},E^P_{2_2},E^P_{3_1},E^P_{3_2}\right\} = \bigcup\left\{Na,Cl,H,O,C,O\right\} = \left\{Na,Cl,H,O,C\right\}.$$

Obviously, in the introduced notation, equation (7) has the following notation:

$$\begin{aligned} &s_1\left(E^R_{1_1}\right)_{R_{1_1}}\left(E^R_{1_2}\right)_{R_{1_2}}\left(E^R_{1_3}\right)_{R_{1_3}} + s_2\left(E^R_{2_1}\right)_{R_{2_1}}\left(E^R_{2_2}\right)_{R_{2_2}} \to s_3\left(E^P_{1_1}\right)_{P_{1_1}}\left(E^P_{1_2}\right)_{P_{1_2}} \\ &+s_4\left(E^P_{2_1}\right)_{P_{2_1}}\left(E^P_{2_2}\right)_{P_{2_2}} + s_5\left(E^P_{3_1}\right)_{P_{3_1}}\left(E^P_{3_2}\right)_{P_{3_2}} \end{aligned} \quad (8)$$

This example shows that $\underbrace{E^R_{1_1} = E^P_{1_1}}_{Na}$, $\underbrace{E^R_{1_2} = E^P_{3_1}}_{C}$, $\underbrace{E^R_{1_3} = E^P_{2_2} = E^P_{3_2}}_{O}$, $\underbrace{E^R_{2_1} = E^P_{2_1}}_{H}$, $\underbrace{E^R_{2_2} = E^P_{1_2}}_{Cl}$, i.e. out of 11 structural units (5 of them appear in reagents, and 6 in products), only 5 are unique, and this circumstance is characteristic to all chemical reactions, both the four types of reactions listed above, and redox- and acid-base reactions. In other words, for any chemical reaction in symbolic representations $R_j = \left(E^R_{j_1}\right)_{R_{j_1}} \left(E^R_{j_2}\right)_{R_{j_2}} \ldots \left(E^R_{j_k}\right)_{R_{j_k}}$ of reagents $\left\{R_j\right\}_{j=\overline{1,N}}$ and $P_j = \left(E^P_{j_1}\right)_{P_{j_1}} \left(E^P_{j_2}\right)_{P_{j_2}} \ldots \left(E^P_{j_\ell}\right)_{P_{j_\ell}}$ of products $\left\{P_j\right\}_{j=\overline{1,M}}$ the number of unique structural units will be less than the total (equal to $j_k + j_\ell$) structural units of N reagents and M products. The essence of the algebraic method for determining the stoichiometric coefficients of chemical reactions consists in drawing up a system of linear algebraic equations, in which the number of equations is equal to the number of unique structural units (which is $card\left(\bigcup_{j_k}\left(E^R_{j_k}\right)_{R_{j_k}}\right)$, where $card(\bullet)$ denotes the cardinality of a set) of regents and products. To construct equations of this system, it is necessary to use so-called law of material balance (for instance, see Krapivin, 1929; Abkin, 1971; Blakley, 1982; Kulibaba, 2010), which states that amount of each unique structural unit before the start of the chemical reaction is equal to the amount of the corresponding unique structural unit after the occurrence of this chemical reaction. Taking this law into account in the chemical reaction considered above with equation (8), we obtain a system of linear algebraic equations for the unknown stoichiometric coefficients of the given chemical reactions

$$\begin{cases} R_{1_1} \cdot s_1 = P_{1_1} \cdot s_3, \\ R_{1_2} \cdot s_1 = P_{3_1} \cdot s_5, \\ R_{1_3} \cdot s_1 = P_{2_2} \cdot s_4 + P_{3_2} \cdot s_5, \\ R_{2_1} \cdot s_2 = P_{2_1} \cdot s_4, \\ R_{2_2} \cdot s_2 = P_{1_2} \cdot s_3, \end{cases} \text{ i.e. } \begin{cases} 2 \cdot s_1 = s_3, \\ s_1 = s_5, \\ 3 \cdot s_1 = s_4 + 2 \cdot s_5, \\ s_2 = 2 \cdot s_4, \\ s_2 = s_3, \end{cases} \quad (9)$$

which is easily solved manually: $s_2 = s_3 = 2 \cdot s_1$, $s_4 = s_5 = s_1$, where $s_1 > 0$ plays the role of a free parameter, which, firstly, can always be specified as any positive number (for example, 1: then we get $s_1 = s_4 = s_5 = 1$, $s_2 = s_3 = 2$), secondly, can

always be left in equation (7) as a parameter, and then we are able to divide by it, namely, taking into account the found $s_j, j=\overline{1,5}$ in (7) we obtain equation $s_1 Na_2CO_3 + 2s_1 HCl \to 2s_1 NaCl + s_1 H_2O + s_1 CO_2,$ which, after dividing both parts by s_1 takes the usual "chemical" form $Na_2CO_3 + 2HCl \to 2NaCl + H_2O + CO_2.$ Application of the regularizing algorithm proposed in the previous section to system (9), which in matrix form has the form (we put $s_1 = 1$)

$$\underbrace{\begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 2 & 0 & -1 & 0 & 0 \\ 1 & 0 & 0 & 0 & -1 \\ 3 & 0 & 0 & -1 & -2 \\ 0 & 1 & 0 & -2 & 0 \\ 0 & 1 & -1 & 0 & 0 \end{pmatrix}}_{A_{6\times 5}} \underbrace{\begin{pmatrix} s_1 = 1 \\ s_2 \\ s_3 \\ s_4 \\ s_5 \end{pmatrix}}_{Z_{5\times 1}} = \underbrace{\begin{pmatrix} 1 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}}_{U_{6\times 1}}, \quad (10)$$

gives the following results (implemented in Mathcad, version 14.0.0.163):

– deterministically perturbed matrix and right-hand part: $A^h = \left\{a_{ij} + 0.7\right\}_{i=\overline{1,6}}^{j=\overline{1,5}}$,

$$U^\delta = \left\{u_i + 0.1\right\}_{i=\overline{1,6}};$$

– normal pseudosolution (solution (4)): $Z_{\text{Reg.}}^\alpha \approx \begin{pmatrix} 0.99872 \\ 1.99674 \\ 1.99697 \\ 0.99837 \\ 0.99884 \end{pmatrix}$; (11)

– regularization parameter (root of (5)): $\alpha \approx 1.165568962121907 \cdot 10^{-4}$;

– absolute and relative errors:

$$\left\| Z - Z_{\text{Reg.}}^\alpha \right\| \approx 5 \cdot 10^{-3}, \ \frac{\left\| Z - Z_{\text{Reg.}}^\alpha \right\|}{\left\| Z_{\text{Reg.}}^\alpha \right\|} \approx 1.5 \cdot 10^{-5}.$$

Let's pay attention to the found stoichiometric coefficients (11): the question arises, how can we use the found approximate values of stoichiometric coefficients $s_j, j=\overline{1,5},$ if they must be natural numbers (we already know that $s_1 = s_4 = s_5 = 1,\ s_2 = s_3 = 2$)? The answer is obvious: it is necessary to round them to the nearest natural numbers, since the proposed regularizing algorithm is

guaranteed to find a stable solution – a solution that continuously depends on the initial data, in other words, a small change in the initial data (the main matrix and the right-hand side of system (10)) is guaranteed to correspond to a small change of solution (see found absolute and relative errors).

Below are examples of more complex chemical reactions in which it is required to determine the stoichiometric coefficients by the algebraic method..

Example 2 (Blakley, 1982). Consider a chemical reaction, the equation of which has form

$$\begin{aligned} &s_1H_2CO_3 + s_2Ca(CN)_2 + s_3NaAlF_4 + s_4FeSO_4 + s_5MgSiO_3 + s_6KI + s_7H_3PO_4 \\ &+s_8PbCrO_4 + s_9BrCl + s_{10}CF_2Cl_2 + s_{11}SO_2 \to s_{12}PbBr_2 + s_{13}CrCl_3 + s_{14}MgCO_3 \\ &+s_{15}KAl(OH)_4 + s_{16}Fe(SCN)_3 + s_{17}PI_3 + s_{18}Na_2SiO_3 + s_{19}CaF_2 + s_{20}H_2O. \end{aligned} \quad (12)$$

The task is to determine the stoichiometric coefficients $s_j, j = \overline{1,20}.$

We use the aforementioned law of material balance, and, knowing that in the chemical reaction under consideration, unique structural units are $\{H, C, O, Ca, C, N, Na, Al, F, Fe, S, Mg, Si, K, I, P, Pb, Cr, Br, Cl\}$, we obtain a system of linear algebraic equations (3) $A_{20\times20}Z_{20\times1} = U_{20\times1}$ to find the desired coefficients $Z = \{z_j = s_j\}_{j=\overline{1,20}}$ (coefficient $s_1 > 0$ we left as a free parameter), where

$$A = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 2 & 0 & 0 & 0 & 0 & 0 & 3 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -4 & 0 & 0 & 0 & 0 & -2 \\ 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -1 & 0 \\ 0 & 2 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & -1 & 0 & -3 & 0 & 0 & 0 & 0 \\ 0 & 2 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -3 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -2 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 4 & 0 & 0 & 0 & 0 & 0 & 0 & 2 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -2 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & -3 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 4 & 3 & 0 & 4 & 4 & 0 & 0 & 2 & 0 & 0 & -3 & -4 & 0 & 0 & -3 & 0 & -1 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -3 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & -2 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 2 & 0 & 0 & -3 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{pmatrix}, \quad U = \begin{pmatrix} s_1 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}.$$

Note that, despite looking sparse, matrix A has a nonzero determinant, however it is an ill-conditioned matrix: $\det(A) \approx 1056,\ \mu(A) \approx 145.82.$

Solving the designed system in Mathcad software, version 14.0.0.163 using the inverse matrix solution method, $Z = A^{-1}U$ (due to the ability to carry out symbolic/algebraic calculations carried out by the operator $\rightarrow$ in Symbolic Keyword Toolbar, Mathcad allows us to operate on variables, in particular, source data that depend on free parameters: the right side U of our system depends on the free parameter s_1; in addition, in Mathcad, using the "Fraction" format in the "Number Format" tab of the "Result Format" dialog box, one can present the results of numerical and symbolic calculations in fractional format), we got that $s_2 = \frac{15}{88}\cdot s_1,\ s_3 = \frac{3}{44}\cdot s_1,\ s_4 = \frac{5}{44}\cdot s_1,\ s_5 = \frac{3}{88}\cdot s_1,\ s_6 = \frac{3}{44}\cdot s_1,\ s_7 = \frac{1}{44}\cdot s_1,\ s_8 = \frac{3}{44}\cdot s_1,$ $s_9 = \frac{3}{22}\cdot s_1,\quad s_{10} = \frac{3}{88}\cdot s_1,\quad s_{11} = \frac{5}{22}\cdot s_1,\quad s_{12} = \frac{3}{44}\cdot s_1,\quad s_{13} = \frac{3}{44}\cdot s_1,\quad s_{14} = \frac{3}{88}\cdot s_1,$ $s_{15} = \frac{3}{44}\cdot s_1,\ s_{16} = \frac{5}{44}\cdot s_1,\ s_{17} = \frac{1}{44}\cdot s_1,\ s_{18} = \frac{3}{88}\cdot s_1,\ s_{19} = \frac{15}{88}\cdot s_1,\ s_{20} = \frac{79}{88}\cdot s_1.$ Since the least common multiple for the denominators $s_j, j = \overline{2,20}$ is 88, then, obviously we should take the value of the free parameter s_1 equal to this number: $s_1 = 88.$ Given the already fully determined stoichiometric coefficients $s_j, j = \overline{1,20}$ in the equation (12), we have

$$88H_2CO_3 + 15Ca(CN)_2 + 6NaAlF_4 + 10FeSO_4 + 3MgSiO_3 + 6KI + 2H_3PO_4$$
$$+6PbCrO_4 + 12BrCl + 3CF_2Cl_2 + 20SO_2 \rightarrow 6PbBr_2 + 6CrCl_3 + 3MgCO_3$$
$$+6KAl(OH)_4 + 10Fe(SCN)_3 + 2PI_3 + 3Na_2SiO_3 + 15CaF_2 + 79H_2O.$$

Application of the regularizing algorithm proposed in the previous section to this problem (we "traditionally" put $s_1 = 1$, not $s_1 = 88$) gives the following results (implemented in Mathcad, version 14.0.0.163):

– randomly perturbed matrix and right-hand side:

$A^h = \{a_{ij} + \mathrm{rnd}(0.2)\}_{i,\,j=\overline{1,20}},\ U^\delta = \{u_i + \mathrm{rnd}(0.2)\}_{i=\overline{1,20}},$

here the built-in function $\mathrm{rnd}(x)$ generates a uniformly distributed random number between 0 and x;

– normal pseudosolution (i.e., solution of the system (4), see Fig. 2):

z_α(α) =

	1
1	0.99874
2	14.99983
3	6.00017
4	9.99886
5	2.99999
6	5.99999
7	2.00003
8	6.00013
9	11.99898
10	3.00026
11	19.99999
12	5.99999
13	5.99977
14	3.00001
15	6.00012
16	10.00001
17	1.99997
18	2.99836
19	14.99864
20	78.99765

– regularization parameter (root of (5)): $\alpha \approx 1.165568962121907 \cdot 10^{-4}$;

– absolute and relative errors:

$$\left\| Z - Z_{\text{Reg.}}^{\alpha} \right\| \approx 3.77 \cdot 10^{-3}, \quad \frac{\left\| Z - Z_{\text{Reg.}}^{\alpha} \right\|}{\left\| Z_{\text{Reg.}}^{\alpha} \right\|} \approx 4.3 \cdot 10^{-5}.$$

As mentioned above, the coordinates of the obtained normal pseudosolution vector must be rounded to the nearest natural numbers.

Example 3 (Kulibaba, 2010). Consider chemical reactions that are described by the following equations:

$$s_1 KNO_3 + s_2 S \to s_3 K_2 SO_4 + s_4 KSO_3 + s_5 KNO_2 + s_6 SO_3 + s_7 NO + s_8 N_2 + s_9 O_2 + s_{10} SO_2; \quad (13)$$

$$s_1 KNO_3 + s_2 C + s_3 S \to s_4 K_2 SO_4 + s_5 K_2 CO_3 + s_6 CO_2 + s_7 CO + s_8 N_2; \quad (14)$$

$$s_1 KMnO_4 + s_2 H_2 S \to s_3 K_2 SO_4 + s_4 K_2 S_2 O_3 + s_5 S + s_6 MnS + s_7 H_2 O; \quad (15)$$

$$s_1 \left(Cr\left(H_2 NCONH_2 \right)_6 \right)_4 \left(Cr\left(CN \right)_6 \right)_3 + s_2 KMnO_4 + s_3 HCl \to s_4 K_2 Cr_2 O_7 + s_5 CO_2 + s_6 KNO_3 + s_7 MnCl_2 + s_8 KCl + s_9 H_2 O. \quad (16)$$

It is easy to see that in chemical the equation (13) the difference between the numbers of unique structural units $\{K, N, O, C\}$ and the desired stoichiometric coefficients is $6 = \left| \underbrace{card\{K, N, O, C\}}_{4} - \underbrace{card\left(\left\{ s_j \right\}_{j=\overline{1,10}} \right)}_{10} \right|$; in the equation (14) this

difference is $3=\left|\underbrace{card\left\{K,N,O,C,S\right\}}_{5}-\underbrace{card\left(\left\{s_j\right\}_{j=\overline{1,8}}\right)}_{8}\right|$; in the equation (15) – $2=\left|\underbrace{card\left\{K,Mn,O,H,S\right\}}_{5}-\underbrace{card\left(\left\{s_j\right\}_{j=\overline{1,7}}\right)}_{7}\right|$; and in the equation (16), as in the equations (7) and (12) from Examples 1 and 2, respectively, this difference is $1=\left|\underbrace{card\left\{Cr,H,N,C,O,K,Mn,Cl\right\}}_{8}-\underbrace{card\left(\left\{s_j\right\}_{j=\overline{1,9}}\right)}_{9}\right|$. Recall that the number of unique structural units is the number of equations in the constructed system with respect to the desired stoichiometric coefficients, and, therefore, the number $\left|card\left(\left\{\text{set of base units}\right\}\right)-card\left(\left\{s_j\right\}_{j\in\mathbb{N}}\right)\right|$ determines whether the constructed system with respect to the unknown stoichiometric coefficients is a normal, underdetermined or overdetermined system (obviously, provided that the equations of the system are linearly independent).

The system of linear algebraic equations for the desired stoichiometric coefficients, constructed on the basis of the material balance law, is

– an underdetermined system for the reaction (13):

$$\underbrace{\begin{pmatrix}1&0&-2&-2&-1&0&0&0&0&0\\1&0&0&0&-1&0&0&-1&-2&0\\3&0&-4&-3&-2&-3&-2&-1&0&-2\\0&1&-1&-1&0&-1&-1&0&0&0\end{pmatrix}}_{A_{4\times10}} Z_{10\times1}=\underbrace{0}_{U_{4\times1}},\ Z_{10\times1}=\left\{s_j\right\}_{j=\overline{1,10}};\ (17)$$

– an underdetermined system for the reaction (14):

$$\underbrace{\begin{pmatrix}1&0&0&-2&-2&0&0&0\\1&0&0&0&0&0&0&-2\\3&0&0&-4&-3&-2&-1&0\\0&1&0&0&-1&-1&-1&0\\0&0&1&-1&0&0&0&0\end{pmatrix}}_{A_{5\times8}} Z_{8\times1}=\underbrace{0}_{U_{5\times1}},\ Z_{8\times1}=\left\{s_j\right\}_{j=\overline{1,8}};\ (18)$$

– an underdetermined system for the reaction (15):

$$\underbrace{\begin{pmatrix} 1 & 0 & -2 & -2 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 & 0 & -1 & 0 \\ 4 & 0 & -4 & -3 & 0 & 0 & -1 \\ 0 & 1 & 0 & 0 & 0 & 0 & -1 \\ 4 & 0 & -4 & -3 & 0 & 0 & -1 \end{pmatrix}}_{A_{5\times 7}} Z_{7\times 1} = \underbrace{0}_{U_{5\times 1}},\ Z_{7\times 1} = \left\{ s_j \right\}_{j=\overline{1,7}}; \quad (19)$$

– a normal system for reaction (16) (because we can add to it equation $s_1 = p$, where p is any positive number, for example, 1):

$$\underbrace{\begin{pmatrix} 7 & 0 & 0 & -2 & 0 & 0 & 0 & 0 & 0 \\ 96 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & -2 \\ 66 & 0 & 0 & 0 & 0 & -1 & 0 & 0 & 0 \\ 42 & 0 & 0 & 0 & -1 & 0 & 0 & 0 & 0 \\ 24 & 4 & 0 & -7 & -2 & -3 & 0 & 0 & -1 \\ 0 & 1 & 0 & -2 & 0 & -1 & 0 & -1 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & -1 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & -2 & -1 & 0 \end{pmatrix}}_{A_{8\times 9}} Z_{9\times 1} = \underbrace{0}_{U_{8\times 1}},\ Z_{10\times 1} = \left\{ s_j \right\}_{j=\overline{1,9}}. \quad (20)$$

System (20), after supplementing it with equation $s_1 = p$, where as p one can take any positive number (for example, $p = 1$), can be solved manually or by some direct analytical or numerical method, for example, Gaussian elimination method, or Cramer's rule, or inverse matrix solution. As a result, we get $s_1 = 10$, $s_2 = 1176$, $s_3 = 2798$, $s_4 = 35$, $s_5 = 420$, $s_6 = 660$, $s_7 = 1176$, $s_8 = 446$, $s_9 = 1879$. Therefore, the balanced reaction equation (15) has the form

$$10\left(Cr\left(H_2NCONH_2\right)_6\right)_4\left(Cr\left(CN\right)_6\right)_3 + 1176KMnO_4 + 2798HCl \to 35K_2Cr_2O_7$$
$$+420CO_2 + 660KNO_3 + 1176MnCl_2 + 446KCl + 1879H_2O.$$

Since systems (17)-(19) are underdetermined systems, they cannot be solved by the usual direct analytical or numerical methods. In the article (Kulibaba, 2010) (we would like to note that this article was written, unfortunately, somewhat carelessly and there are many mathematical typos), the underdetermined systems (18) and (19) were not solved, or rather, there is an unsuccessful attempt to solve their logical and exhaustive way, however, as a result of this attempt, not entirely correct results were obtained. The implementation of the regularizing algorithm proposed in the previous section in Mathcad, version 14.0.0.163, allows us to determine the correct values of the desired stoichiometric coefficients of chemical

equations (14) and (15) (when performing Step 1 of the proposed algorithm, we perturbed the elements of the main matrices and the right-hand sides of systems (18) and (19) using the built-in function $\mathrm{rnd}(x)$, where we put $x = 0.2$). Namely:

– a normal stable pseudosolution of the system (18) is vector (i.e., a solution to the system (4), see Fig. 2)

z_α(α) =

	1
1	4.00328
2	3.99871
3	0.99969
4	0.99877
5	1.00016
6	1.99999
7	1.00111
8	1.99899

whose coordinates, as has been said many times earlier, should be rounded to the nearest natural numbers: as a result, we get that $s_1 = 4,\ s_2 = 4,\ s_3 = 1,\ s_4 = 1,\ s_5 = 1,$ $s_6 = 2,\ s_7 = 1,\ s_8 = 2,$ and, therefore, the correctly balanced reaction equation (14) is the equation

$$4KNO_3 + 4C + S \to K_2SO_4 + K_2CO_3 + 2CO_2 + CO + 2N_2,$$

which in article (Kulibaba, 2010) looked like

$$12KNO_3 + 8C + 5S \to 5K_2SO_4 + K_2CO_3 + 6CO_2 + CO + 6N_2,$$

in which the law of material balance is formally fulfilled.

– a normal stable pseudosolution of system (19) is a vector (i.e., a solution to system (4), see Fig. 2)

z_α(α) =

	1
1	3.99663
2	8.98872
3	0.99999
4	1.0003
5	1.99997
6	3.99999
7	9.00142

which allows you to write a correctly balanced equation of the chemical reaction (15)

$$4KMnO_4 + 9H_2S \to K_2SO_4 + K_2S_2O_3 + 2S + 4MnS + 9H_2O$$

instead of a not entirely correct equation (at least, it is not an equation with, as a rule, the required minimum stoichiometric coefficients)

$$10KMnO_4 + 22H_2S \to 3K_2SO_4 + 2K_2S_2O_3 + 5S + 10MnS + 22H_2O$$

from article (Kulibaba, 2010).

In (Kulibaba, 2010), system (17) is not solved, and it is argued that (we quote) "... The system has many solutions, but it is impossible to find a

mathematical way to solve it. The only option left is to orally select the coefficients ...".

Application of the proposed regularizing algorithm (4)-(6) to system (17) gives us the following normal pseudo-solution (the algorithm is implemented in Mathcad, version 14.0.0.163, while the elements of the main matrix and the right-hand side of system (17) were perturbed using the built-in function where we put again $x = 0.2$):

$z\_\alpha(\alpha) =$

	1
1	9.73782
2	6.64992
3	1.88514
4	1.92046
5	1.77621
6	1.86405
7	1.62960
8	2.77704
9	0.85882
10	0.87763

(21)

Before carrying out the necessary rounding off of the coordinates of the obtained pseudo-solution vector (21) to the nearest natural numbers, let us pay attention to the "dangerous" coordinates, which are the second and seventh coordinates. Why are these coordinates "dangerous"? The fact is that if instead of the values 6.64992 and 1.6296 of these coordinates there were values, for example, 6.5 and 1.5, respectively, then the necessary rounding of them to the nearest natural numbers would give us four alternatives: 6 and 1, or 6 and 2, or 7 and 1, or 7 and 2, and, therefore, all these four alternatives must be taken into account in turn in equation (13), as a result of which there is a single correct set of values of the sought stoichiometric coefficients:

$$10KNO_3 + 7S \to 2K_2SO_4 + 2KSO_3 + 2KNO_2 + 2SO_3 + 2NO + 3N_2 + O_2 + SO_2. \quad (22)$$

In the general case, if the dimension of the found pseudosolution vector is $n \times 1$ (i.e. if the number of unknown stoichiometric coefficients is n) and, if all coordinates of this pseudo-solution are "dangerous" in the above sense (one cannot exclude the occurrence of such cases!), then there are 2^n alternatives, which greatly complicates the determination of the unique correct set of values of the unknown stoichiometric coefficients in the equation of the considered chemical reaction. It seems to us that the solution to the arisen brute force problem of 2^n alternatives can be significantly facilitated (in the sense of simplifying calculations) if we use the apparatus of rich theory of Boolean functions, in particular, algorithms for finding the minimal disjunctive form of both a completely defined Boolean function and an incompletely defined Boolean function. However, this paper will not investigate the possibility of using the apparatus of the theory of Boolean functions for computational simplification

when solving the above-described enumeration problem for 2^n alternatives of rounding the coordinates of the obtained pseudo-solution vector. In conclusion, we just add that in any case, even brute forcing through 2^n alternatives is extremely easier, than brute forcing through $\prod_{j=1}^{n}\overline{m}_j$ alternatives of values of stoichiometric coefficients or even a chemical-logical search among $\prod_{j=1}^{n}\left(\overline{m}_j-\underline{m}_j+1\right)$ alternatives of values of stoichiometric coefficients, where natural numbers $\underline{m}_j$ and $\overline{m}_j$ denote estimated lower and upper boundaries of the stoichiometric coefficient $s_j, j\in\{1,\ldots,n\}$. For example, let $n=5,$ and let it be established from a chemical-logical way that the stoichiometric coefficient s_1 can take one of the values from the set $\{3,\ldots,10\}$ of possible values, s_2 – from $\{1,\ldots,5\}$, s_3 – from $\{6,\ldots,11\}$, s_4 – from $\{4,\ldots,7\}$, s_5 – from $\{3,\ldots,5\}$; then we get 2880 alternatives in chemical-logical enumeration, which is 90 times more than 2^5 alternatives, which arise due to the above-described ambiguity of rounding the coordinates of the found pseudo-solution.

Remark 4. If we at least visually compare the pseudosolution (21) with the found pseudosolutions from the previous examples, then it is easy to see that (21) deviates more from the true solution, which we already know (see the coefficients in equation (22)). This is indeed the case, as evidenced by the relatively large absolute (order 10^{-1}) and relative (order 10^{-2}) of pseudo-solution error (21), namely, $\left\|Z-\underbrace{Z^{\alpha}_{\text{Reg.}}}_{z\_\alpha(\alpha)}\right\|\approx 0.70795,\ \dfrac{\left\|Z-Z^{\alpha}_{\text{Reg.}}\right\|}{\left\|Z^{\alpha}_{\text{Reg.}}\right\|}\approx 0.05515.$ It is intuitively clear that $\left\|Z-Z^{\alpha}_{\text{Reg.}}\right\|\sim\left|card\left(\{\text{set of base units}\}\right)-card\left(\{s_j\}_{j\in\mathbb{N}}\right)\right|,$ where the symbol $\sim$ means proportionality, e. the greater the difference between the numbers of the desired stoichiometric coefficients and equations in the system of algebraic equations (3), the lower the resolution becomes (in other words, the efficiency of application) of the proposed regularizing algorithm, and, thereby, the values of the absolute and relative errors of the found pseudosolution of the system (3): one of the authors of this work, while still a 4th year student of Lomonosov Moscow State University, investigated the essence of this proportionality when solving operator equations of the first kind, which include, in particular, the system of linear algebraic equations (see Dmitriev & Guseynov, 1995). EOR

Discussion

Obviously, the problem of determining stoichiometric coefficients in equations of chemical reactions arises not only in the corresponding academic disciplines of chemistry taught in secondary schools and higher educational institutions – at least, it is an imprescriptible "routine" task in chemical industries, some of the main questions of which are: – how much raw material should be taken to maintain a given productivity taking into account the degree of conversion of reagents, process selectivity and losses? – how much energy is needed for the efficient implementation of simple and complex chemical processes? The authors of this work, academic personnel, have never been associated with chemical industries and technologies, and we do not know exactly how automated material and energy calculations in chemical industries and technologies in various countries are (at least in the developed countries of the European Union and North America). Even if we assume that there is full automation, then the mathematical method proposed in this work, which, without much difficulty, can be automated (not using Mathcad software, as it was done in this work due to its intuitive and easy-to-use interface (see Remark 2), but through software development using an Integrated development environment), can be considered as an alternative full-fledged innovative approach that does not require deep knowledge of chemistry (at least knowledge of oxidation numbers theory), especially in relation to redox reactions, in the equations of which three methods are mainly used to find the stoichiometric coefficients – the electron-balance method, the ion-electron method (also called the half-reaction method), the method of Arcesio Garcia (see Garcia, 1987; note that there is still no proper scientific justification for this method), the use of which requires memorizing some chemical facts and operating them, for example, memorizing the oxidation states of some elements, the behavior of oxidants and reducing agents in different environments, etc. Nevertheless, in Remark 1 we emphasized that this work is intended primarily for teachers of a traditional chemistry course and for high school students taking such a course. Natural questions arise: – whether the students of senior grades of general education schools are able to assimilate (independently or under the guidance of teachers) the content of this work; – whether, generally speaking, students of general education schools need to know which types of systems of linear algebraic equations exist? – whether they need to study 2-3 direct methods for solving normal systems (at least the Gaussian elimination method and/or the Cramer's rule, and/or the inverse matrix solution)? – whether they need to understand what problems may arise when implementing these methods on computers (i.e., when they are numerically implemented)? – whether they need to be able to apply the gained knowledge to

solve practical/real problems, for example, to solve the problem of determining stoichiometric coefficients in equations of chemical reactions.

Our answers to all these questions are unequivocally affirmative. At one time, studying under a 10-year educational system, in the 7th grade within the framework of the "Algebra" subject, authors studied the above-mentioned direct methods for solving normal systems of linear algebraic equations (and manually solved systems with 10 equations and unknowns); in the 7th grade, within the framework of the "Algebra" subject, they studied types and properties of matrices and vectors/arrays and operations on them; in the 8th grade, within the framework of the same subject, they studied underdetermined and overdetermined systems of linear equations and were able to find bases, basic solutions and basic admissible solutions of such systems; the second author, in the 8-10th grades, at extra optional lessons, studied the elements of mathematical modeling, within which the studied problems were reduced to problems of game theory, linear programming and graph theory; the second author, in the 10th grade, within the framework of an extra optional lesson, studied elements of the theory of inverse problems – a class of problems in which, according to known consequences, it is required to determine the causes; etc. It can be added that in grades 9-10 in the framework of the subject "Mathematics" we studied complex numbers, limits, differential and integral calculus, elements of analytical geometry, elements of the theory of probability and mathematical statistics, etc. We emphasize once again that all this was carried out in general education schools with a 10-year educational system. Why is it impossible to study at least the elements of linear algebra at a good level in general education schools with a 12-year educational system?! Of course, in almost every general education school there are several schoolchildren who, for one reason or another (mainly under the influence of relatives and friends), will try to deepen their knowledge, but this is not about units, but about the massiveness of obtaining deep knowledge. Maybe deep education is not needed? – if so, who exactly does not need it and for what reasons? After all, it is almost an axiom that the main component of sustainable and dynamic development of any state is development and realization of the intellectual potential of the nation!

Let us return to the approach proposed in this work for determining stoichiometric coefficients in equations of chemical reactions of any type. Let's give a simple typical example, considering a simple redox reaction with reagents – oxidizing agent $KMnO_4$, environment H_2O, reducing agent Na_2SO_3, and products MnO_2, KOH, Na_2SO_4, that is, let us consider the chemical equation

$$s_1 KMnO_4 + s_2 H_2O + s_3 Na_2SO_3 \to s_4 MnO_2 + s_5 KOH + s_6 Na_2SO_4, \quad (23)$$

where $\{s_i\}_{i=\overline{1,6}}$ are the desired stoichiometric coefficients.

Application of the half-reaction method to the considered chemical reaction generates the following stages (this method is based on preparation of ionic equations for oxidation and reduction processes with their subsequent summation into a general equation):

- constructing the ion-molecular equation of each half-reaction, taking into account the transformation of permanganate ion in a neutral medium into manganese dioxide:

$$MnO_4^- + H_2O \to MnO_2 + OH^-,$$
$$SO_3^{2-} + H_2O \to SO_4^{2-} + H^+;$$

- obtaining electron-ion equations by arranging the coefficients in each half-reaction and determining number of electrons participating in it:

$$\left.\begin{array}{l} MnO_4^- + 2H_2O + 3\overline{e} \to MnO_2 + 4OH^- \left| \text{electrons: 3; coefficient: 2,} \right. \\ SO_3^{2-} + H_2O - 2\overline{e} \to SO_4^{2-} + 2H^+ \left| \text{electrons: 2; coefficient: 3;} \right. \end{array}\right\} \Rightarrow$$

$$\left.\begin{array}{l} 2MnO_4^- + 4H_2O + 6\overline{e} \to 2MnO_2 + 8OH^-, \\ 3SO_3^{2-} + 2H_2O - 6\overline{e} \to 3SO_4^{2-} + 6H^+; \end{array}\right.$$

- obtaining ion-molecular equation of the redox reaction by summing electron-ion equations obtained in the previous stage and reducing similar terms:

$$2MnO_4^- + H_2O + 3SO_3^{2-} \to 2MnO_2 + 2OH^- + 3SO_4^{2-};$$

- constructing the desired molecular equation according to the obtained ion-molecular equation:

$$2KMnO_4 + H_2O + 3Na_2SO_3 \to 2MnO_2 + 2KOH + 3Na_2SO_4. \quad (24)$$

Now we apply a mathematical approach to equation (23) of the considered redox reaction. Since in equation (23) number of unique structural units is 6 (K, Mn, O, H, Na, S) and number of required stoichiometric coefficients is also 6, we obtain a square system of linear algebraic equations

$$\begin{cases} s_1 = s_5, \\ s_1 = s_4, \\ 4 \cdot s_1 + s_2 + 3 \cdot s_3 = 2 \cdot s_4 + s_5 + 4 \cdot s_6, \\ 2 \cdot s_2 = s_5, \\ 2 \cdot s_3 = 2 \cdot s_6, \\ s_3 = s_6, \end{cases} \quad (25)$$

in which the last two equations coincide and, therefore, one of them should be excluded from consideration. It is quite easy to express all the coefficients $\{s_i\}_{i=\overline{2,6}}$

through s_1: $s_2 = \frac{1}{2} \cdot s_1$, $s_3 = \frac{3}{2} \cdot s_1$, $s_4 = s_1$, $s_5 = s_1$, $s_6 = \frac{3}{2} \cdot s_1$. Since stoichiometric coefficients $\{s_i\}_{i=\overline{1,6}}$ must be natural numbers, the minimum value s_1 guaranteeing naturalness of $\{s_i\}_{i=\overline{2,6}}$, is 2, that is, we put $s_1 = 2$. Consequently, $s_2 = 1$, $s_3 = 3$, $s_4 = 2$, $s_5 = 2$, $s_6 = 3$. Taking these values into account in equation (23) gives us equation (24), which was established by a chemical method – the half-reaction method.

In the context of the simple example just considered, two questions immediately arise: (a) do authors of this work claim that the proposed mathematical method is better than the chemical method (the word "best" can mean "simple" and/or "easy" and/or "visual", etc.)? (b) what about the "cumbersome" algorithm proposed in this work? – after all, the applied mathematical method (compilation and solution of a system of simple linear equations (25)) is not the "cumbersome" algorithm that is proposed. Our answers to these questions are as follows: (a) no, we do not claim this – our work did not carry out a comparative analysis of the mathematical and chemical methods from the point of view of "better or worse", the proposed mathematical approach can be perceived as a full-fledged alternative method that can be easily implemented on any of the modern softwares, in particular, in Mathcad software with a convenient and intuitive interface (see Remark 2), and we are sure that students of secondary schools (in particular, in Latvia) are quite capable of fully mastering the proposed algorithm; (b) in the considered simple example, the number of unique chemical structural units coincides with the number of the desired stoichiometric coefficients, and, therefore, the resulting system of equations (generally speaking, the obtained system is not always as simple as system (25)) could be solved manually or by one from direct methods on a computer; if the resulting system of equations is underdetermined (the number of unique structural units is greater than the number of desired stoichiometric coefficients) or overdetermined (the number of unique structural units is less than the number of desired stoichiometric coefficients), and the difference between the numbers of equations and unknowns is more than 2, then it is impossible to solve them by conventional direct analytical or numerical methods, and then the algorithm proposed in this work acts as an "irreplaceable key" for finding stoichiometric coefficients in the equations of chemical reactions, which can be arbitrarily complex (especially in modern chemical industries).

In conclusion of this section, we would like to note that authors tried to reduce the large amount of this work, however, unfortunately, we could not do this without prejudice to understanding and complete assimilation of the proposed algorithm (except for this section, which can be removed). However, the authors

do not exclude that this reason for not reducing the amount of this work is subjective.

Conclusions

In this paper, to determine the stoichiometric coefficients in the equations of chemical reactions, we propose a regularizing algorithm (consisting of two steps), which is based on the fundamental concept of Tikhonov regularization. The proposed algorithm finds a normal stable pseudosolution of a system of linear algebraic equations constructed by applying the material balance law. The examples implemented in Mathcad software, version 14.0.0.163, demonstrate the applicability of this algorithm to both normal systems and underdetermined or overdetermined systems. Further, this paper describes a mechanism for reducing the problem of determining stoichiometric coefficients in the equations of chemical reactions to systems of linear algebraic equations. Using examples of specific chemical reactions, including redox reactions, both the aforementioned mechanism for constructing a system of linear algebraic equations and ensuring the implementation of both steps of the proposed regularizing algorithm are shown. Finally, this paper discusses, in a way, the limits of the possibility of applying the proposed regularizing algorithm to the problem of mathematical determination of stoichiometric algorithm) to the nearest natural numbers, there is an ambiguity in the choice of the direction of rounding (what to choose: floor function or ceiling function?): such situations arise when the difference between the numbers of unknowns (stoichiometric coefficients) and system equations is significant.

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ДИАГНОСТИКО-МЕТОДОЛОГИЧЕСКИЙ КОМПЛЕКС ОЦЕНКИ СТЕПЕНИ СФОРМИРОВАННОСТИ У МЛАДШИХ ШКОЛЬНИКОВ КОММУНИКАТИВНОГО УНИВЕРСАЛЬНОГО УЧЕБНОГО ДЕЙСТВИЯ «ПОСТАНОВКА ВОПРОСОВ»

Diagnostic and Methodological Complex for Assessing the Degree of Formation of the Communicative Universal Educational Action «Asking Questions»

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Abstract. *The article deals with the actual problem of effective pedagogical management of the process of formation of communicative universal educational action «asking questions» in junior schoolchildren.*
In order to solve the problem under study, this paper presents a diagnostic and methodological complex for assessing the degree of formation of the designated universal educational action in elementary school students, which includes a system of criteria, scaled nominative indicators, a theoretical model of the formation of the designated universal educational action in students, consisting of five possible levels - standards, as well as diagnostic tools adapted to the age characteristics of younger schoolchildren.
The empirical experience of using diagnostic tools in the practice of an elementary school teacher, qualitative and quantitative analysis of the results of the study made it possible to obtain data on the degree of formation of the components of the communicative universal educational action «asking questions» in the educational activities of elementary school in junior schoolchildren.
Keywords: *criteria, diagnostic tools, KUUD raising questions, levels of KUUD formation, nominative indicators, posing questions.*

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Введение
Introduction

В настоящее время запросы информационного общества ориентируют систему российского начального общего образования на подготовку выпускника, способного самостоятельно учиться, готового к принятию решений, к коммуникации.

Принципиальным отличием школьных стандартов начального общего образования нового поколения (Federal'nyy gosudarstvennyy standart nachal'nogo obshchego obrazovaniya, 2014) является их направленность на формирование личности учащихся, овладение ими универсальными учебными действиями (УУД), обеспечивающими успешность познавательной деятельности на всех ступенях дальнейшего образования.

Особого внимания заслуживает формирование у учащихся начальной школы коммуникативных универсальных учебных действий (КУУД), в частности КУУД «постановка вопросов», обеспечивающего социальную компетентность младшего школьника, отвечающего за его способность слушать и слышать; вступать в диалог; участвовать в коллективном обсуждении проблем; продуктивно сотрудничать со сверстниками и взрослыми.

Однако, для эффективного педагогического управления процессом формирования у младших школьников КУУД «постановка вопросов» педагогу-практику необходимо обладать не только знанием содержательной структуры обозначенного универсального учебного действия, но и составляющими диагностического аппарата оценки степени сформированности у учащихся начальной школы КУУД «постановка вопросов».

Решение поставленной задачи опирается на определение теоретико-методологического комплекса критериев, шкалированных номинативных показателей, возможной теоретической модели уровней становления у учащихся КУУД «постановка вопросов», адаптированного к тематическому предметному содержанию начального общего образования диагностического инструментария, а также проведение эмпирического исследования.

В силу сказанного цель настоящей статьи заключается в ответе на следующие вопросы:

- Каковы критерии и шкалированные номинативные показатели для определения возможных уровней сформированности у младших школьников коммуникативного универсального учебного действия «постановка вопросов» в образовательной деятельности начальной школы?

– Каковы эмпирические результаты использования типового диагностического инструментария в педагогической практике учителя начальной школы?

Методами исследования являются теоретический анализ литературных источников, педагогический эксперимент.

Теоретическая основа темы
The Theoretical Background

Общеизвестно, что коммуникация как социально научная категория понимается не просто как обмен информацией, а как центральный смысловой аспект общения и социального взаимодействия.

Осмысление литературных источников по проблеме формирования у младших школьников коммуникативного универсального учебного действия «постановка вопросов» (Asmolov, 2015; Bardin, 2012; Kirillov, 2017; Savenkov, 2016) позволил нам вывести следующие основополагающие теоретические положения данного исследования:

– коммуникативные универсальные учебные действия трактуются как умения, обеспечивающие социальную компетентность обучающегося, учет позиций других людей, партнеров по общению или деятельности; умение слушать и вступать в диалог; участие в коллективном обсуждении проблем; интеграцию в группу сверстников и построение продуктивного взаимодействия и сотрудничества со сверстниками и взрослыми (Asmolov, 2015);
– понятие вопрос традиционно в педагогических исследованиях рассматривается как форма выражения проблемы, устремляющая мышление ребенка на поиск ответа, то есть пробуждающая потребность в познании, приобщении его к умственному труду (Savenkov, 2018).

Согласуется с обозначенными выше общепринятыми позициями точка зрения К.В.Бардина, который под вопросом понимает «эффективное средство обучения, вызывающее желание учиться» (Bardin, 2012).

Таким образом, можно сказать, что познание начинается с вопроса, который направляет мышление ребенка на поиск ответа, пробуждая в его сознании потребность к познанию нового. Следовательно, умение младшего школьника спрашивать – это первостепенный индикатор его познавательной деятельности (Vekker, 2018).

Обратим внимание на то, что термины «проблема», «проблемная ситуация», «вопрос» обозначают нетождественные, но взаимосвязанные между собой понятия. Вопрос, по мнению А.И. Савенкова чаще всего

рассматривается как форма выражения проблемы, тогда как гипотеза является способом решения проблемы (Savenkov, 2016).

Грамматической формой вопроса является вопросительное предложение. В связи с тем, что вопрос – это выраженная в вопросительном предложении мысль, направленная на дополнение или уточнение исходного знания (базиса вопроса) (Kirillov, 2017) представляется первостепенно значимым рассмотреть содержание логической структуры вопроса.

Сказанное согласуется с мнением зарубежных специалистов в области логики (Cohen & Nagel, 2013; Searle, 2018), которые указывают на то, что вопрос можно условно разделить на две составляющие – базисная, исходная информация, и указание на её недостаточность.

Базисом или предпосылкой вопроса, как отмечает А.И.Савенков (Savenkov, 2016), называются исходные знания. Они в явной или скрытой форме могут быть отражены в вопросе. Неполноту, недостаточность базисных знаний требуется ликвидировать. На это обычно и указывают вопросительные слова (операторы вопроса) «кто», «что», «когда», «почему» и другие аналогичные им.

Научный интерес представляет точка зрения В.И.Кириллова (Kirillov, 2017), который обращает особое внимание на то, что все вопросы в широком значении можно разделить на два типа по их отношению к существу обсуждаемой темы.

В качестве первого типа выделяется вопрос по существу темы, прямо или косвенно относящийся к обсуждаемой теме, ответ на него конкретизирует исходную информацию. При этом оценка вопроса – это не формально-структурная, а информационно-содержательная задача, решение которой формируется знанием обсуждаемой проблемы.

Ко второму типу относится вопрос не по существу темы, не имеющий непосредственной связи с обсуждаемой темой. Он внешне связан с заявленной на обсуждение проблемой. Принятие и обсуждение данных вопросов уводит дискуссию в сторону.

Изучая логическую структуру вопроса, мы заметили, что качество базисного знания сильно влияет на логический статус вопроса, устанавливая правильность или неправильность его постановки.

Правильно поставленным или корректным является вопрос, предпосылкой которого является истинное непротиворечивое знание.

Неправильно поставленным или некорректным считается вопрос с ложным или противоречивым базисом.

В отдельных случаях речь может идти об «улавливающих» или «провокационных» вопросах, то есть неправильно поставленных, умышленно используемых с целью запутать отвечающего.

В рамках рассмотрения логической структуры вопроса важно продемонстрировать классификационные группы вопросов, отличающиеся содержательными формулировками.

С позиции А.И.Савенкова (Savenkov, 2016) основаниями для классификации вопросов является их морфологическая структура а так же корректность формы постановки. На основании морфологической структуры выделяются:

- уточняющие вопросы (прямые, или «ли-вопросы»): «верно ли, что..», «надо ли создавать…», «должен ли…»;
- восполняющие (неопределенные, непрямые, «кто-вопросы», «что-вопросы»).

Уточняющие вопросы могут быть как простыми так и сложными, то есть состоящими из нескольких частей. Простые вопросы можно, в свою очередь, поделить на две группы: условные и безусловные. Например: «Правда ли, что….?» – простой безусловный вопрос. «Верно ли, что?» – простой условный вопрос.

Восполняющие (неопределенные, непрямые, «кто-вопросы», «что-вопросы») простые и сложные вопросы обычно включают в свой состав слова: «где», «когда», «кто», «что», «почему», «какие» и др.

В зависимости от корректности формы постановки вопросов выделяют корректные и некорректные вопросы. Первые – это вопросы, которые опираются на истинные суждения. Вторые – логически некорректные вопросы, когда спрашивающий не знает о ложности базиса своего вопроса.

В работах ряда российских и зарубежных исследователей (Bardin, 2012; Kirillov, 2017; Cohen & Nagel, 2013) нам удалось обнаружить следующие разновидности вопросов, отличающиеся своей содержательной структурой: простые вопросы («ли-вопросы»; «что-вопросы»); сложные соединительные, разделительные, смешанные вопросы.

Простым называется вопрос, не вмещающий в качестве составных частей другие вопросы, в операторе данного вопроса заключается одно суждение. В простом «что-вопросе» находится лишь одно вопросительное слово, которое относится к единственному требующему дополнения суждению.

К сложным вопросам относится вопрос, включающий в качестве составных компонентов другие вопросы, объединяемые логическими связками. От типа связки зависит, каким будет вопрос: а) соединительным (конъюнктивным); б) разделительным (дизъюнктивным); в) смешанным (соединительно-разделительным). Так соединительный вопрос представляет собой два и более простых вопроса, объединенных связкой «и»; разделительный вопрос – это два и более простых вопроса,

соединенных связкой «или»; а смешанный вопрос – объединение соединительных и разделительных вопросов.

Таким образом, на основании осмысления приведенных выше литературных источников, мы пришли к следующим выводам:

- коммуникативное универсальное учебное действие «постановка вопросов» – сложное речевое умение по формулировке вопросительного предложения, направленного на дополнение, уточнение исходного знания (базиса вопроса);
- при формировании у младших школьников КУУД «постановка вопросов» педагогам-практикам необходимо опираться на знание логической структуры вопроса.

На данном этапе логика научного изложения ориентирует нас на постановку следующих вопросов: «Каковы диагностические инструменты (критерии и их номинативные показатели) определения возможных уровней сформированности у обучающихся начальной школы КУУД «постановка вопросов»? Каким уровнем сформированности данного УУД обладают учащиеся второй ступени основного общего образования?»

С целью нахождения ответов на поставленные вопросы мы обратились к эмпирическому исследованию.

Методы и организация исследования
Methodology and Organization of the Research

В статье представлены материалы, полученные с помощью теоретического анализа литературных источников, стандартизированного наблюдения за образовательной деятельностью младших школьников, диагностирования уровня сформированности КУУД «постановка вопросов» у младших школьников.

Базой исследования явилась МБОУ «Средняя общеобразовательная школа №23 с углубленным изучением английского языка» г.Пскова.

Эмпирическая часть исследования заключается в презентации критериев, показателей, уровней сформированности у младших школьников КУУД «постановка вопросов»; анализа результатов проведенного в образовательной деятельности начальной школы диагностирования исходных уровней сформированности у младших школьников данного КУУД.

Результаты исследования
The Results of the Research

В данном разделе представлена презентация результатов разработки методики диагностирования у младших школьников коммуникативного универсального учебного действия «постановка вопросов», которая ранее была подробно представлены в работе О.И. Каменских (Kamenskih, 2020).

Сущность разработанной нами методики заключается в организации в образовательной деятельности текущих систематических наблюдений за коммуникативной деятельностью младших школьников на основе совокупности критериев и доступных непосредственному восприятию показателей. Задача педагога состоит в фиксировании результатов наблюдений за каждым обучающимся в протоколы наблюдений и кодировании обнаруженных признаков.

Представим критерии и их шкалированные номинативные показатели, используемые для диагностирования у младших школьников начального уровня сформированности коммуникативного универсального учебного действия «постановка вопросов».

В качестве первого критерия выделим «отношение младшего школьника к обсуждаемой теме» по сформулированному вопросу. Зафиксировать его можно по следующим показателям:

$О_1$ – вопрос не по существу, не имеет отношения к теме;

$О_2$ – вопрос связан с темой лишь косвенно;

$О_3$ –вопрос связан с темой напрямую, способствует ее дополнению, уточнению.

В качестве следующего критерия обозначим «проявление эмоциональности в процессе постановки вопроса», диагностируемое по таким показателям, как:

$Э_1$ – безразличен;

$Э_2$ – уравновешен, спокоен;

$Э_3$ – напряжен;

$Э_4$ – сильное возбуждение.

Третьим критерием служит «лингвистическая корректность постановки вопроса», номинативными показателями которого являются:

$К_1$ – ученик формулирует некорректный (неправильный) вопрос;

$К_2$ - учащийся формулирует корректный (правильный) вопрос, допускает ошибки при его формулировке;

$К_3$ - учащийся грамотно, развернуто формулирует корректный вопрос.

В качестве четвертого критерия для определения уровня сформированности у младших школьников коммуникативного универсального учебного действия «постановка вопросов» выступает «познавательная функция

задаваемых школьником вопросов». Зафиксировать ее учитель может с помощью следующих номинативных показателей:

$Ф_1$– постановка репродуктивных вопросов;

$Ф_2$ – постановка уточняющих вопросов;

$Ф_3$ – постановка восполняющих вопросов;

«Структура формулируемого вопроса» является пятым критерием, который определяется за счет наблюдаемых учителем показателей:

$С_1$- ученик формулирует простой вопрос;

$С_2$ – обучающийся формулирует сложный соединительный вопрос;

$С_3$ – обучающийся формулирует сложный разделительный вопрос;

$С_4$ – обучающийся формулирует сложный смешанный вопрос.

Основываясь на приведенных выше критериях и их номинативных показателях, мы выделили пять возможных уровней сформированности коммуникативного УУД «постановка вопросов» у младших школьников: низкий, ниже среднего, средний, выше среднего и высокий уровни.

Определение критериев, их шкалированных показателей и уровней сформированности коммуникативного УУД «постановка вопросов» у младших школьников позволили нам перейти к эмпирической части исследования.

Цель эмпирического исследования заключалась в определении начальных и итоговых уровней сформированности КУУД «постановка вопросов» с помощью стандартизированного наблюдения, опираясь на выделенные критерии и их номинативные показатели. В опытно-экспериментальной работе приняли участие учащиеся 3-го класса МБОУ «Средняя общеобразовательная школа №23 с углубленным изучением английского языка» г.Пскова.

На основе выделенных и приведенных выше критериев и показателей нами были разработаны диагностические материалы для выявления уровня сформированности КУУД «постановка вопросов» у младших школьников. Диагностический инструментарий включал три типовых задания, адаптированных к тематическому предметному содержанию начального общего образования и соответствующих возрастным особенностям испытуемых. Далее приведем их дидактическое содержание.

Задание 1. Прочитайте текст.

Все киты подразделяются на две группы: беззубые и зубатые. Самый прожорливый кит – кит-касатка. Известен случай, когда такой кит пообедал 12 тюленями и 13 дельфинами. Некоторые млекопитающие могут иметь многокамерный, растягивающийся желудок. У китов кашалотов огромная голова и широченное горло. Киты-касатки заглатывают свою добычу целиком.

- Как ты думаешь, почему киты-касатки охотятся таким необычным способом?

- Запиши как можно больше своих предположений.

- Переваривается ли в желудке кита-касатки пища? Объясни свою позицию.

Задание 2. Прочитайте текст.

Парашют

Еще в XV веке Леонардо да Винчи нарисовал эскиз пирамидального парашюта. Однако, данный чертеж так и остался на бумаге, не получив практического подтверждения. В XVIII веке достижения промышленного производства привели к созданию первых летательных аппаратов. Нередко такие полеты заканчивались катастрофой. Возникла необходимость благополучного спуска человека с большой высоты. С этой целью в 1783 году французский физик Ленорман впервые сконструировал и испытал парашют (от греческого «пара» - против и французского «шюте» - падение).

Выбери и отметь √ из предложенных вариантов проблемный вопрос, который раскрывает причину создания и испытания аппарата для спуска человека с большой высоты.

Перечень вариантов следующий*:* «Что способствовало изобретению первых летательных аппаратов?», «Нужен ли был людям парашют, если у них не было летательных аппаратов?», «Что побудило изобретателей вплотную заняться изобретением парашюта?», «Полеты летательных аппаратов часто заканчивались катастрофой?» «Кому принадлежит идея создания парашюта?», «Почему так много времени потребовалось на изобретение парашюта?»

Задание 3. Прочитайте текст.

Поставьте и запишите как можно больше вопросов, которые у тебя возникают к автору этого текста.

Пенициллин

Шотландский ученый Александр Флемминг своей научной целью считал найти вещество, способное уничтожить болезнетворных микробов.

С целью проведения опытов он выращивал микробов в специальных чашках. Уборку рабочего кабинета ученый считал бессмысленной тратой времени. Некоторые чашки за время опытов успели покрыться плесенью. Однако, к большому удивлению Флемминга, в них не оказалось ни одного живого болезнетворного микроба.

- Что тебя удивило в информации, изложенной в тексте?

- Как ты думаешь, почему погибли болезнетворные микробы в чашках, покрытых плесенью? Объясни свою позицию.

Разработанные диагностические материалы позволили выявить уровни сформированности КУУД «постановка вопросов» у учащихся 3-го класса

МБОУ «Средняя общеобразовательная школа №23 с углубленным изучением английского языка до проведения опытно-экспериментальной работы и по ее завершению. Полученные результаты были количественно и качественно проанализированы. Количественные результаты представим в таблице 1.

Таблица 1 ***Результаты диагностирования уровней сформированности КУУД «постановка вопросов»***
Table 1 ***The Results of Diagnosing the Levels of Formation of the KUUD «asking questions»***

Уровни	Экспериментальная группа (3 «В» класс МБОУ «Средняя общеобразовательная школа №23 г. Пскова)	
	До ОЭР	После ОЭР
Низкий уровень	42%	7%
Уровень ниже среднего	34 %	31%
Средний уровень	21%	48%
Уровень выше среднего	3%	14%
Высокий уровень	0 %	0%

Из таблицы 1 видно, что 14% обучающихся после проведения опытно-экспериментальной работы обладает уровнем сформированности коммуникативного универсального учебного действия «постановка вопросов» выше среднего. Младшие школьники, находящиеся на данном уровне сформированности УУД «постановка вопросов» формулируют вопросы, имеющие прямое отношение к теме, способствующие ее дополнению, уточнению. Способны без ошибок, развернуто поставить корректный вопрос, в том числе, восполняющего вида, формулируют как сложные соединительные (со связкой «и»), так и сложные разделительные вопросы (со связкой «или»), делают правильный выбор из сформулированных другими сложных смешанных вопросов. Самостоятельная постановка сложных смешанных вопросов на данном уровне для обучающегося еще затруднительна

Большинство обучающихся (48% третьеклассников) смогли достигнуть среднего уровня сформированности коммуникативного универсального учебного действия «постановка вопросов» в сопоставлении с результатами на начало эксперимента (21% соответственно) Школьники, находящиеся на данном уровне, формулируют вопросы, напрямую связанные с темой. Опираясь на имеющиеся у них лингвистические умения, исправляют собственные ошибки в процессе развернутой формулировки корректного вопроса. С целью выяснения истинности представленной в

суждении информации учащиеся способны задавать уже уточняющие вопросы, обнаруживают новую, дополнительную информацию по рассматриваемой теме (явлению, процессу), формулируя восполняющие вопросы. На данном уровне младшие школьники логически связывают простые вопросы между собой с помощью связки «и», поставив сложный соединительный вопрос. Самостоятельная постановка сложных разделительных вопросов на данном уровне для обучающегося затруднительна.

Анализ полученных диагностических данных демонстрирует, что показатели уровня сформированности коммуникативного УУД «постановка вопросов» ниже среднего существенно снизились. Так на данном этапе им обладает меньшее число школьников (31% третьеклассников). После проведения опытно-экспериментальной работы учащиеся способны формулировать вопросы по существу темы, связанные с ней, однако данная связь носит косвенный характер. У младших школьников на данном уровне наблюдается состояние эмоционального напряжения, инициирующее корректную формулировку вопроса. Однако в корректной постановке вопроса все еще присутствуют ошибки: учащиеся не ставят вопросительные знаки в конце вопросов, также допускают орфографические ошибки. Учащиеся формулируют лишь уточняющие вопросы. Умение логически связывать простые вопросы в сложный вопрос на данном уровне отсутствует, поэтому ученик по-прежнему формулирует простые вопросы.

Лишь 7% обучающихся остались на низком уровнем сформированности коммуникативного универсального учебного действия «постановка вопросов» в сравнении с 42% на начало проведения педагогического эксперимента. Заданные школьниками, находящимися на данном уровне сформированности УУД, вопросы не имеют отношения к рассматриваемой теме, или вообще отсутствуют. Эмоциональное напряжение у учащихся не возникало, так как вопросы формулировались не по существу рассматриваемой темы. Школьники, как правило, некорректно (неправильно) задавали репродуктивные вопросы. Младшие школьники на данном уровне были способны сформулировать лишь простые вопросы в пределах одного суждения.

Определим степень различий результатов, полученных в экспериментальной группе на начало опытно-экспериментальной работы (далее ОЭР) и по ее завершении с помощью критерия Фишера. Результаты представим в таблице 2.

Таблица 2 ***Использование углового преобразования Фишера***
Table 2 ***Using the Fisher Angular Transform***

Группы	«Есть эффект»	«Нет эффекта	Суммы
	Количество испытуемых	Количество испытуемых	
ЭГ (До ОЭР)	38%	62 %	100%
ЭГ (После ОЭР)	76%	24%	100%

Ответ: φ*эмп = 5,751. Ось значимости: 1.64-2.31. Полученное эмпирическое значение φ* находится в зоне значимости. H_0 отвергается. Доля школьников с более высоким уровнем сформированности КУУД «постановка вопросов» после проведения ОЭР значимо выше, чем на начало педагогического эксперимента. Результаты достоверны.

Анализ и обобщение эмпирических данных, полученных после формирующего этапа опытно-экспериментальной работы, свидетельствует о существенной положительной динамике становления КУУД «постановка вопросов» у респондентов экспериментальной. Сравнительные результаты представлены на Рисунке 1.

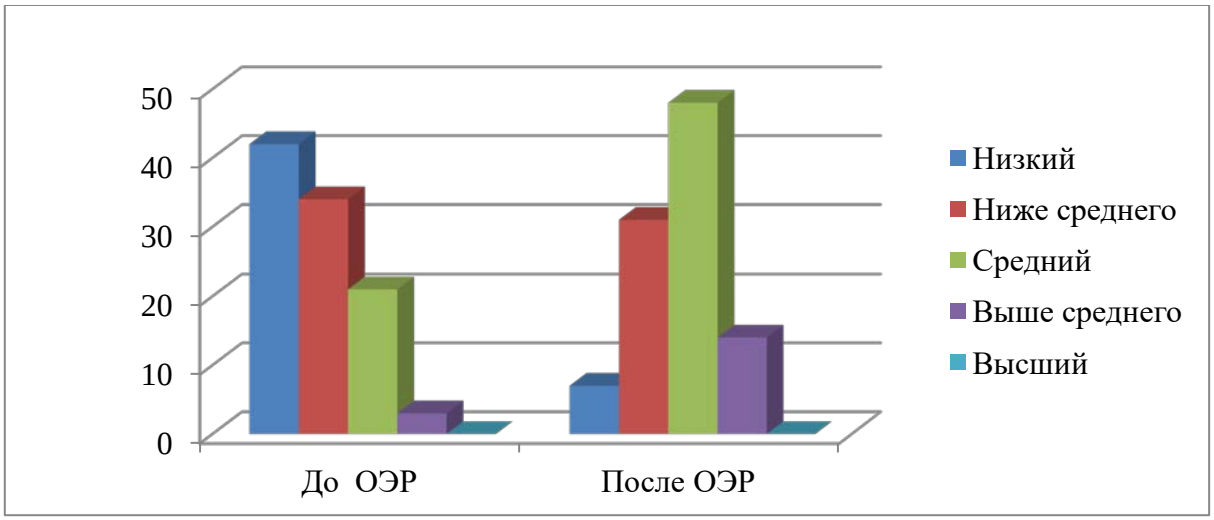

Рисунок 1 ***Динамика изменения уровня сформированности КУУД «постановка вопросов» у младших школьников экспериментального класса***
Figure 1 ***Dynamics of Change in the Level of Formation of the KSUD «raising questions» in Junior Students of the Experimental Class***

Обобщение
Conclusions

Осуществление эффективного педагогического управления процессом формирования у младших школьников КУУД «постановка вопросов» предполагает:

- рассмотрение коммуникативного универсального учебного действия «постановка вопросов» как сложного речевого умения по формулировке вопросительного предложения, направленного на дополнение, уточнение исходного знания (базиса вопроса);
- определение системы критериев оценки овладения младшими школьниками КУУД «постановка вопросов» («отношение младшего школьника к обсуждаемой теме»; «проявление эмоциональности в процессе постановки вопроса»; «лингвистическая корректность постановки вопроса»; «познавательная функция задаваемых школьником вопросов»; «структура формулируемого вопроса») и их шкалированных номинативных показателей;
- построение теоретической модели становления у обучающихся начальной школы пяти возможных уровней-эталонов (низкий, ниже среднего, средний, выше среднего, высокий) КУУД «постановка вопросов»;
- конструирование типового диагностического инструментария для оценки начального уровня сформированности КУУД «постановка вопросов» у младших школьников, основывающегося на тематическом предметом содержании, адекватном возрасту испытуемых.

Результаты эмпирического исследования до специально организованной педагогической деятельности позволили констатировать следующие начальные уровни сформированности коммуникативного УУД «постановка вопросов»:

- низкий уровень – 7 %;
- уровень ниже среднего – 31 %;
- средний уровень – 48 %;
- уровень выше среднего – 14 %.

Высший уровень сформированности КУУД «постановка вопросов» у учащихся начальной школы не был диагностирован.

Summary

Implementation of effective pedagogical management of the process of formation of KUUD "asking questions" in younger schoolchildren involves:

- defining a system of criteria for assessing the degree of mastery of primary school students KUUD "asking questions" ("attitude of a younger student to the topic under discussion"; "manifestation of emotionality in the process of posing a question"; "linguistic correctness of posing a question"; "cognitive function of questions asked by a student"; "structure formulated question "and their scaled nominative indicators;
- construction of a theoretical model of the formation of five possible levels of standards among primary school students (low, below average, average, above average, high);
- construction of a typical diagnostic toolkit for assessing the initial level of the formation of the KUUD “posing questions” in younger schoolchildren, based on the thematic subject content, adequate to the age of the subjects.

The results of empirical research prior to specially organized educational activities made it possible to state the following levels of the formation of the communicative ECD “asking questions”:

– low level of – 7%;
– the level is below the average – 31%;
– average level of – 48%;
– level above average – 14%.

The highest level of formation of the KUUD “posing questions” among primary school students was not diagnosed.

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DEVELOPMENT OF THE PERSONAL SELF-DETERMINATION OF SECONDARY SCHOOL STUDENTS IN THE CONTEXT OF THE HUMANITARIAN PARADIGM OF EDUCATION

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Abstract. *The research problem is the development of the personal self-determination of secondary school students in the process of learning based on the humanitarization of education. The research has been underpinned by the humanitarian paradigm of education, which is the result of the development of pedagogical methodology. In the 21st century, pedagogy is viewed as a social-humanitarian science with the predominance of the humanitarian component. We regard humanitarization as a contemporary technology of the educational process. The aims of the study are to analyse the characteristics of the personal self-determination of adolescents, identify the structure of the personal self-determination of secondary school students and determine conditions for the development of the personal self-determination of secondary school students in the process of learning. The research methods include observation, survey, conversation, an establishing experiment, mathematical statistics. The research results:*

1. *there was determined the structure of personal self-determination of secondary school students as the system of inter-connected components;*
2. *it was established that the humanitarization of the educational process is the key precondition for the development of the personal self-determination of secondary school students both regarding the logic of the subject and the logic of the process of learning (changing the style of relationships), as well as the logic of education (understanding culture as the world of human attitudes and meanings);*
3. *the key values of secondary school students were identified, which were mainly pragmatic values.*

Keywords: *humanitarian paradigm of education, humanitarization, personal self-determination, values and meanings.*

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Introduction

The topicality of the research. The research was carried out on the basis of the humanitarian paradigm of education developed by Zoja Chehlova (Čehlova, 2001). The humanitarian paradigm of education is the result of the development of pedagogical methodology. In the 21st century, pedagogy is viewed as a social and humanitarian science with the predominance of the humanitarian component. Humanitarization is regarded as a contemporary technology of the educational process. It implies focusing on the development of the content of education in order to nurture and develop an individual. Knowledge is regarded as the means of humanitarization.

The aims of the research are as follows:

- to analyse the essence of personal self-determination in adolescence;
- to determine the structure of the personal self-determination of a senior secondary school student;
- to identify the conditions for the development of the personal self-determination of secondary school students in the educational process;
- to conduct an establishing experiment in Riga Classical Gymnasium and in Pushkin Lyceum.

The research methods used in the study include observation, survey, experiment, and mathematical statistics.

The Essence of Personal Self-determination in Adolescence

The topicality of the problem of personal self-determination in the period of adolescence is underpinned by the need to educate a European citizen on the basis of the system of fundamental human values (Chehlova, Kevisa, Chehlov, & Marchenoka, 2016). The relevance is also due to the development of the methodology of pedagogy (Chehlova, Chehlov, & Gode, 2018). Pedagogy is currently viewed as a social and humanitarian science with the predominance of the humanitarian component. The humanitarian paradigm of education is a system-forming element in the pedagogical activity. As a result, the reference points of the pedagogical activity have changed:

- there has been a shift in educational emphasis from behavioural rules to value relationships (values are made explicit instead of analysing correct behaviour);
- the transformation of the educational paradigm of the interaction “teacher-learner” into the paradigm “person-person”, where the concept of “person” is interpreted as an individual being part of humanity;

- replacement of the administrative style of communication between a teacher and students with a humanistic style, which presupposes student's freedom of choice as the most important principle of their education (I suggest discussing, could you…);
- education is seen as the basis for individual's upbringing in culture (Alijevs, 2005).

The actualization of the humanitarian component in pedagogy has led to the study of those aspects of personality development that previously remained outside the scope of pedagogical analysis. These aspects include the construct "personal self-determination", which is the subject of research in psychology. It should be noted that until recently the issue concerning the development of self-determination had not been the subject of comprehensive research in the science of pedagogy. In this regard, there should be pointed out the study by M.Chehlov "The Humanitarian Basis for the Development of Personal Self-Determination of Senior Secondary School Students" (Čehlovs, 2011).

The methodological foundations for the problem of self-determination were laid by Rubinstein (1989). He considered self-determination in the context of the problem of determination; according to the principle proposed by him – external causes act by refracting through internal conditions. In this context, self-determination acts as internal determination in contrast to external determination. It is an important conclusion for a teacher. Thus, the concept of "self-determination" expresses the active nature of "internal" conditions of a person, rather than one-sided submission to external social conditions. Moreover, the specific nature of human existence, according to Rubinstein, lies in the extent of correlation between personal self-determination and determination by other social conditions, and the character of self-determination also depends on that.

In Western psychology, there is a category analogous to the concept of "personal self-determination"; namely, the category of "psycho-social identity" developed and introduced in the academic discourse by the American scholar Erik Erikson (1959). The "normative identity crisis" is the central moment through the prism of which the formation of a personality at a transitional stage is viewed, including the period of adolescence. The word "normative" has the connotation that the author views the life cycle of a person as a series of successive stages, each of which is characterised as a specific crisis in the relationships of the individual with the outside world. According to Erikson, the main task that an individual faces is the formation of the sense of identity. An adolescent has to answer the questions: "Who am I?", "What is my further path in life?" Searching for personal identity, individuals decide what actions are important for them and develop certain norms for assessing the behaviour of other people. This process is also associated with the awareness of their own value and competence. The main danger that a young person should avoid in this period, according to Erikson,

is the feeling of erosion of his/her "I" due to confusion or doubts about the possibility of directing their life in a certain direction.

The Canadian psychologist Marcia (1980) singled out four states or statuses of self-identity: diffuse self-identity, preliminary identification, moratorium, and achieved self-identity.

Research conducted by M. Ginzburg (1996) is also important for pedagogy. When determining the psychological content of personal self-determination, Ginzburg proceeds from the dual nature of the human being. The human is traditionally viewed as a dual spiritual and material being, as the coexistence of spatial-temporal and content-notional aspects. Ginzburg concludes that the spatial-temporal plane is a field of real action (actual and potential) for a person, and the value-notional plane – a field of values and meanings. In his concept, Ginzburg (1994) proposes the following definition of self-determination: personal self-determination is the construction by a person of his/her personal field, which includes both a set of individual life meanings and the space of real action (actual and potential).

In defining the pedagogical foundations for personal self-determination of senior secondary school students, we proceed from the ideas of Vygotsky (1983) that self-determination is a personal new-formation of an individual in adolescence. We also proceed from the "duality" of personal self-determination recognised by all researchers: on the one hand, there is a specific definition of the future profession and planning of life; on the other hand – the search for the meaning of one's existence. Vygotsky singles out three aspects of self-determination in adolescence: professional self-determination, personal-self-determination, and social self-determination. In this article, we analyse personal-self-determination. Vygotsky's conclusion that personal self-determination is a systemic formation that represents the inter-connection and unity of components is very important for pedagogical research. Researchers identify the content and procedural aspects of personal self-determination. In the procedural activity aspect, we focus on the activity cycle developed by Chehlova (Čehlova, 2002).

It seems constructive to consider self-determination as a personal formation, i.e., as a special personality trait. The approach to self-determination as a relatively independent personal formation allows researchers to elucidate this particular formation: its structure, the laws of its formation, as well as psychological and pedagogical factors that contribute to its development. We proceed from the understanding of self-determination as a relatively independent stage of socialization, the essence of which in an individual is the awareness of the purpose and meaning of life, readiness for independent life activity based on correlating one's desires, values and opportunities and requirements set by other people and by society.

Criteria and Indicators of the Personal Self-determination of Secondary School Students (Content Aspect)

In this article, we rely on the criteria and indicators of the personal self-determination of a senior secondary school student developed in the monograph by M.Chehlov (Čehlovs, 2011).

The content aspect of personal self-determination includes the following criteria and indicators.

Criteria:

1. Value orientations

Indicators:

- Value saturation:
- a wide range of personally significant positive values (life is experienced as meaningful);
- a narrow range of personally significant negative values (life is experienced as meaningless).

2. Meaning of life:

Indicators:

- focus on moral values, moral meaning in life;
- focus on utilitarian-pragmatic values: egoistic meaning. Individual systems of meaning are being formed;
- pragmatic focus;
- existential orientation:
- interest in the meaning of life, active discussions about it, having an existential orientation;
- lack of interest in the meaning of life, lack of existential orientation.

3. Self-concept

Indicators:

- educational competence;
- understanding of one's abilities and capabilities;
- understanding the correspondence of one's abilities and capabilities to the requirements of one's profession;
- objective self-assessment;
- development of self-regulation;
- attitude to oneself as a value;
- attitude to other people as a value;

4. Self-realization

Indicators:

- space for self-realization: wide (broad range of areas of self-realization), limited (narrow range of areas for self-realization);
- the character of self-realization: creative, reproductive.

Empirical Study

During the research, there was carried out an establishing experiment. The aim of the experiment was the study of the personal self-determination of a senior secondary school student as a systemic component. In this article, we mainly analyse value orientations using the personal maturity test questionnaire developed by Gilbukh (1995). The experiment was carried out in Riga Classical Gymnasium, involving 30 11th and 12th form students, and in Pushkin Lyceum, involving 20 students, in the period of 2018-2019. We used the questionnaires "Your life priorities" and "I am a leader".

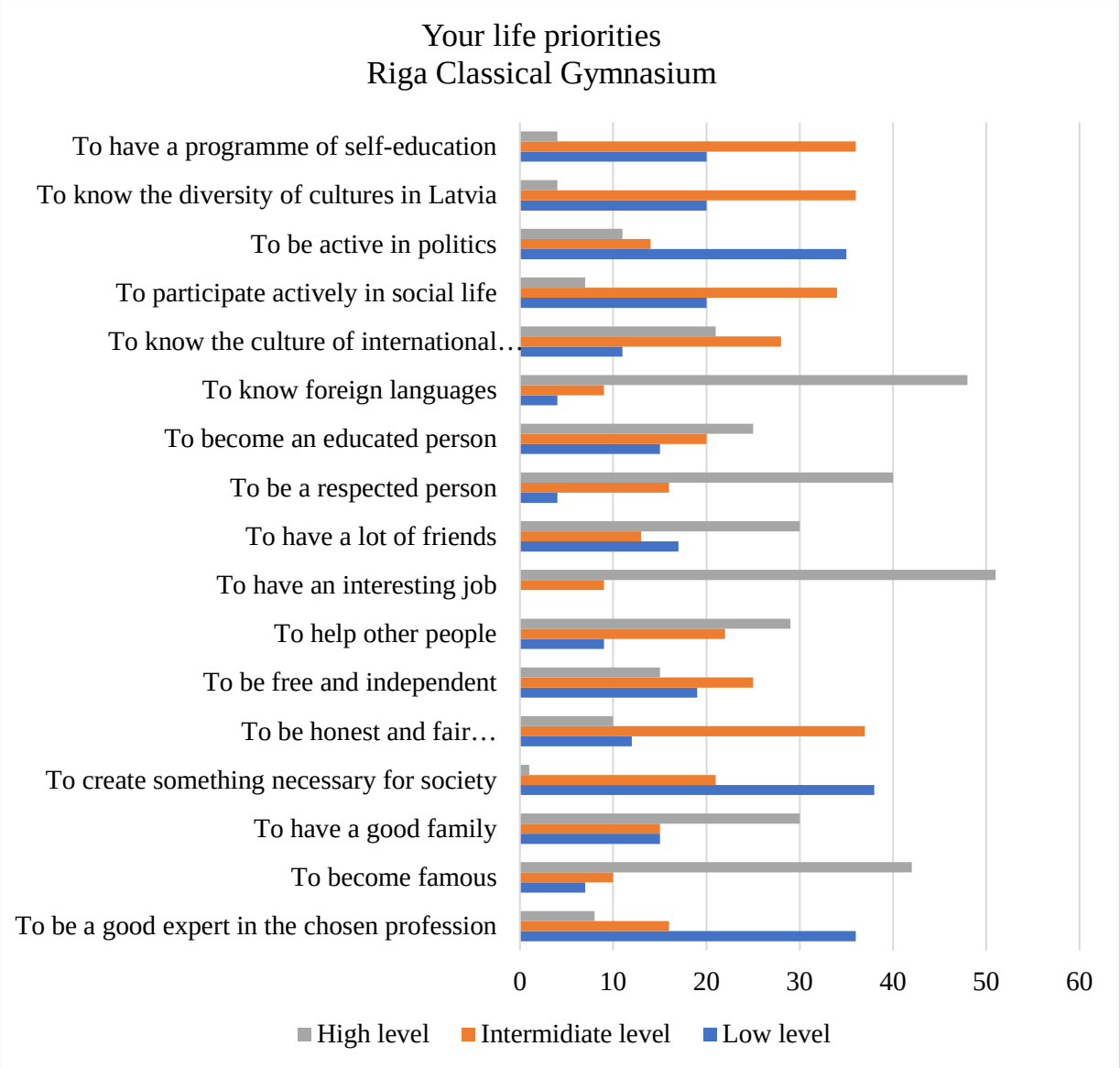

Figure 1 ***Test "Your life priorities" Riga Classical Gymnasium***

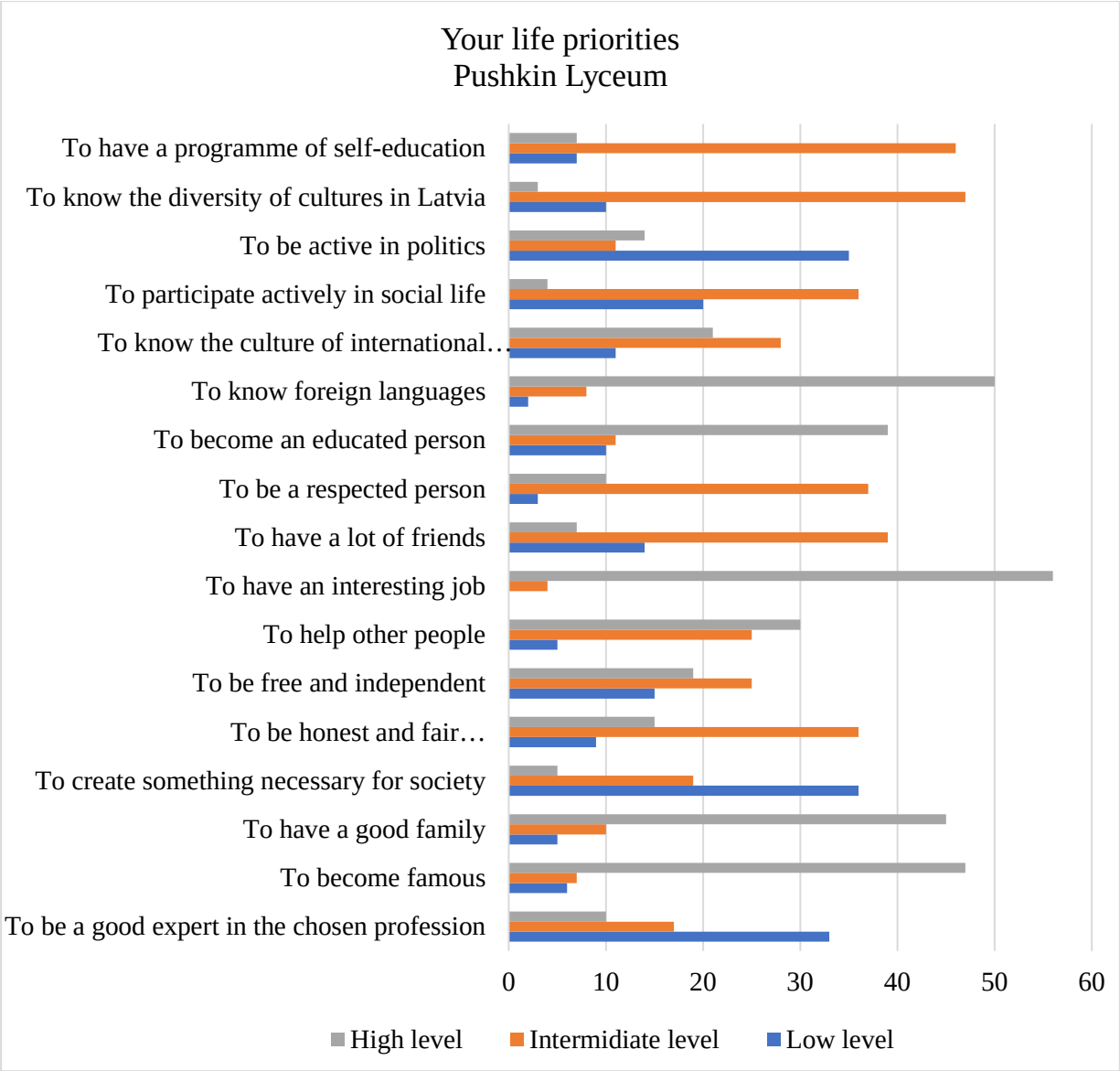

Figure 2 ***Test "Your Life Priorities". Riga Pushkin Lyceum***

The analysis of the results of the experiment showed that the structure of personal self-determination of senior secondary school students can be regarded as a system of interrelated components. It was established that the humanitarization of the educational process is the main pre-condition for the development of the personal self-determination of secondary school students both regarding the logic of the subject and the logic of the process of learning (changing the style of relationships), as well as the logic of education (understanding culture as the world of human attitudes and meanings).

The establishing experiment also showed that the personal self-determination of secondary school students is characterised by value saturation, but by the focus on utilitarian-pragmatic values. The reason lies in the existence

of objective conditions. It is due to the difficult economic situation in Latvia, as well as in many countries of the world, caused by the pandemic of Covid-19 and the lack of jobs in the chosen speciality. The organization of the educational process based on a knowledge-based approach plays a certain role, as well. Subjective factors also play a significant part, especially, insufficient development of the readiness for personal self-determination and the predominance of interest in material values.

Conclusions

1. Personal self-determination is a systemic formation representing the interconnection of components.
2. The personal self-determination of a senior secondary school student acquires a moral meaning if the educational process is organised based on the humanitarian paradigm of education.
3. Humanitarization is viewed as a technology of the educational process, where the style of the relationship "teacher-learner" is changing to the relationship "person-person".
4. Culture is seen as the basis for human education.
5. These views became the basis for the humanitarian paradigm of education developed by Chehlov (Čehlovs, 2011).
6. The experimental study of the value orientations of secondary school students, the systemic component of personal self-determination showed that personal self-determination is characterised by value saturation; at the same time, there can be observed focus on utilitarian-pragmatic values.

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APPLYING FLIPPED LEARNING APPROACH IN EFL CLASSROOM IN LIEPAJA CENTRE PRIMARY SCHOOL

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Abstract*. Educational planning documents highlight the importance of differentiation of the learning process and improving individuals' competencies to fulfil complex tasks. By a flipped learning approach, when the students acquire the new information at home, watching the instructional video, more time is devoted to the active learning process in the classroom, as a result of which the students have the opportunity to improve their competencies.*
Within this article's framework, a case study's data on using a flipped learning approach in teaching elementary school students are analysed. The study included fourteen 4th grade English as first foreign language students of Liepaja Centre primary school. The study was conducted in 2020 from 30 October till 27 November.
The study's main objective is to analyse possibilities to differentiate the learning process according to students' individual needs and improve competencies using a flipped learning approach.
The study found that teachers have an excellent opportunity to give students individual and useful feedback and differentiate students' work according to their individual needs. The study revealed that students have the possibility to improve competencies.
It is useful to introduce teachers to the possibilities of a flipped learning approach to individualize the learning process and develop students' competencies as it is stated in education planning documents.
Keywords: *competences, differentiation, elementary EFL classroom, feedback, individualization.*

Introduction

The National Planning Document "Guidelines for the Development of Education" determines that education must meet the needs and opportunities of the individual both by providing an inclusive approach to teaching and by supporting the promotion of talent and excellence; measuring the growth progress of an individual; opportunities to plan individual learning and self-development paths; as well as the active use of technology in providing these individualized solutions (Ministry of Education and Science, 2020). Individualization of the learning process and differentiation in a class with many students is problematic for the teacher. Bergamann and Sams point that "Personalization is truly

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overwhelming for most educators, and they end up taking the shotgun approach to teaching: present as much content as they can in the time they have and hope that it hits as many students as possible-and sticks" (Bergmann & Sams, 2012) According to the flipped learning approach, organizing the learning process solves this problem because this type of learning is suitable for students with different levels of ability (Girmen & Kaya, 2019). "Flipping the classroom establishes a framework that ensures students receive a personalized education tailored to their individual needs" (Bergmann & Sams, 2012). There is a possibility to differentiate tasks, time, support for students at homework (Bergamann & Sams, 2015) and in the classroom according to students' abilities. Qualitative differentiation and individualization of work are implemented, where more able students have to show an understanding of a more profound topic; in turn, students with learning difficulties learn the most important aspects of the subject. There is a balance between online and face-to-face learning. In face-to-face classes, it is possible to work with students individually and provide additional explanations to those who have not experienced the topic (Bergamann & Sams, 2012).

To successfully implement the flipped learning approach, the teacher must use backward planning step by step from subject standard and program to homework activities. Now there's a much broader understanding that the in-class activities need to be designed first (McKenzie, 2018) to set outcomes to be achieved in a particular lesson.

The study's main objective is to analyse the possibilities of differentiation the learning process according to students' individual needs and abilities, providing meaningful feedback, and developing competencies using the flipped learning approach. There are analysed Latvia's education planning documents, scientific literature on the flipped learning approach, and data of a case study of English as the first foreign language in 4th grade.

Literature Review

"Flipped learning is a framework that enables educators to reach every student. The Flipped approach inverts the traditional classroom model by introducing course concepts before class, allowing educators to use class time to guide each student through active, practical, innovative applications of the course principles" (Flipped Learning Global Initiative). A flipped learning model has two components: direct instruction using video lectures outside the classroom to acquire knowledge, and active face-to-face learning inside the classroom (Ansori & Nafi, 2017). Flipped learning modifies the traditional learning environment - in this model, the teacher is not the main one in the classroom who provides his/her knowledge to the students, but a student-cantered learning process is organized, in which the teacher is a leader, assistant, mentor, coach.

Students learn the topic individually outside the classroom as homework by watching video (Binit Halili, Hijja, Rabihah, Sulaiman, & Razaket, 2019; Marqués-Molías, Palau-Martín, Usart, & Morilla, 2019; Yoshida, 2019) and get acquainted with the information prepared by the teacher. During such homework, the students can control his/her learning through pause, repetition. The students perform the work at the place, time, and pace of his/her choice (Lee & Lai, 2017; Binit Halili et al., 2019; Jackson, 2019; Marqués-Molías et al., 2019; Mohammadi, Barati, & Youhanaee, 2019; Muntean, 2019; Tomas, Evans, Doyle, & Skamp, 2019; Yoshida, 2019; Zou, 2020), according to interests, abilities, and learning style (Yean, 2019). Being able to watch the video again, pause it, rewind the recording helps to better understand it, and allows students to get an idea of the next lesson's topic, thus better preparing for it (Yoshida, 2019; Muntean, 2020). Research also shows that students who do tasks while watching videos are better prepared for classroom work (McKenzie, 2018). By watching videos and completing assignments before class, students are willing to become more actively involved in classroom work, share opinions, and interact with each other (Abdullah, Hussin, & Ismail, 2019). Students have an idea of the topic's content, have acquired basic knowledge, ask questions about what is not understood (Zamora-Polo, Corrales-Serrano, Sánchez-Martín, & Espejo-Antúnez, 2019), and the teacher has the opportunity to address their misconceptions before they come to long-term memory (Bergmann & Sams, 2012).

Table 1 ***Traditional and Flipped Learning Process***

Traditional learning process		**Flipped learning process**	
Activity	**Time**	**Activity**	**Time**
Warm-up-activity	5%	Warm-up-activity	5%
Go over homework	20%	Question and answer time on video	10%
Lecture new content	35%	Guided and independent practice	85%
Guided and independent practice	40%		

The classroom environment is formed as a dynamic, interactive learning setting, in which a more in-depth acquisition and understanding of the study content takes place with the help of a teacher and in cooperation with classmates. The teacher manages students who work in groups, actively cooperate, apply the acquired knowledge, skills, and engage in creative activities. Students are actively involved in the learning process and developing higher thinking skills (Bergmann & Sams, 2012). According to the flipped learning model, students receive personalized support appropriate to their needs. The teacher has the opportunity to work individually with students who need additional help during the lesson. As a result of class discussions and individual support, students improve their social skills and achievements (Bergman & Sams, 2015). The

founders of flipped learning, Bergamann & Sams (2012), compared traditional and flipped learning (Table 1). In the flipped learning process, it is possible to plan more time for students' active learning in the classroom.

Classroom activities in flipped learning process begin with a test of students' understanding of the topic learned at home. At the beginning of the lesson, students have the opportunity to ask questions about a theory they have not understood. Students answer the teacher's questions thus demonstrate understanding (Binit Halili et al., 2019), take a digital test (Yoshida, 2019; Muntean, 2019), or discuss video watched at home, so the teacher can assess what the students have not understood and answer to students' questions (Mohammadi et al., 2019; Zamora-Polo et al., 2019). Thus, students have the opportunity to listen to the opinions of others, ask questions, discuss, eliminate misunderstandings, and mistakes at an early stage (Marqués-Molías et al., 2019). By evaluating the students' answers, the teacher can give the students meaningful feedback about their performance and an overview of the topic learned at home, emphasizing the most essential information (Muntean, 2019).

Most lesson time is devoted to practical activities - skills development and improvement of learning strategies (Marqués-Molías et al., 2019). Valuable lesson time is used productively. There is no need to write down information and instructions (Gonzales, 2019). As students have already gained information by watching videos at home, they have knowledge of a topic that is strengthened, expanded, applied in non-standard situations during the class time. During the lesson, large classes are transformed into interactive study groups. Students participate in competitions, discussions, co-operate, as a result of which students have the opportunity to communicate more with classmates on language subjects, thus practicing speaking skills and improving language competence (Zou, 2020), read books, write descriptions (Bergmann & Sams, 2015). The flipped learning allows students to be more active in the classroom and gives them more opportunities to develop academic language skills and confidence in language use (Ansori & Nafi, 2017). Students address problem-solving issues to deepen their understanding of the topic, thus developing critical thinking skills (Zamora-Polo et al., 2019; Kurnianto, Wiyanto, & Haryani, 2020). Students recall, apply, and expand the knowledge they have acquired before class (Tomas et al., 2019), complete tasksin books and worksheets, correct mistakes in pairs, practice concepts (Ansori & Nafi, 2017; Mohammadi et al., 2019; Muntean, 2019), conduct experiments, prepare presentations, engage in brainstorming on a topic, and answer questions asked by a teacher (Lee & Lai, 2017; Yean, 2019). If necessary, students can re-watch the video to clarify the information and discuss it with the teacher (Binit Halili et al., 2019). During the lesson, students create materials that show a deeper understanding of the topic. - videos, podcasts, websites, blogs, which may include tutorials, strategies. The time devoted to

practical activities in the lesson is sufficient for students to perform useful tasks, demonstrate the acquired skills and present their work (Lee & Lai, 2017). Thus, a student-centred learning process is implemented to collaborate with each other; it is an opportunity to provide deep-learning to develop 21st-century competencies (Lee & Lai, 2017; Gonzales, 2019).

The teacher is not a provider of information but collaborates with students to advise and guide students to help those who need it most (Bergmann & Sams, 2012; Ansori & Nafi, 2017). The teacher is a mentor who observes the process from the outside, encourages students to work independently, provides individual help (Jackson, 2019), answers questions, decrease misunderstandings individually (Tomas et al., 2019), provides students with support in applying practical knowledge, teaches learning strategies and explain higher-difficulty tasks (Muntean, 2020), provide feedback (Mohammadi et al., 2019). Thus, learning becomes interactive and effective (Gonzales, 2019). Students receive the necessary advice, support, growth-oriented, personalized feedback (Yean, 2019; Zou, 2020), and encouragement to engage in active learning and group discussions, asking and answering questions, resulting in improved student-student and student-teacher interaction (Binit Halili et al., 2019).

At the end of the lesson, the works created by students are reviewed and discussed (Tomas et al., 2019), game-based activities are implemented according to the content to be learned (Zamora-Polo et al., 2019), conclusions are made about what has been done (Yoshida, 2019). Students are informed about preparation for the upcoming lesson or task (Yean, 2019) and about the learning materials' availability to be learned at home (Muntean, 2019).

Research Methodology

The case study was conducted in cooperation with English as a foreign language teacher who is open-minded, interested in new pedagogical practices, wants to improve her work, and has 30 years of work experience.

One group (14 students) of 4th grade English class students (6 boys and 8 girls) was chosen to reach the aim - analyse possibilities of the differentiation of the learning process according to students' individual needs and possibilities to improve competencies using a flipped learning approach. Students have access to technology and the Internet at home and have equal knowledge of English. Two students have an average English level, ten students have an optimal English level, and two students have a high English level. Students learn English as the first foreign language from the 1st grade. In the 4th grade, students have 3 English classes per week, where two classes are together and contain 80 minutes, and one is 40 minutes. To reach the aim of the research, the case study was chosen as a design in order to observe the process of differentiation and competencies

development in details and encouraging teachers to make changes in their pedagogical practice (Thomas, 2021).

A literature review was done on a flipped learning to develop theoretical understanding and formulate ideas about the study's object in a preparation phase. The teacher prepared lesson plans and practical tasks for each topic. Before implementing the flipped learning approach, the teacher informed the students about changes in the learning process organization. She taught them possibilities of video-pausing, re-watching the video or its part, and taking notes. Suitable methods for the case study were chosen – observing and recording of the lessons, transcribing the students' and teacher's activities, and comparing students' performance at the beginning and end of each class and in two tests - on the topic learned using the traditional approach and test after using flipped learning approach. A questionnaire was developed, which the students filled in at the end of the case study to discover the students' opinions about organizing lessons according to flipped learning principles. In a structured interview, the teacher expressed her views on the flipped learning approach's benefits and restrictions.

The action phase was conducted from October 30, 2020, till November 27, 2020, to test out ideas based on literature review. A total of 8 lessons were observed. During the first lesson (October 30), the case study was validated. The case study is based on seven lessons observation results, two of which were 80-minute classes and three 40-minute classes. The case study was started on November 10, as students began learning a new topic, "A very special day!". Students acquired reading, speaking, listening, writing skills, and grammar within each topic. Within this topic's framework, the students learned demonstrative pronouns, cardinal and ordinal numbers in the amount of 100, and dates.

In the assessment phase were analysed the teaching-learning process results, students' test results, questionnaires, and interview. Findings of positive aspects and difficulties necessary to take into account were clarified, and conclusions on implementing flipped learning approach in other classes were written.

Research Results

Before each class, the students in the information system e-class got informed with the teacher's prepared materials on the topic in a presentation, memo, and/or video material available on YouTube (2018), which corresponds to the English textbook Welcome 2 used at school (Unit 4 Lesson 1, Lesson 2, Lesson 3). Students took notes at home - wrote the new words in their dictionary, wrote down the sentences according to the spelling/word order, wrote down the conclusions about the spelling based on the researched material.

At the beginning of the lesson, students answered the teacher's questions and discussed topics acquired at home in pairs or groups. Under the teacher's

guidance, students drew conclusions about the unclear issues that should be clarified during the lesson. The teacher involved the students in setting goals and planning the class activities to improve their knowledge and skills.

The teacher used a test on quizziz.com to determine the students' understanding of the topic learned at home (Table 3), thus gaining an insight into the students' knowledge of the subject. The class time was allocated for the application and strengthening of the knowledge acquired at home, improving skills, and developing learning strategies. During the classes, the students recall what they had learned at home, applied their knowledge and skills, learned the topic in-depth, working individually, in pairs, and in groups. Students carried out practical tasks in a workbook, worksheets and demonstrated the skills they had acquired by playing didactic games, using the website learningapps.org and working on interactive live worksheets. Students engaged in discussions to implement the tasks, collaborated, presented and explained their views, taught the topic to classmates, corrected mistakes during class time. So, students improved language competence, speaking skills, cooperation skills, and critical thinking skills. The student-centred learning process was implemented, in which students learned in-depth and developed 21st-century competencies.

During the teaching process, the teacher listened to the students' discussions, led the learning, collaborated with the students, encouraged and counselled them. The teacher answered the unclear issues, eliminated misunderstandings and mistakes, explained the misunderstanding individually. The teacher provided feedback to the groups, individual assistance to students who needed it, and personal feedback indicating improvement opportunities. As a result, students became more actively involved in teaching, cooperated more safely and confidently with classmates. The teacher prepared tasks for students with different levels of English language skills. Students with a high level of English language skills were offered higher-level tasks. Students with average English language skills were offered reminders, samples, and lower-level tasks.

Table 2 ***Differentiation of the Learning Process***

	Lower-level	**Higher-level**
Content	Writes full dozens Connect the number to its written notation	Writes various two-digit numbers Write a number with words Write full sentences
Process	Use a memo/sample Classmates' help Teacher's help	Works independently Examine tasks in pairs and groups, discuss differences, prove their opinion
Result	The date is written with numbers 3 sentences are written Basic skills tasks are performed	The date is written in words 6 sentences are written Additional tasks are performed

The teacher differentiated the content, process, and final product according to students' abilities (Table 2).

At the end of each lesson, students did the test in quizzis.com, showing the knowledge and skills they had acquired in the class. The students took the test in writing, indicating part of the goal to be achieved, which is related to grammar comprehension (Table 3). The teacher summarized what was learned in the lesson and invited the students to draw conclusions about the acquired knowledge, skills, and necessary improvement.

Table 3 ***Pre and Post-test Achievements***

Goal of the lesson	**correct answers at the beginning of the lesson**	**correct answers at the end of the lesson**
I can write dozens in words; I can use them in a dialogue.	71%	88%
I can write sentences with this/that these/those; I can use this/that these/those in dialogues.	30%	85%
I can write ordinal numbers 1-10 in words; I can use them in conversation.	67%	78%
I can write ordinal numbers 11-100 in words; I can use them in conversation.	32%	48%
I can write dates independently, ask and answer questions using ordinal numbers.	67%	85%

Pre-test results show that students have become familiarized with the topic at home and understood it. The test results reflect the positive dynamics of student performance at the end of all lessons.

By summarizing the activities observed in the classes, the average time allocated for each activity was calculated. Greetings and specification of the lesson's aim took on average 4% of the class time. On average, 14% of class time was spent asking and answering questions to limit misconceptions. On average, 82% of the class time was devoted to students guided and independent practice.

Students' answers in the questionnaire on the flipped learning process organization show that 100% of students get acquainted with the information sent by the teacher and performed the tasks before class as homework. 54% of students’ re-view video after the lesson. 100% of students answered that the teacher's prepared video material/presentation/memo helped to better understand the subject.

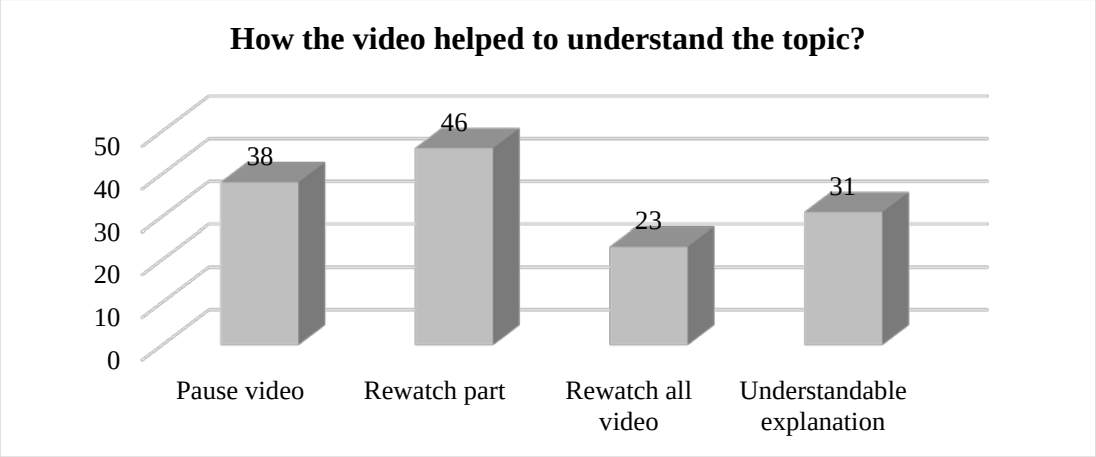

Figure 1 ***Ways of Using Video at Home***

Students used the video material possibilities in various ways to better master the topic (Fig. 1). Three girls used several video materials options, pausing and re-watching a fragment or the whole video. Two of the students have a high level of English, one has an average level of English. 6students (46%) re-watched a part of the video that they did not understand when watching it for the first time. 5students (38%) used the opportunity to pause the video and take notes. 4 students (31%) stated that they understood the topic because the video material was clear, simple, and understandable. 3students (23%) watched the video several times to better understand the subject.

Using a Likert scale (fully disagree, disagree, neither agree nor disagree, agree, fully agree), students assessed the impact of flipped learning approach on their learning by evaluating 7 statements. 10 students (77%) agree and fully agree that they understood the topic better if they looked at it before class. 10 students (77%) agree and fully agree that they work more actively in the classroom if they obtained information at home.10 students (77%) agree and fully agree that they are more confident and able to do well in English if they get familiar with a topic before class. 11 students (85%) agree and fully agree that they like working in a group. 12 students (92%)agree and fully agree that they like to do tasks on tablets in the classroom. 7 students (54%) agree and strongly agree that they like explain the topic to classmates, and 7 students (54%) agree and fully agree that they like their classmates explain the subject to them.

Comparing the students' achievement in two tests can conclude that the students' assessment in the second test, which was performed after the organization of the study process according to the flipped learning approach, is 0.43 points higher (7.07 and 7.5). In the first test, two students had grades 3 (below average), while in the second test, the lowest grade was 5 (average).

Interview with the teacher identified the most significant difficulties in organizing the flipped learning process. In the planning process, it was challenging to plan and restructure the teaching materials and select a suitable video piece. It was time-consuming to formulate useful homework tasks and prepare various tasks corresponding to different ability levels to proceed with deep-learning. It was challenging to prepare individual, pair, and group work tasks to develop students' cooperation, planning, critical thinking, and self-directed learning skills. In the teaching process, difficulties appear when groups of students who did their job faster had to wait for feedback from the teacher if she provided feedback to another group. A slow internet connection made the learning process more difficult with tablets, and valuable classroom time was lost.

The teacher analysed her and students' work after each lesson, based on which tasks were set to solve problems. In planning - the lesson plan with small changes and material prepared once can be used repeatedly for an identical class and teaching a topic in the next school year. In the management of the lesson, to make the learning process run smoothly teacher prepared a descriptive plan of tasks for students to use, designed answer sheets for students' self-evaluation, and formed heterogeneous groups, where one of the students played the teacher's assistant role.

As positive aspects, the teacher emphasized the possibility for students to practice more, collaborate, work in pairs and groups, receive support from the teacher and classmates as a result of which the students learned from each other. The teacher noticed the students' active involvement in the learning process as important because the students had become acquainted with the topic at home, as a result of which they asked questions about the issue and expressed their opinions and conclusions. Students developed cooperation, critical thinking, problem-solving, and self-directed learning skills. Students, working in pairs and groups, explained the issue, compared their performance, explained their opinion to the teacher and classmates, reflected on their learning, set goals for further work to improve knowledge and skills. By using ICT in the learning process, students developed a deeper understanding of technology's various uses for learning purposes.

Conclusions

Flipped learning is a teaching approach that allows the teacher to use lesson time to engage students in active learning, enable the teacher to individualize learning according to students' abilities; the students better understand the content of the topic and work more successfully in the lesson.

The case study results showed that it is possible to differentiate learning processes better. The use of the flipped learning approach has a positive effect on

students' performance. This approach allows students to engage in an active learning process, deepen knowledge-develop cognitive skills, improve transversal skills-social and emotional skills-cooperation at different levels (communicate, express and explain their opinions), critical thinking, problem-solving, and self-directed learning (goal setting, planning, learning management). These are competencies that students need to develop in the learning process according to the curriculum.

The students' questionnaire results showed that students have a better understanding of the topic, work more actively in the classroom, and are more confident that they will complete the English lesson tasks if they acquire the subject's information before the class.

Difficulties are connected with providing a stable Internet connection and time-consuming preparation and planning process, but the once planned lesson is possible to use repeatedly.

Implementing the flipped learning approach is important because teachers need to teach using methods informed by the latest educational research and practice. New approach implementation requires teachers' professional development and observing the best practices.

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NATIONAL PHYSICS OLYMPIADS FROM THE POINT OF VIEW OF PARTICIPANTS AND PHYSICS TEACHERS

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Abstract. *The development of student's interests and skills is strategically important to foster their career choice in the field of science, technology and engineering, which is one of the goals of Latvia's National Development Plan for 2021-2027. Physics Olympiads can be used as one of the enrichment measures to supplement formal school teaching in raising student motivation and developing their skills and talents. We explore directions in which the existing system of Physics Olympiads can be improved, with the* ***goals of reaching a wider audience of teachers and students*** *and achieving* ***further integration with the learning processes in schools.*** *We have conducted a survey of physics teachers (N_T=188), and participants (N_P=486) of the second (county) stage of Latvian Physics Olympiad in January 2020. The aim of the survey was to find out: 1) What motivates students to participate and teachers to encourage participation in Physics Olympiads? 2) What resources are used for training? 3) What further support would students and teachers need for training for the Olympics? Based on the results of the survey, we propose specific measures to support teachers and students in their engagement with Physics Olympiads, report on the implementation progress, and give an outlook for the future.*
Keywords: *gifted education, Latvian Physics Olympiads, motivation, participants, physics teachers, supporting measures.*

Introduction

According to the forecasts of the Ministry of Economics, by 2027 a significant shortage of highly qualified specialists in the field of science, technology, engineering and mathematics - of STEM for short is expected (Ministry of Economics Republic of Latvia, 2020) in Latvia. Qualitative implementation of the new curriculum, emphasizing the development of STEM

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skills, is defined in the Latvian National Development Plan for 2021-2027 as one of the indicators of quality education for the formation of a knowledge-based society (Cross-Sectoral Coordination Centre Republic of Latvia, 2020). The issue of how to engage young people in the field of STEM is relevant not only in Latvia - according to European Commission strategy for smart, sustainable and inclusive growth, at national level, Member States will need to ensure a sufficient supply of science, maths and engineering graduates (European Commission, 2020).

Student competitions in the field of STEM and Physics Olympiads particularly are considered to be a potent enrichment measure for developing student's problem-solving skills and fostering later career choice (Balta & Asikainen, 2019; Campbell & Walberg, 2011; Petersen & Wulff, 2017; Friege & Lind, 2001; Sahin, Gulacar, & Stuessy, 2014).

Since 2012, the second (county) stage of the Latvian State Physics Olympiad has been taking place online on the Moodle-based platform (Dougiamas & Taylor, 2003), gathering more than two thousand 9th-12th grade students every year. Participants are offered sets of tasks developed by the academic staff and students of the Department of Physics of the Faculty of Physics, Mathematics and Optometry of the University of Latvia. As this type of selection for the second (county) stage of the Olympiad has been done for the last nine years without changes, the time for evaluation is due. Therefore, two surveys were developed: one for physics teachers and one for participants of the Olympiad. The surveys were designed to address the following research questions: 1) What motivates students to participate and teachers to encourage participation in Physics Olympiads? 2) What resources are used for training? 3) What further support would students and teachers need for training for the Olympics?

Physics Olympiads - Internationally and in Latvia

The aims and tasks of the Latvian State Physics Olympiads (PhO) are to promote in-depth study of physics, research and experimental skills, to explore new talents in physics and to select Latvian state unit candidates for international competitions, as well as to promote students' interest in physics and encourage purposeful career choice (National Centre for Education Republic of Latvia, 2020). The Olympiad is organized and managed by the National Centre for Education Republic of Latvia, the University of Latvia Faculty of Physics, Mathematics and Optometry, the University of Latvia Information Technology Department and municipalities. The participants of the Olympics are 9th-12th grade students of general education schools.

The selection procedure for the International Physics Olympiad (IPhO) consists of four phases. The first stage is organized in schools. This stage is not

mandatory and is not regulated, its organization is up to the physics teacher and the educational institution.

The second (county) stage, which is usually held in January, since 2012 is organized online. The PhO was the first to be organized online, over time it was followed by the organizers of Olympiads in other subjects: biology, chemistry, economics, geography, Latvian language, history, in the 2020/2021 school year the second phases of English language and philosophy were also planned online. Existing developments in the organization of online competitions allowed for the rapid adoption of the Latvian subject matter Olympiad selection process for the remote process, which was determined due to COVID spread restrictions.

The PhO course implemented in Moodle is in general accessible only to a restricted group of users - course participants, i.e. students. Users who want to access a Moodle site with PhO tasks must have an email account previously incorporated in a database and a password. PhO participants are divided into four groups corresponding to the student class and different tasks are assigned to each of them. Submitted solutions are evaluated automatically on a previously prepared set of tasks and participants receive the preliminary scored points by finishing PhO. Participants can see the distribution of scores in their group.

An hour after the competition students can view the answers and solutions to all tasks and their mistakes in the online system. Then students can ask questions to the organizers in the forum about possible inaccuracies in the tasks and moderate their solutions. The Olympics results discussion forum is an important and valuable part of the Olympics, which promotes the involvement of participants, their physics teachers and task authors immersion in physics through debates and, as well as ensures the quality approbation of the Olympics tasks. If the organizers decide to correct an answer, then the reassessment can be done in a very short time for all 2000 and more participants.

During the last three years (2018-2020), 659 schools participated in the second stage of the Latvian State Physics Olympiad, which is 93.2% of the number of general education schools in Latvia (Central Statistical Bureau of Latvia, 2020). The number of participants varies slightly from year to year: from 1861 in 2012 to 2519 in 2016, it is around 5% of the number of 9th-12th grade students in the country (Ministry of Education and Science Republic of Latvia [IZM], 2020).

According to the results of the second stage, around 100-120 most successful participants are invited to the third (national) stage, which takes place in March or April for two days at the University of Latvia. The winners of the third stage are 12-20 students who are nominated for participating in the Nordic-Baltic Physics Olympiad, which serves as the final selection stage for the Latvian IPhO team.

The selection process of the teams and their preparation for the Olympiads differ from country to country, on average, the IPhO participating countries have 3.1 selection stages, average number of participants in the first stages among the countries ranges from classroom size to about half million in P.R.China (Petersen & Wulff, 2017). In Latvia about 4% of the county stage participants are invited to the next stage, about 1% win prizes (which is one of the factors influencing school rankings), and only about 0.2% are selected for participation in the IPhO. But in some other countries this percentage is much lower: 0.00008% in the US, 0.00002% in China (Campbell & Walberg, 2011).

Role of Motivation in Physics Olympiads

Motivation is a main factor to successful learning and achievements, it is "a force that energizes, directs and maintains behaviour toward a goal" (Pintrich & Schunk, 2002). Motivation is influenced by various factors: parenting, attitudes of teachers and peers, the results of the individual's own activities (Skujina, 2000). Motivation in relation to a subject influences career choice - most students make decisions about further studies during high school, and their career interests are affected most of all by their teachers, personal interests and family (Sahin, Gulacar, & Stuessy, 2014).

Concepts related to motivation are: interest, need (for achievement, for affiliation, e.g. friendly relationships with other persons, for leadership), attitude (getting pleasure from activity) and aspirations (having a particular aim) (Clues & Charlton, 2007). It is revealed that there is no significant difference in the attitude and motivation of students towards learning physics (Guido, 2013), and therefore, motivation and related concepts are used interchangeably in this article.

Because motivation is an extensive and complex issue, researchers and theorists have different views on motivation, two of which are - intrinsic motivation (preferred type of motivation), which may be defined as "studying for its own sake". In contrast, extrinsic motivation depends upon external factors (including test results and marks) (Clues & Charlton, 2007). It is found that "intrinsic motivation and extrinsic incentives have positive impacts on solvers' task effort" (Liang, Wang, Wang, & Xue, 2017).

Olympiads, as one of enrichment measurements used for teaching gifted children, provide good motivation and a sustainable environment for the development of students` talents (Liashenko, Khalezov, & Arsalidou, 2017; Ushakov, 2000). Studies show that most often high school students participate in the competitions to get better in physics and because of interest in physics and challenging problems solving (Kolar, 2019; Friege & Lind, 1999).

An international study of long-term effects of olympiads shows that the average intelligence of the winners of the physics olympiads is not above the

average intelligence of the secondary school students. Rather, success is determined by an interest in physics and effort willingness (Friege & Lind, 2001). Thus, identifying, maintaining, and increasing motivation is one of the most important preconditions to reach PhO main goals: promoting excellence in physics and career choices in the field of STEM for high school students.

Methodology

The research is based on the results of a survey of 188 physics teachers and 486 participants of the 70th Latvian Physics Olympiad county stage.

The survey of teachers was organized electronically using the contacts database of members of the Latvian Physics Teachers' Association and the list of education institutions available on the website of the Ministry of Education and Science (IZM, 2020). Participation in the survey was voluntary. Teachers' responses were registered from 15 to 24 January 2020. The aim of the survey was to find out the factors that influence why teachers do or do not encourage their students to participate in PhO, to gather physics teachers' opinions on the process of organizing national PhO, to understand what kind of support would be useful for teachers to prepare students for PhO, as well as linking the above issues to teacher education, work experience and school type. All questions for teachers (except for general information about the respondent) were offered as open-ended questions.

The survey of the participants of the Olympiad was executed to find out 1) motivation to participate in the PhO (open-ended question); 2) resources used by students in preparation for the PhO (closed question); 3) support needed to improve preparing for the Olympics (closed question). The proposed questionnaire was very short to avoid participants` distraction from the Olympics. It was offered on the Olympics website on the day of the Olympics and was available to participants after logging in to the system. Participation in the survey was voluntary and did not affect participation in the Olympics.

The answers to open-ended questions in both surveys were grouped by content, creating categories further used for statistical analysis.

Margin of error for percentage points is calculated at 95% confidence level taking into account the relevant population size n.

Olympiad Participants Survey Results

The survey was addressed to 2352 participants of the Olympiad, 486 of them filled the form (20% of potential respondents).

In analysis the effect of school type four types of schools were considered: basic schools (offer education up to 9th grade), secondary schools, gymnasiums/ state gymnasiums except for Riga (gymnasiums typically have more resources and more stringent student admission criteria) and state gymnasiums in Riga (the capital Riga is likely to attract more talent due to Latvia's centralized structure). Answers to the open question about motivation to participate in physics Olympiads, were grouped into nine categories shown in Table 1:

Table 1 ***Motivation of Students for Participation in Physics Olympiad***

%	Participants answers
52%	to test and prove one's knowledge and capabilities in physics
20%	to get new experience and further improve in physics
16%	being interested in physics or liking the subject
11%	to prepare for future study
7%	to spend time interestingly, to get relief from lessons
6%	to be challenged by solving complex and hard problems
4%	encouragement from teacher/parents
3%	no motivation/difficult to answer
2%	to defend the school's honour/to earn an award

The total exceeds 100% because some respondents mentioned several kinds of motivation.

The distribution of answers is not significantly correlated with the class group and the school type.

In order to find out what kind of resources the participants of the Olympiad use for preparation, a closed-ended question with five answer options was offered, from which one or more could be chosen. The choices of the participants are summarized in Table 2.

Table 2 ***Resources and Actions Used by Participants for Training***

%	Participant’s answers
55%	solving online tasks of previous years' Olympics on the website edu.lu.lv
49%	reading theory and solving problems from books and taskbooks
40%	attending additional physics classes/consultations at school
40%	solving additional tasks offered by the teacher
22%	not specially preparing anything

The total exceeds 100% because many respondents chose several answer options.

It seems that the 9th grade students attend physics consultations at school more often (53%± 9%, n=133 vs. 33%±10%, n=86 in 12th grade). To prepare for the Olympics, a teacher's consultations are used more frequently by basic school

students (51%±17%; n=35) and least often by Riga state gymnasiums students (23%±7%; n=127).

When asked what kind of support would be needed to better prepare for the Olympics, the most popular answers are training materials with typical problem-solving techniques and more detailed explanations of solutions on the Olympiad website (Table 3).

Table 3 ***What Kind of Support Would Be Needed to Better Prepare for the PhO***

%	Participant's answers
52%	training material, which would clarify the typical problem-solving techniques
44%	more detailed explanations of the solutions of the previous years' Olympics tasks on the website edu.lu.lv
35%	there is enough support, but it 's hard to find the time and motivation to do anything extra
23%	special classes in physics outside school
21%	if there were more students in the class preparing for the Physics Olympiad to be able to prepare together
21%	more efficient learning process at school physics classes
19%	more individual consultations are available at the school with a physics teacher

The total exceeds 100% because many respondents chose several answer options

These results do not differ significantly by class group and school type.

Physics Teachers Survey Results

The survey was fulfilled by 188 teachers, of whom 9% are new teachers who have been working at the school for less than two years, 26% are teachers with 3-10years experience, 20% with 11-20years experience and almost half - 45% with more than 20years experience.

This distribution is consistent with the general demographics of teachers in Latvia - according to the statistics of the Ministry of Education, the proportion of new teachers has significantly decreased over the last twenty years and the proportion of old teachers has almost doubled. 44% of respondents teach only physics, the rest teach physics and one or two other subjects, most often mathematics (35%), computer science (17.5%), chemistry (7.5%), and biology (5%).

Within the group of the teachers who have entered the school in recent years, only about a third have initially studied to be physics teachers, the rest are either teachers of other subjects or specialists in other fields who have later acquired the right to teach physics (among teachers with more than 20 years of experience 70% have initially studied to be physics teachers).

The majority of teachers, 77%, have indicated that in the last three years their students have participated in the second (county) stage of the PhO. Among the teachers whose students have not participated in the Olympiads in the last three years, more than a half are teachers with little work experience. When asked why students are not encouraged to participate in PhO, teachers with more experience mention students' poor level of knowledge and motivation, lack of time, as well as the fact that the teacher himself has difficulties in solving the tasks of the Olympics.

The highest proportion of teachers whose students have participated in PhO in the last three years is among those who only teach physics (88%±7%; n=83 versus 67%±9% n=105 for teachers of two or more subjects). There are no significant differences between teachers who initially studied to be physics teachers and those who came from other fields or retrained as physics teachers.

The answers to the open-ended question about support for teachers and their students to help them prepare for and participate in the Physics Olympiads are summarized in Table 4.

As limitations of the online physics Olympiad phase, teachers point to the complexity of the tasks offered (20%) and their inconsistency with the school curriculum (10%), the fact that the system does not give an impression about how participants thinking (9%) and points may be lost due to arithmetical errors (7%), inaccurate task formulations (5%), inconvenient registration system and access to training tasks (3%). It should be noted that 11% of teachers indicate that they do not see any drawbacks in the organization of this stage. Regarding the limitations of the third stage, teachers mention that the number of invited participants is too small, that the tasks are too complex, that both rounds (theoretical and experimental) take place in one day, that there is no organized moderation and results discussion process.

Table 4 ***What Kind of Support Would Be Needed to Better Prepare for the PhO***

%	Teachers' answers
26%	training material, which would clarify the typical problem-solving techniques
16%	seminars for teachers in problem solving methodology
11%	more individual consultations to be charged at the salary
7%	solutions to previous years' Olympics tasks in PDF or other printed-out format
5%	special classes in physics outside school
5%	to include in the Olympiad more problems that are feasible for students
5%	Olympics program with intended content
4%	there is enough support
3%	if the Olympiads of different subjects did not follow one another

Table 5 ***Why to Encourage Students to Participate in Physics Olympiads***

%	Teachers' answers
25%	opportunity for students to test their knowledge and gain proof of their abilities
24%	students' interest in physics and the opportunity to realize their potential
21%	students' growth during preparation for and participation in the Olympics
6%	success in the Olympics can affect university enrollment
5%	students have the opportunity to gain new experiences
5%	raising the school rating
4%	prove that I am a good teacher
4%	interesting problems
3%	encouragement from the school administration
3%	prize from the municipality

Teachers indicate that in physics olympiads they like interesting tasks (19%), the opportunity for students to test and prove themselves, train and learn (15%), online format (13%), the opportunity to receive quick feedback (10%).
This is also reflected in the answer to the question of teachers' motivation to encourage students to participate in physics olympiads (Table 5).

Conclusions and Discussion

Our results show that students participate in the PhO to test and prove their knowledge and capabilities in physics (52%), to get new experience and further improve in physics (20%), because they are interested in physics (16%) and to prepare for future study (11%). These factors are largely consistent with other studies (Kolar, 2019; Friege & Lind, 1999). External motivational incentives, such as awards, play a minor role. Primary (why participating for the first time) and secondary (why participating repeatedly) factors were not considered separately in the study. Also, the possible demotivating factors and how participation in the Olympics influenced the motivation to study physics for participants who did not have high success were not studied.

The revealed views of the participants in the Olympics and their physics teachers on why to participate in the Physics Olympiads largely coincide. Teachers encourage students to participate in physics olympiads, as the most important factors for students noting possibility to test their knowledge and gain proof of their abilities, to realize their potential, interest in physics and improving skills and knowledge during preparation for and participation in the Olympics.

Answering the research question about resources used for training it was found that more than half of the students solve online tasks of previous years' Olympics using the online platform edu.lu.lv (55%), 49% read theory and solve

problems from books, 40% attending additional physics classes/consultations at school. According to survey results, participants from younger class groups more often attend physics consultations at school.

Answering about further support needed for training for the Olympics, both students and teachers highlight the need for training material, which would clarify the typical problem-solving techniques. As a second important possible support, students point to the need for more detailed explanations of the solutions of the previous years' Olympics tasks on the website (44%). About a third of students admit that there is enough support, but it is a lack of time and motivation to prepare for the Olympics. The second most popular response from physics teachers to the needed support is necessity for seminars in problem solving methodology.

Outlook

Further research is required to find out how the motivation to participate in physics olympiads differs between those who do it for the first time and those who do it again. This would help not only to attract new participants to the PhO, but also to maintain motivation and interest in physics for those who have ever participated in the PhO. For these reasons possible demotivating factors and the impact of Olympiad participation on underperforming students should also be explored.

In 2020, in cooperation with the National Centre for Education Republic of Latvia, a physics Olympiads` problem taskbook of was written. It includes the tasks of the second and third stages of the 2017-2020 Physics Olympiad for the last four years with prompting questions and detailed explanations of the solutions. Over time, it is planned to supplement the online platform edu.lu.lv with more detailed explanations of tasks, thus responding to the need of teachers and students for detailed explanations of the solutions to the Olympics problems.

Based on the results of the survey reported here, a seminar for teachers was organized on the methodology of solving the Olympics tasks in mechanics, as well as appropriate support materials were developed in the course of years 2020, with encouraging early feedback from teachers.

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DEVELOPING A CHILD'S AUTHENTIC LEARNING EXPERIENCE THROUGH MEDIA: TEACHERS' APPROACH

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Abstract. *The article analyses the development of an authentic experience for primary school students as a result of experiential learning. Possibilities of developing children's authentic experience through media are discussed, as the ability to find, perceive and critically assess and use information and media content, as well as to express oneself, are one of the most important human abilities in the 21st century. The article presents a qualitative research of the attitudes of primary education teachers about the development of a child's authentic experience by using media. The following research revealed that the method of accumulating authentic experience has a positive effect on students' learning motivation, allows to develop critical, creative thinking, constructs a real connection with teaching materials and practice, enables students to operate actively, independently, and be responsible for their own learning. The research highlighted the advantages and disadvantages of developing an authentic learning experience through media.*
Keywords: *authentic learning experience, experiential education, media.*

Introduction

The need for learners of creating authentic experiences and experiential education is determined by the constantly changing education system, development of information technologies, which form different human educational needs, encourage to discuss the qualitatively new educational process. In order to fully assess the place of experiential education in the Lithuanian legal and educational system, it is necessary to indicate the strategic documents of Lithuania, which determine the direction and guidelines of education. The most important strategic documents in the area of education are:

- Lithuania's Progress Strategy "Lithuania 2030";

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- National Education Strategy 2013–2022 (prepared by taking into account the provisions of the Lithuania's Progress Strategy "Lithuania 2030").

The change of educational paradigms and new emerging trends in the change of educational content allow to reveal the importance of a child-centred paradigm. The following paradigm focuses on the child and emphasizes that one's uniqueness, needs, regularity of development determine the individual approach to a child and one's environment. Today, there is a global recognition of the need to look for new learning/teaching opportunities, whereas the traditional teaching model should be used less often (Global Challenge Insight Report, 2016). Experiential education, including the construction of authentic experiences, today is defined as philosophy and methodology, when teachers consciously use the direct experience of learners to expand knowledge and develop skills (Braslauskienė, Norvilienė, Šmitienė, 2018).

Since the European Parliament legitimized the topic of media training in education in 2009, endorsing its inclusion in curricula at all levels of education, it became important to develop children's authentic experience by using and exploiting the full potential of the digital age (Grizzle, 2011). In order to properly master the possibilities of media education, not only do educators need to get acquainted with and evaluate information communication technology tools, be able to apply them, properly organize parental education, etc., but also use real world objects to help children develop authentic learning experience by creating real learning opportunities and simulating real-life experiences, etc.

The aim of the following research is to find out the opinion of primary education teachers about the development of a child's authentic experience through media.

Methods: analysis of scientific literature, interviews, content data analysis.

Theoretical Assumptions of Experiential Education and Acquisition of Authentic Learning Experience through Media

G.Voukelatou (2019) claims that rapid social and cultural development influences the increase of educational needs and the emergence of new teaching/learning methods in the educational process. S.Vosniadou (2011) described the important results of recent research on learning that is relevant for education. The attempt to integrate research comes from diverse areas of psychology, including educational, developmental, cognitive, social and clinical psychology. The following research has offered us new insights into the learning process and the development of knowledge in many subject-matter areas. As a result, curricula and instruction are changing in schools today. They are

attempting to become more student-centred than teacher-centred, to connect the school to real-life situations. Authentic learning is defined as learning that is seamlessly integrated or implanted into meaningful, "real-life" situations (Jonassen, Howland, et al., 2008). Also, it is stated that in authentic learning, learners are presented with realistic problems or projects that have realistic purposes and given the opportunity to investigate and converse about these problems and projects in manners that are applicable to them and their lives (Carlson, 2002; Mims, 2003; Iucua, Marina, 2014).

As claimed by the philosopher J.Dewey (cit. from Braslauskienė, Norvilienė, Šmitienė, 2018), who developed the theory of pragmatic constructivism, study subjects should not be learned separately, education should start from the child and his / her authentic experience, it should be contextual. According to J. Warren, K. Hof, L. Morris et al. (2012), students learn more and assimilate learning materials more easily when the teaching/learning is based on real and specific life events and existing students' experiences.

Creating an authentic human experience and ideas of experiential education have been known from the earliest time of humans and human education. From learning being passed though storytelling and oral tradition to Plato's dialogues about the human soul, and continuing education, experiential education has prevailed as a dominant mode of learning in Western culture (Breunig, 2005). The importance of the student's experience is especially evident in the application of experiential education. It is a strategy of active student-centred learning that is based on the ideas of constructivist theory. Such education pays a lot of attention to learning environments, personal needs and motives. The following learning theory draws attention to the process when learners actively construct and make their own and authentic knowledge. During the process, new ideas, concepts, and meanings are created on the basis of previously acquired knowledge and experience (Monkevičienė, Sakadolskis, Bruzgelevičienė et al., 2014).

According to O.Vaščenkienė (2012), the essence of modern education can be summarized as follows: it is important to focus on the development of student's personality, on one's own active and conscious learning, by providing the student with appropriate support to develop life-critical competencies. Modern teaching/learning should comply with the following principles: it should be realistic, relevant, attractive, motivating; it should be clear, precise, i.e. aimed at a specific goal and addressee; it should give students autonomy; it should be adapted for students with different teaching/learning needs and styles; it should create opportunities to take on different roles and responsibilities; it should broaden horizons and encourage to seek more. G.French (2007) points out that every learner can and should become a source of learning, as everyone's experience is individual, and therefore, unique and authentic. In this way, new

awareness is constructed, new knowledge is created here and now, learning/teaching process becomes very dynamic (Monkevičienė, Sakadolskis, Bruzgelevičienė et al., 2014).

G.Petty (2006) argues that authentic learning occurs when individuals act freely and strive to foster each other's growth and development. An authentic personality is a free personality; thus, the student's autonomy is important in fostering authenticity. C.Mims (2003) claims that authentic learning provides an opportunity for students to explore, discuss and construct concepts and relationships in contexts that encompass real-world problems. If learning is authentic, then students need to explore real educational issues that allow for direct connections between new material and prior knowledge. Authentic teaching/learning, which encourages to reflect on and analyse one's own experience and to learn from it, at the same time urges to get to know oneself better as a person and a learner. Moreover, it provides teachers and other learners with a lot of useful information about the learner. In other words, authentic teaching/learning permits to get to know not only the surrounding world, but also oneself. Therefore, teaching can be adapted to the individual abilities and needs of the learner (Moon, 2005).

Authentic assessment is a powerful tool for educators to analyse information gathered during everyday classroom activities and routines in order to understand each unique child's development. Consistent and comprehensive reflection on observation notes, photos, artistic creations, emergent writing, and dictations provides teachers with meaningful insight about each child and about the group as a whole. With this insight, teachers can plan activities and experiences that are responsive to children's interests and needs. Teachers can share their understanding of each child's growth with his or her family, while also gaining important insight from them in return (Anderson, Hartwig, 2016).

R. Gaučaitė, A. Kazlauskienė, E. Masiliauskienė et al. (2012) state that the essence of an authentic learning strategy is that a personality develops through personal experience. The increased freedom of the learner not only allows to actively construct one's process of learning, but also enables one to take greater responsibility for learning outcomes, strengthen motivation and become more involved in the teaching/learning process. The following learning process includes innovative learning methods, rather than traditional ones.

Digital technologies have revolutionised our society, and children today grow up and live in a world where these are ubiquitous. The 4th industrial revolution, the term originally coined by K. Schwab (2016) to describe the spread of digital technologies, affects all aspects of life, from health to commerce, from social interactions to the way people work. Education systems are no less affected, not only because technology can impact the way education is delivered, but also

because education has a role to play in preparing young people for a tech-driven world.

R. Jančiauskaitė (2016) claims that the ability to find, perceive and critically assess and use information and media content, in this way also expressing oneself, is one of the most important human skills of the 21st century. Information reaches us both in digital format and when visiting libraries, archives, museums, we can receive it from other people, organizations. Information flows are very high and we must to be able to effectively find, obtain, assess, select and use it ethically and responsibly.

According to B. Šupšáková (2016), media education creates a space for young people to freely express themselves and exercise their right to obtain information. It is beneficial for their personal development, and it enhances their participation and interaction in society, thus preparing them for democratic citizenship and political consciousness. The media education curriculum must socialize young people, to acquire experiences from social changes (Buckingham, 2000).

Media education is being developed to help children cultivate their curiosity, learn how to evaluate the highest variety of questions and situations in various contexts and at differing complexity levels, accept diverse perspectives, and optimistically consider the future. As reflected in the educational practice, media education at the primary level of education should include all personal levels of children/students as well as children's cognitive (basic orientation in the media environment, recognition of differences and diversity, decoding of the 'reality' represented by the media, understanding of the positive and negative impacts of the media, etc.), psychomotor (active communication in the media environment, creation of their own media content, ability to collaborate and communicate with the media environment), and attitudinal (ability to develop their own attitudes towards media products, ability to critically analyse, responsibility for content creation, etc.) functions (Šupšáková, 2016).

Summarizing the theoretical assumptions of experiential learning and acquisition of authentic learning experience by applying media, it can be stated that the axis of experiential education is the experience available and constantly acquired by students. The strategy of authentic teaching/learning experience applied by teachers allows students to become more active participants of the teaching/learning process, giving meaning to the already existing and acquired experience.

Methodology of Research

According to V. Žydžiūnaitė, S. Sabaliauskas (2017) qualitative research helps to understand and interpret the social world, while human behaviour is perceived as being dynamic, situational, helping to investigate cases without aiming at representativeness.

Participants of the research. The sample of informants when performing qualitative research depends on the aim of the research (Bitinas, 2013). Since the research sought to reveal the opinion of primary education teachers about the development of the child's authentic experience through media, sample units selected for the qualitative research from the general sets were chosen by applying the targeted sampling method. Targeted sampling is such sampling, when the researcher selects elements for the sample depending on the aims of the research.

The targeted selection allowed to choose individuals who can provide the researcher with meaningful information on the subject. In this case, it is primary education teachers who apply media for the development of a child's authentic experience. The participants of the research were 15 teachers of 1-4 grades of general education schools of Klaipėda city, aged 25 to 51. Such sample is sufficient, because when applying the semi-structured interview, the recommended sample size is from 5 to 30 people (Žydžiūnaitė, Sabaliauskas, 2017). It was established that 6 of the respondents have up to 5 years of pedagogical work experience; 7 teachers have more than 15 years of work experience, but not more than 25 years; and 2 indicated that their pedagogical work experience is more than 25 years, but not more than 30 years.

The research was conducted in September – November 2020. The semi-structured interview method was chosen for the implementation of the research being one of the most convenient survey methods during which it is possible to obtain as much unstructured information about the research issue as possible. Semi-structured interview provides the researcher with an opportunity, depending on the course of the interview, to steer the questions in the right direction. The obtained interview data were analysed by the method of content analysis: on the basis of the theoretical analysis the categories of the researched phenomenon were identified and the obtained data were assigned to them, the obtained results were interpreted and analysed, examples and category illustrations have been provided. This is a valid method that allows conclusions to be drawn on the basis of the analysed text (Bitinas, 2013). The following ethical principles have been followed during the implementation of the qualitative research (interview): goodwill, respect for the dignity of a person, justice, right to obtain accurate information.

Research Results

The qualitative research of opinions primarily sought to find out the opinion of informants about *why do you use the method of accumulating children's authentic learning experience in children's education?* The obtained data are presented in Table 1.

Table 1 ***Use of the Method of Accumulating Children's Authentic Learning Experience in Education***

Category	Subcategory	Statements	Number of responses
Method of accumulating authentic learning experience in education	Learning motivation	"Hard learners can enjoy success, while good learners have an excuse to compete" "Encourages students to get to know themselves better and to understand their role in the educational process" "Encourages students to understand their potential, experience success" "Students deepen their knowledge in an area that interests them" "Have an opportunity to learn what they want" "Compete to read more pages of a particular book, report by describing them" "The content of lessons is aligned with students so that they can learn what they want" "Helps students stay motivated to learn" "Provides opportunities to be autonomous, active, independent and responsible for one's own learning" "Can rejoice in their success, there is an opportunity to compete for better results" "Students can share their knowledge" "Encourages children to work in a team" "Encourages, motivates weaker students to get involved, to rejoice in the success of the team" "Hard learners experience the joy of learning, feel great in the classroom"	14
	Development of critical thinking	"Promotes critical thinking skills" "Creates learning conditions that provide an opportunity to organize, interpret, explain, evaluate, research, analyse" "Students accumulate information using various methods"	15

		"Reveals the learning potential, encourages students to think critically" "Develops students' ability to select, process and apply relevant information" "Encourages to search for relevant information in various sources" "Teaches children to select proper and improper information for a project or lesson"	
	"Involvement" in the learning process	"Provides active learning opportunities" "Links the student's learning and one's experience" "Students suggest their own topics" "There is interdisciplinary integration" "Widespread use of ICT" "Children learn to present the accumulated information to everyone in the classroom" "Children learn to communicate, cooperate"	12
	Application of acquired knowledge in life	"Learned subjects can be used in everyday life" "Promotes the use of knowledge not only in the classroom, but also outside of it" "Children can see the connection between what they learn in an educational institution and how this knowledge is used in society, outside the educational institution" "Prepare projects that are related to life, students' living environment" "There is a real connection between the teaching material and practice, it makes sense for the student to learn" "It's a great opportunity to socialize children: get acquainted with nature, natural phenomena through experience"	15

According to educators, the method of accumulating authentic experience in children's education has a positive effect on learning motivation, makes the teaching process inclusive, and "education is most suitable for all students in terms of life readiness" (European Agency for Special Needs and Inclusive Education, 2014, p. 7). The increase of learning motivation is related to children's needs, goals, values and habits, helps students to focus on the goal and understand how long it will take to achieve the goal, whether and what kind of reinforcement is needed, actualizes the necessary knowledge, abilities and skills of students, has an impact on the quality and outcomes of learning. Teachers also believe that the method of accumulating authentic experience develops children's critical thinking and encourages to apply the acquired knowledge in practice, i.e. in life and in

society. The research on the development of critical thinking (Indrašienė, Matonytė, Penkauskienė and Suboč, 2010) revealed that students have little opportunity to develop and substantiate critical thoughts, reflect on the progress of their thinking and activities; therefore, the application of the method of accumulating authentic experience in education solves this issue.

Informants claimed that learning motivation, using the method of accumulating authentic experience in children's education, manifests itself in encouraging students to understand their potential, experience success, get to know themselves better, and understand their role in the educational process. The application of the following method allows hard learners to enjoy success and good learners to have excuses to compete. Students deepen their knowledge in an area that interests them, have the opportunity to learn what they want. Moreover, content of lessons is aligned with students, and this helps them stay motivated to learn. The authentic experience method provides children with an opportunity to be autonomous, active, independent and responsible for their learning. Students can share their knowledge, they are encouraged to work in a team, which motivates weaker students to engage in activities, and rejoice in the success of the team. This means that hard learners experience the joy of learning and feel great in the classroom.

Teachers, who participated in the qualitative research, noticed that the application of the method of accumulating authentic experience in education activates the "inclusion" of the learning process – active learning opportunities are provided, interdisciplinary integration takes place, and the use of information communication technologies is wide. The following method makes it possible to link student's learning with one's own experience, and students offer their own topics. Each student learns to present the collected information to everybody in the classroom.

The method of accumulating authentic experience helps to develop critical thinking: it creates learning conditions that provide an opportunity to organize, interpret, explain, evaluate, explore, analyse information. By applying the following method, students collect information by using a variety of methods, which reveals students' learning potential, encourages students to think critically. With the help of the method, students are encouraged to search for the necessary information in various sources, children learn/are taught to select proper and improper information for the project or lesson. Accordingly, the following develops students' abilities to select appropriate information, process and apply it.

Qualitative research revealed that the method of accumulating authentic experience promotes the application of the acquired knowledge in life – not only in the classroom, but also outside of it. Children can see the connection between what they learn in an educational institution and how this knowledge is used in

society, outside the educational institution. By applying the following method, students prepare projects that are related to life, students' living environment – there is a real connection between the learning materials and practice, it makes sense for the student to learn. Moreover, the method provides an opportunity for children to socialize: get acquainted with nature, natural phenomena through experience.

Qualitative research sought to determine the opinion of informants about *what types of media do primary school teachers use to promote authentic learning?* The obtained data are presented in Table 2.

Table 2 ***Types of Media Used to Promote Children's Authentic Learning***

Category	Subcategory	Statements	Number of responses
Types of media used to promote children's authentic learning	Print media	Books, magazines for children, newspapers, encyclopaedias	15
	Audio-visual media	Television	15
	Visual	Photography	4
	Acoustic/audio media	Radio, phonography	6
	Interactive media	Mobile phones (various applications), tablets/computers (databases, search engines, applications, games, movies, programs, TV shows, etc.)	15

The research showed that in order to promote children's authentic learning, primary school teachers use both traditional types of media (print, audio-visual, audio) and interactive types of media (mobile phones (various applications), tablets/computers (databases, search engines, applications, games, movies, programs, TV shows, etc.). Photography, radio, phonography are used less often.

The opinion of informants about *why is the use of media in children's authentic learning important?* was clarified and provided in Table 3.

The research revealed that the importance of media in children's authentic learning is related to the development of media literacy and the promotion of cooperation with each other. According to the UNESCO definition, media and information literacy is a set of competencies that covers traditional and new media, as well as abilities related to them – from technical skills to visual and media literacy. Media literacy is closely linked to social inclusion, lifelong learning, creative problem-solving, activity and collaboration – cornerstones of modern society.

Table 3 ***The Importance of Media in Children's Authentic Learning***

Category	Subcategory	Statements	Number of responses
The importance of media application in children's authentic learning	Development of media literacy	"Find information themselves, use information sources, process, adapt, compare, coordinate" "Adapt and compare information" "Media gives learners more experience" "What a child learns can be put into practice in everyday activities" "When learning one experiences only good emotions, completes tasks with joy" "Analyse specific cases through practice, discusses" "Recognize information in different situations" "Can illustrate one's ideas" "Children share their experiences, impressions of what they experienced while observing, exploring" "Provide their examples" "Students are interested, they want to deepen their knowledge on a certain topic" "Analyse specific practical cases" "Helps to experience a sense of success" "Develops children's understanding of how to properly integrate what they have learned in life situations"	12
	Promotion of students' cooperation	"Students collaborate with classmates, parents, teachers" "Students teach each other" "Collaborate with each other" "Can share their success and knowledge with others" "Students teach each other, correct each other's works"	14

Informants noted that the application of media in authentic learning is one of the ways of developing children's media literacy, because they find information themselves, use information sources, process, adapt, compare, coordinate, analyse specific practical cases, discuss. Media gives the learners more experience – what the child learns can be applied in practice in everyday activities. It is also important that while learning, the child experiences only good emotions, performs

tasks with joy, and feels a sense of success. With the help of media, students recognize information in different situations, can illustrate their ideas, and provide their own examples. Through media, children share their experiences, impressions of what they have encountered while observing, exploring. Students are interested, which means they want to deepen their knowledge on a certain topic.

Primary school teachers, who participated in the research, noted that the importance of media in authentic learning is also determined by the promotion of cooperation – with classmates, parents, educators. Students teach each other, correct each other's works. Moreover, then can share their success and knowledge with others.

Qualitative research helped to find out the opinion of primary school teachers about *what advantages and disadvantages do you see in the development of authentic learning experience through media?* Data from questionnaires are presented in Table 4.

Table 4 ***Advantages and Disadvantages of Using Media in Developing Children's Authentic Learning Experience***

Category	Subcategory	Statements	Number of responses
Advantages and disadvantages of using media in developing children's authentic learning experience	ADVANTAGES		15
	Improvement of the study process quality	"Teacher-convenient method" "An attractive educational method for the modern student" "A great way to lean anywhere and anytime" "Wide range of application of the method" "Develops ICT skills" "Promotes motivation to learn" "Children can apply their knowledge and skills"	13
	Development of students' communication skills and critical thinking	"Media allows to illustrate one's ideas" "What is learned can be applied in other activities, in life" "Easily accessible information" "Develops critical thinking" "Children are encouraged to communicate and collaborate, develop, self-assess their abilities" "Develops communication skills and critical thinking" "Promotes creativity and collaboration" "Students understand the importance of their authentic experience and the media makes it easier to remember that"	12

	DISADVANTAGES		15
	Damage to the mental and physical health of the child	"Long time spend with media reduces children's creativity" "May be harmful to health if a lot of time is spend with media" "Reduces students' physical activity" "Application of media even more attracts children to technologies that are already a major problem"	14
	Uncertainty in the quality of education	"Lack of systematic approach, methodology" "Takes more lesson time than usual" "There is no direct contact with the teacher and not everyone can study independently" "Not all schools are equipped with the necessary media, poor internet connection" "Not recommended for students with lower abilities (or teachers need to adapt tasks)" "Media management is time consuming, it is difficult to reconcile with mandatory teaching standards" "Some students find it difficult to select necessary information, because there is too much of it" "There are students who cannot use different media" "Direct contact with the student decreases" "It is difficult for a child not to get lost in the abundance of information" "A child sometimes needs parental help/care when using media"	15

Primary school teachers noted that advantages of using media in the development of children's authentic learning experience are related to the improvement of the quality of the educational process: a convenient method for the teacher and an attractive educational method for the modern student, when it is possible to learn anywhere and anytime. With the help of media, children develop ICT skills and can also apply the existing knowledge and skills, which stimulates students' motivation to learn. The application of media in the development of children's authentic learning experiences is also relevant for the development of communication skills and critical thinking, as information is easily accessible and what students learn can be applied in other activities, in life. Through media, children are encouraged to communicate and collaborate, create, self-assess their abilities, illustrate their ideas. Media develops communication

skills and critical thinking, promotes creativity and collaboration. In developing an authentic learning experience, students understand the importance of their authentic experience, and the media makes it easier to memorize it.

However, teachers stated that the application of media in the educational process also has disadvantages, which are actualized by the damage caused by media to the child's mental and physical health: long hours spend with media reduces children's creativity, reduces students' physical activity. Educators emphasized that the application of media attracts children to technology even more, which is already a big problem. Informants noted the uncertainty of the quality of education as a disadvantage in the application of media in the development of children's authentic learning experience, because there is a lack of a systematic approach and methodology on the application of media in the educational process. The use of media takes more lesson time compared to conventional work, it is difficult to reconcile with mandatory teaching standards. Moreover, the student's direct contact with the teacher decreases, and not everyone can study independently. Some students find it difficult to select the information they need, as there is too much of it, and there are students, who are unable to use a variety of media. Educators also stated that not all schools are equipped with the necessary media and have poor internet connection.

Conclusions

1. Theoretical analysis revealed that the importance of student's authentic experience is evident through experiential learning/teaching. It is an active student-centred learning strategy that is based on the ideas of constructivist theory, which draw attention to the process of learners actively constructing and making their own knowledge. The authentic learning of students takes place when educators foster the growth and improvement of each child, enable children to act freely, explore, discuss and construct concepts and relationships that encompass real-world problems through the use of media. Researchers that emphasize the advantages of experiential learning note that modern teaching/learning should comply with the following principles: it should be realistic, relevant, attractive, motivating; it should be clear, precise, i.e. aimed at a specific aim and addressee; it should give students autonomy; it should be adapted for students with different teaching/learning needs and styles; it should create opportunities to take on different roles and responsibilities; it should broaden the horizon and encourage to seek more. Authentic learning is defined as learning that is seamlessly integrated or implanted into meaningful, "real-life" situations, new knowledge is created *here and now*, the teaching/learning process becomes more authentic.

2. The analysis of research's results revealed that the method of accumulating authentic experience in children's education makes a learning process more positive, inclusive, and develops children's critical thinking and motivates to apply knowledge in practice. According to educators, the meaning of children's authentic experience is especially evident in interdisciplinary integrational activities through the use of the media. In their opinion, in order to give meaning to the authentic experience pupils have, the media used in the learning process gives children more experience, while learning they experience only positive emotions, can illustrate their ideas, present their experience. In the interviews, educators identified not only advantages but also disadvantages of developing a child's authentic learning experience through the media: the child's own systematic approach to the quality of education, choice of methodologies and their application in the educational process through various media, as well as the ability of pupils to learn independently. The findings of this study suggest that the authentic experience of pupils can be made meaningful while in the educational process, when the foundations of learning that remain important throughout life are laid. The research is relevant and requires continuity in order to reveal the importance of the student's authentic experience both in the activities initiated by the educators and in the children's contribution to the organization of the learning process itself.

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EXPRESSION OF THE NEEDS OF THE CHARACTERS OF FAIRY TALES CREATED BY CHILDREN GROWING UP IN FAMILIES AT SOCIAL RISK AND THEIR SATISFACTION

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Abstract. *The scientific literature analyses in detail the problems of a family at social risk, threats to the child's social and personality development, etc., however, all insights are provided from an adult perspective – research that would allow the voice of a child growing up in a family at social risk to be heard has not been detected. Children have a limited ability to talk about their experiences. This is facilitated by the creation of a fairy tale, where the child, through the images of the characters created, can safely convey his/her individual life experiences. The aim of the article is to identify the expression of the needs of the characters of fairy tales created by children growing up in families at social risk and their satisfaction. Fairy tales created by 9–12 year old children were selected as the object of analysis. Of the 69 texts written by children, 47 were selected for analysis. The content analysis of fairy tales was based on the principles of phenomenological hermeneutics. The analysis of fairy tales created by children growing up in families at social risk shows that the characters of the fairy tales they create experience the following unmet needs: physiological, security and social. Heroes of the fairy tales of children growing up in families at social risk are not prone to solving problems, it is more comfortable for them to live as usual, although not always they feel good because of that.*
Keywords: *children's voice, child's needs, fairy tale created by a child, family at social risk, middle childhood.*

Introduction

In many countries, as the attitude towards children changes and children are perceived as a social group with a certain social status, there is an increasing focus on childhood research and various research from a child's perspective (e.g., Tangen, 2008; Maybin, 2012; Tay-Lim & Lim, 2013; Livesley & Long, 2013; Nimante et al., 2018; Rouvali & Riga, 2018; Malinauskienė & Juodaitytė, 2019; Urbina-García, 2019). Such research takes place focusing on the situation of the child's being in the present and allows to get to know the child's real experiences.

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The socialization of an individual in society takes place in different conditions, which are characterized by one or another danger that negatively affects human development. As a result, groups of people, who become victims of unfavourable circumstances of socialization, emerge. These include children growing up in families at social risk. Researchers (e.g., Masiliauskienė & Griškutė, 2010; Dobelniece et al., 2015; Gudzinskiene & Augutavicius, 2018) point out that families at social risk are characterized by a variety of problems of poverty, alcohol abuse, violence, unemployment, poor housing and other problems. Most of the problems are related to poor basic skills or lack of them, also to lack of motivation to change. Children growing up in such a family face poverty, primitive value orientation, a negative psychological climate and upbringing mistakes. When such a stressful environment prevails, the child develops a wrong attitude both towards himself/herself and others – as a result, children from families at social risk try to distance themselves from the environment, not to trust those around them. The scientific literature analyses in detail the problems of a family at social risk, threats to the child's social and personality development, etc., however, all insights are provided from an adult perspective – research that would allow the voice of a child growing up in a family at social risk to be heard has not been detected.

Children have a limited ability to talk about their experiences. This is facilitated by the creation of a fairy tale, where the child, through the images of the characters created, can safely convey his/her individual life experiences, attitudes to the surrounding environment and at the same time talk about worrying problems and imaginary solutions to them. The aim of the article is to identify the expression of the needs of the characters of fairy tales created by children growing up in families at social risk and their satisfaction.

According to S. Broström (2002), the stories created by children also exhibit each child's growing awareness of his/her environment and life concerns, these are texts, which, as I. Zandere (2007) states, "best reflect a modern child's encounter with everyday reality and how he/she perceives, evaluates, catalogues, and mythologizes that reality (...). It is an authentic document" that helps adults to look at the phenomena of the child's world from the child's perspective.

Methodology

Fairy tales created by children aged 9–12 years, i.e., in middle childhood (N = 69), have been chosen as the object of the article. The research was conducted in the academic year 2019–2020 in seven day care centres of the Lithuanian town X. (A children's day care centre is an institution of social services, the purpose of which is to provide day care, occupation, leisure time

organization, etc. services for children, materially and morally weak families in order to normalize their relationships with the social environment.) The research was organized in accordance with L. Karlsson's (2013) principles of the organization of the creative process of a fairy tale, focused on the child's right to be listened to, heard and understood, and the provisions on respect for the child's opinion.

The researcher met with small groups (3–5 children), having arranged the meeting in advance with the administration of the day care centres and obtained the consent of the children's parents (guardians) to communicate with their children. Children's participation was based on the principles of voluntary participation, free self-determination and confidentiality. Each meeting began with a conversation about reading, a favourite book, a tale, or a story. The conversation ended with the researcher's introduction that she is interested in fairy tales created by children, collects and analyses them, therefore, she knows that everyone has unique thoughts that allow them to create interesting stories. The children were then invited to take part in a study – to create and write their own fairy tale. Instructions for creating a fairy tale were not provided – the children had a right to decide for themselves which characters, which place and time of the action to choose, how to construct the plot. After finishing writing the fairy tale, the children decided for themselves whether they wanted to read aloud what they had created (or they wanted the researcher to read it aloud), or whether they agreed to give their fairy tales (or copies) to the researcher.

Although writing should be one of the most enjoyable, valuable, and effective tools for creative self-expression and self-discovery, as G. Rodari (2001) and V. Oaklander (2007) notice, children do not like writing. This is mainly due to the fact that children do not have good writing skills, moreover, they have some experience that when evaluating their creative works at school, the first emphasis is on spelling, form, sentence structure, handwriting – it inhibits and impedes the child's creative flow of thoughts, discourages the desire to create a story. Therefore, it was especially important for children to hear that the researcher adheres to the attitude that the author's own fairy tale is excellent and interesting as it is, that the researcher will not correct or mark mistakes in texts created by them, will not pay attention to clumsy handwriting, will not tell them to rewrite the fairy tale, will not limit the time of creating a fairy tale – children will decide for themselves how much and how they want to correct and improve their creative task. In this way, each child was given the power to decide what and how he/she wanted to write, and the researcher took on only the role of an understanding reader.

Of the 69 texts written by children, 47 were selected for analysis, i.e., those in which elements of the fairy tale genre can be seen. The fairy tales created by

the children were analysed using content analysis; the principles of phenomenological hermeneutics, focused on the disclosure of meanings constructed in children's authentic texts, were relied on, avoiding the researcher's prejudices, interpretations and limiting to highlighting the commonalities related to the expression of the needs of fairy tale characters.

To make the expression of the needs of the characters of the fairy tales created by children growing up in families at social risk more visible, the context of fairy tales created by children in middle childhood growing up in the middle and higher social class families was used to compare the main themes of these texts and the peculiarities of the development of the plot (Bražienė, 2018). The article presents authentic children's texts – only spelling and punctuation errors have been corrected, sentence boundaries have been clarified (for the convenience of translating from Lithuanian into English); children's names have been changed.

Background

Fairy tales created by children in the context of a narrative. A. Preece (1987), who studied the ability of 5–7 year old children to create stories in a conversational stream, distinguished 14 types of narratives. In addition to the usual narratives from experience, retelling of an event seen or heard, etc., stories of original fiction are indicated. They include texts where one can see originality and novelty as far as possible, where events are associated with fantasy characters. As B. Sutton-Smith (1981) notices, the structure in children's stories is in accordance with the structure of the folk tales. Thus, it is no coincidence that in children's stories of original fiction distinguished by A. Preece (1987), the traditional features of the fairy tale genre (beginning and end formulas, environment, props, characters) are sought, it is considered whether the texts created by children contain a complicated situation, a difficult task, and so on. Therefore, the type of original fantasy narrative singled out by A. Preece (1987) is similar to the traditional fairy tale of miracles. A. Preece essentially responds to the features of fairy tales created by children highlighted by A.N. Applebee (1978). According to A.N. Applebee (1978), a fairy tale created by a child is a story composed of a chain of events, framed by traditional beginning and end formulas, it depicts extraordinary events, a conflict situation, and fantasy characters act in an unusual space of action.

One of the most necessary and important elements of any fairy tale mentioned by both A. Preece (1987) and A.N. Applebee (1978) – conflict or the culmination of a fairy tale – can be different in fairy tales created by children. According to the assessment of E. Maranda and K. Maranda (1971), in fairy tales created by children, one can see four levels of conflict resolution (stories

that do not have any of the following ways of conflict resolution are attributed to zero level):

1. No resistance. These are rather primitive plots where one force defeats another without the latter even trying to resist. Usually, texts of this type are limited to the information that the hero is threatened, the villain defeats the hero, the lack is identified or what is lost is indicated. In rare cases, the villain is presented, the evil done is described.
2. Unsuccessful reaction. The hero tries to resolve the conflict, but the idea fails. Sometimes the hero simply escapes, and sometimes the villain suddenly "converts" – becomes favourable.
3. Quick success. The hero reduces the danger relatively easily and quickly, or nullifies it altogether; achieves what was lacking. Often the threat is eliminated or the task is solved through the mediation of helpers.
4. Successful transformation. This is a part of the plot development close to traditional miracle tales. The lack is liquidated by the hero's personal efforts, experience, wisdom or through the mediation of helpers, through miraculous means.

According to E. Maranda and K. Maranda (1971), the fantasy narratives of children at the end of early childhood are usually dominated by the first and second levels of conflict resolution, meanwhile, the fourth one – successful transformation – is noticed in the plots of the stories created by girls in middle childhood. However, boys of the same age rarely choose a successful transformation. Most likely it is related to the style of conflict resolution: the hero of the plots created by boys defeats the villain by force or cleverness, meanwhile, girls rely more on forming an alliance. Moreover, the characters of the fairy tales created by boys are more physically active. Thus, it determines that boys create more dynamic and interesting plots than girls, in the boys' stories there is the explicit – and usually enthusiastic – depiction of active violence, conflict, and destruction (Sutton-Smith, 1981; Nicolopoulou, 2011).

Due to the fact that fairy tale texts written by children are created following the example of traditional miracle fairy tales, scholars (Sutton-Smith, 1981; Broström, 2002; Nicolopoulou, 2011) suggest evaluating them according to the system of functions, i.e., characters' deeds significant to the action of the fairy tale, formulated by V. Propp (see more Propp, 1968). G. Rodari (2001) points out that each function of a fairy tale resonates in the child's individual world and helps the child to understand himself/herself, as the structure of the fairy tale is in some ways related to the structure of the child's experience, which necessarily involves a sequence of tasks and struggles, severe trials and

disappointments. The child has the experience of interdiction, miraculous gifts, miraculous donors, his/her world is inhabited by powerful allies and fierce enemies.

From the above, it can be stated that children in middle childhood, creating their fairy tale, need to be able to: begin/end the text with traditional beginning/end formulas; compose a text from a chain of unexpected events, trying to use as many elements of the traditional fairy tale as possible; the text must contain a clear conflict situation and its resolution in a new and unique way, construct the plot using the functions of a fairy tale. If the listed elements are not present in the created text, consequently, it is not a fairy tale, but only a story.

The context of social and personality development in middle childhood. Middle childhood is an intense time for a child's personality development. In this period, individual differences of the child, determined by nature and social environment, become apparent. Middle childhood is a period of time when the perception of personal competence is the main theme of social and personality development. According to G. Halász & A. Michel (2011), personal competence is defined as the integrity of the person that in relations with others and oneself is expressed in the person's dignity, self-confidence, responsibility for one's actions, self-esteem, commitment to meaningful goals and the ability to pursue them. As J. Eccles (1999) states, personal competence is determined by three key forces: (1) cognitive changes that heighten children's ability to reflect on their own successes and failures; (2) a broadening of children's worlds to encompass peers, adults, and activities outside the family; and (3) exposure to social comparison and competition in school classrooms and peer groups (p. 33). Every child's experience in the context of communication is influenced by emotional and behavioural reactions that vary depending on personality, self-awareness, and relationships. According to E. Erikson's theory (Erikson, 2004), middle childhood is described as a period of the industry-inferiority crisis. At this stage of development, children develop an understanding of their abilities – the child's self-esteem depends on both real achievements (the one who is more successful evaluates himself/herself better, the one who is less successful evaluates himself/herself worse) and the assessment of those around him/her. Children, like adults, want to be respected, loved, want to communicate, understand others, and so on. If these needs are not met, an inferiority complex emerges, accompanied by such unpleasant feelings as fear, guilt, anger, which can turn into aggression, and so on. According to A. Maslow's theory (Maslow, 2006), of the hierarchy of needs, the emergence of higher needs (esteem and self-actualization) is conditioned by the satisfaction of physiological and security needs, in addition to which, the social needs that determine the child's

socialization are important. Without having satisfied the lowest – physiological and security – needs, a person does not care about the higher ones.

In middle childhood, according to J. Eccles (1999), H. Gazelle & M.J. Druhen (2009), relationships with peers and related emotional experiences are very important for children. However, here, along with the likelihood of being popular and attractive to his/her peers, the child is at risk of being rejected by peers and feeling lonely. Rejection of peers or the disappointment of the child himself/herself with friends can increase anxiety and reduce the child's self-esteem. Children, who are rejected by peers and excluded from joint activities become socially helpless, always expect rejection and do not try to seek new relationships, initiate new social contacts. Moreover, according to the aforementioned authors, although middle childhood is a period when a child is increasingly striving for independence and wants to be independent of the family, attachment to parents is still important.

One of the most important goals of parents when raising children is to meet their needs, i.e., physical, cognitive, social, moral and spiritual needs. Many authors (cit. Kondrotaitė, Butvilas, 2007) note that in families at social risk emotional communication is impaired, such families are unable to meet the child's emotional and physical needs, moreover, the way they communicate significantly limits the child's opportunities to develop appropriate social skills, express his/her necessary needs and feelings. The most important characteristics of the individuals of the lower stratum are reticence, reconciliation with the current situation and insufficient initiatives to change that situation, as well as inadequate regulation of relations when problems are resolved through conflict and force. E. Masiliauskienė & V. Griškutė (2010) identified the consequences of parental misconduct for children growing up in families at social risk: failure to ensure the physical, mental, spiritual and moral development and safety of children; the environment created in the family is unfavourable for the healthy and productive growth and development of the child; children are characterized by unfavourable self-esteem; children have not acquired the necessary social skills; fundamental rights (care, education, etc.) of children are not realized; children's opportunities to participate in the life of society, grow and develop spiritually are restricted. When one grows up in such conditions, a wrong attitude towards the world and oneself is formed. This is what makes one distance oneself from the social environment, not trust those around. Children growing up in such families have very low self-esteem, do not expect that their needs are important and can be met.

Research Results

Comparing the fairy tales created by children in middle childhood growing up in families that are not at social risk and in families at social risk, it has been observed that the texts created by the latter children have a very simple plot, are close to a simple story, fairy tales lack the development of the action, moreover, the characters' goals, desires, motives of behaviour are not always clearly perceived, the causal connections of the characters' actions are not understandable, the presentation of events lacks consistency and completeness, there is a lack of fantasy elements typical of the fairy tale genre, there is a little use of the functions of a fairy tale. The most common functions used in the fairy tales of children growing up in families at social risk – lack, departure from home, meeting the Donor, liquidation of lack, arrival home. The fairy tales of children growing up in families at social risk do not have magical agents, interdiction, violation of the interdiction, transference of the hero to the whereabouts of an object of search, difficult tasks and their solutions, functions of the hero's transfiguration – i.e., such functions that are present in the fairy tales of children growing up in families that are not at social risk. The ways of liquidation of lack/conflict resolution also vary: the fairy tales of children growing up in families at social risk are dominated by the first two levels of conflict resolution singled out by E. Maranda & K. Maranda (1971) – "no resistance" and "unsuccessful reaction", in several fairy tales "quick success" has been identified. The fourth level – "successful transformation" – has not been found in any of the fairy tales. It can be said that the fairy tales of children growing up in families at social risk meet the criteria by which foreign researchers distinguish five-year-old children's fairy tales from other types of narrative.

Nevertheless, in general, the themes of the fairy tales of children in middle childhood growing up both in families that are not at social risk and in families at social risk are very similar – the plots are dominated by the aspects of communication between family members and relationships between children. However, attention is drawn to the fairy tales of children growing up in families at social risk, which by name were assigned to the theme of happiness (e.g., "Happiness", "The Spring of Happiness", "The Happy Man", "The Happy Day of Miracles", "The Girl's Happiness"). Fairy tales of children growing up in families that are not at social risk with such names have not been observed. As can be deduced from the texts created by children, happiness is usually understood by the authors of fairy tales as meeting the physiological needs that determine a person's chances of survival.

The Spring of Happiness

Once upon a time there lived poor people. They had no money, no food to eat and nowhere to sleep at night. Once they saw a spring. People came up to that spring to drink. And that spring says, "Come up with two wishes!" The first wish was to have a place to live, the second to have money. All the wishes were fulfilled. Since then, they have lived long and happily (Rita, 11).

The Happy Day of Miracles

Once upon a time, a good princess lived in a slum. She did not have nice clothes and delicious meals. One day she was picking apples and saw a large house. It was her house. She went inside. Everything was beautiful there. A few hours later, a lot of beautiful clothes, all kinds of shoes appeared in her room. And then all sorts of delicious meals appeared. The girl thought that today was a happy day of miracles. She lived well and happily (Rima, 10).

Both when reading these and other fairy tales of an analogous plot, the position of the authors stands out that the "happiness" of having something to eat, where to live, what to wear, as if should be given, donated by someone, received effortlessly – just unexpectedly. Only the creators of two fairy tales seem to understand the reason why their characters live badly – you have to work to have something, to be able to buy something, e.g.: *(…) the old man asks, "Do you want to earn money?" "And what work will I have to do?" "Pasture the sheep and then I will give you food and money." "No, old man, don't even dream, pasture them yourself!" (...) The third brother met the same old man, did what the old man asked. He got a lot of food, money and came back joyful. The whole family ate well, bought a new house and lived happily ever after* (Romas, 11); *(…). The eldest sister went out to look for work. She met an old man. He says, "Where are you going, girl?" "None of your business!", the maid retorted angrily. (...). A few days later, the maid came back without money. The parents ask, "So why didn't you earn anything?" "Because I didn't find a job!" (...) Then the youngest sister left. "Hello, girl, where are you going?" "To look for a job, we ran out of money!" (…) The maiden went home with her salary. (...) Left money and lived a long and happy life (...)* (Toma, 12).

Although these fairy tales are created referring to the example of a folk tale, it would be wrong to say that this was the easiest path chosen by the authors to construct their fairy tale. According to childhood researcher A. Juodaitytė (2002), "the actions, thoughts, thinking and activity structures of a particular child, as well as the cognitive operations performed are discovered by them independently, and not blindly copied and taken from the environment" (p. 197). Consequently, the behaviour of the hero of the folk tale, based on responsibility, morality, service, honesty, etc., and the consequence of that behaviour – the award – were probably the discovery of the child himself/herself, an experience taken from the folk tale and possibly verified in real life, transformed in an alternative form in his/her own fairy tale. On the other hand, in fact, there is an understandable reason why the heroes of fairy tales are passive in liquidating the lack of unmet physiological needs – it is the duty of adults to take care of it. Perhaps due to this fact, reading the fairy tales of

children growing up in families at social risk, the impression is that meeting physiological needs does not require as much effort from the heroes as meeting social needs. This, according to the plots of the fairy tales, depends on the hero's interaction with family, peers and school and is a necessary condition for the hero's adaptation to the environment and survival.

The plots of the fairy tales on the family theme created by children growing up in families at social risk are quite diverse. In the fairy tales created on this topic by children growing up in families that are not at social risk, there is an evident competition between siblings for parents' attention, the fear of losing one's parents, meanwhile, in the fairy tales of children growing up in families at social risk, the following plot lines are distinguished: the desire to live in their biological family, adoption and the conviction that you are unnecessary to anyone.

The child's need – happiness to live in his/her family and feel loved there – is illustrated by the fairy tale "The Girl's Happiness":

The Girl's Happiness

Once upon a time there lived a girl. Dad and mum didn't love her. The day came when she decided to escape, and she did. When the girl escaped, she went in search of happiness. She reached a huge lake, and there she met a sorcerer. The sorcerer asked her, "Where are you going, girl?" "I ran away from home," she replied and went on. But the sorcerer stopped her and said, "If you want, I can fulfil two of your wishes." "Really?" the girl asked. "Really," he replied. "I want to be loved by everyone and come home." "Okay." She happily returned home (Roma, 11).

It has been observed that often in a fairy tale of children growing up in a family at social risk, conflict situations arise due to the unmet need of parents' love and attention – fairy tale characters in the family feel unnecessary, unloved, shouted at, beaten, therefore, the only way out is to run away from home. However, they soon start to miss homes, parents, and look for ways to be with their family members again, e.g.: *(...). The boy wanted to return to his mother. (…) he told that he wanted to return to his beloved family, to his village. He longed for his family, the village, his yard and garden so much (...)* (Arūnas, 10); *(...) The child told the king that he had run away from home, now he wants to return, but does not remember the way. (…)* (Šarūnas, 11); *(...). That child had no parents. And the king began to look for them. Five years later, those parents were found and invited to the kingdom to take the child. (...)* (Ramunė, 9).

If, in the fairy tales quoted, their heroes return to their biological family in one way or another and continue to live happily, in some children's fairy tales lack is immediately named – the main character has no family. In such cases, the authors of the fairy tales solve the problem by finding a new family, and in all cases, that of the king, e.g.: *(...). The boy told the king that he had no family. The king presented him with a book. The boy became happy and allowed him to be adopted. (...)* (Sigitas, 9); *(...). The king tells him, "Maybe you want a new home? I have no doubt that someone would want a child like you. Would you like to live with me? You would be a great son to the king." The child replied, "I would be very grateful to you."* (Ligita, 10); *(…).The*

king hired a guard to go in search of the girl's home, mother and father. And went out to look for her parents. They visited many houses, but no one was her parents. (...). She stayed with the king. They lived happily and did not quarrel (Brigita, 11).

However, not all children's heroes would agree to live with guardians. This is evidenced by an excerpt from the fairy tale of Ramūnas (11): *(...) When Jonukas grew up a little bit older, the king wanted to adopt him, but he refused. (...) When it was night and everyone was asleep, Jonukas packed his things and ran away from home. The king did not worry and did not tell to look for him*.

It is not clear how Jonukas' story would unfold, however, what is most worrying are the words of the author of the fairy tale that "the king did not worry and did not tell to look for him". There is a thought that it seems to the authors of fairy tales of a similar plot that other characters are indifferent to their characters, that you cannot feel stable in an alien environment and expect to be happy. The fear of trusting others, the belief that sometime you may become unnecessary not only in your own family, but also in a family that sheltered you can be judged from such turns of plots, e.g.: *(…) His mother left him* [the kitten – N. B.], *when he was small, at the rubbish bin. (...) One day rich people found him. (...). And they lived long and happily. (…) One day the owners got bored with him and they left him again next to the same rubbish bin (...) There can be no good in life* (Matas, 12); *(…) there lived a small puppy. Some fat uncle took him to raise. (...) Then the uncle said: "Get out, stupid dog, and if you don't get out, I'll shoot you!" Rikis ran as much as he could. (...) But he no longer had the strength and died* (Tadas, 12; the title of the fairy tale – "The Puppy Was and Will Be a Poor Thing").

Fairy tales with a bad ending seem to tell about the hero's perception of the hopelessness of the current situation, the inability to find within himself/herself internal resources to change something, the loss of faith. The painful experiences of the heroes due to unmet emotional needs – security, attention, belonging, attachment – are especially felt in fairy tales, in which the author himself/herself speaks on behalf of the main character, e.g.:

The Angry Tree

Once I walked through the woods. And I saw a tree. He was beautiful. I hugged that tree. And he said angrily, "Get away from me, for I will be angry with you!" I ran home crying (Paulius, 12).

One can only guess who or what an angry tree in Paulius' fairy tale is – family, peers, school, etc., but in Saulė's (12) fairy tale "The Miracle", the reason for the lack is very clear. In this fairy tale, the author apparently expresses one of the most painful personal problems – bullying at school and the need to be recognized by classmates. As can be seen from the development of the plot of the fairy tale, the heroine thinks that this cannot be achieved by her forces, maybe even impossible at all, however, hope has not been dashed yet – an extraordinary mediator could change the situation. Getting such help would be the greatest miracle for the heroine.

The Miracle

Once I met a fairy. I was sad. And she asks, "Why are you so sad?" And I say, "I'm very offended at school." She says, "Could I help you in some way?" The girl replied, "No one can help me." "It's possible. I will work a miracle for them to regard you as their friend." "Well, if you succeed," I said sadly. – "Well, try." And she tried. And succeeded!! I went to school and the kids say, "Oh, hello, how are you doing!?" I was very happy and said, "Finally!!" I went to that fairy and said, "You succeeded! Thank you very much!""Well, you are welcome, be happy".

Analysing the fairy tales of children growing up in families that are not at social risk, there is a tendency observed that in their texts heroes tend to solve problems without the help of a donor, do without a magical agent (even when they have it): follow their own head, look for a way out of a difficult situation themselves, rely on their knowledge and abilities. It can be presumed that, according to A. Juodaitytė (2002), it is related to the child's desire to reveal himself/herself, to the social becoming of the personality, when freedom and independence become significant for the child. The heroes of fairy tales, who are independent and capable of making decisions prove to the adult that "a child in a particular situation is (...) a creator, able to change this situation through the gained (...) experience" (ibid, p. 82). Meanwhile, the hero of the fairy tales of children growing up in families at social risk is not prone to solving problems – it is good if a donor has appeared, but if there is no donor, the problem remains unsolved.

Unresolved problems are especially pronounced in fairy tales on the theme of friendship. Although a motif of the importance of peers is felt in the fairy tales, however, it cannot be said that friendship is understood by the authors of the fairy tales as a relationship based on mutual trust, e.g.:

The Friends Princes Fallen Out

Once, four princes friends were playing. They all were playing with guns. One prince hid in the fields and the others near the house. Everyone was looking for him. But they didn't find him anywhere. Two minutes later, he returned very angry. Then the two friends got into a big quarrel and started fighting. They were separated by other princes. They met a few days later but did not reconcile. Some want to play, but others don't allow them because they were very, very angry. And so they lived unhappily... (Gytis, 12).

The Two Friends

A long time ago, a newcomer moved in one beautiful summer day. The name of the newcomer was Arūnas. After a while, Arūnas found a friend – Linas. He was a prince and lived in the neighbouring palace. Arūnas gave Linas an apple as a little gift. But Linas did not like Arūnas and insulted Arūnas. However, Arūnas did not give up and took revenge on Linas. He poured garbage into Linas' yard (Rytis, 12).

As can be seen, the word "friends" appears in the titles of both quoted fairy tales, however, only very conditionally it would be possible to attribute these texts to the topic of friendship – although it is normal to conflict, it is important to be able to tolerate negative affect, seek mutual understanding, constructively solve the problem. This has been observed in reading fairy tales created by

children growing up in families that are not at social risk: for their authors, friendship is understood namely as a relationship based on mutual trust, when there is a conflict between friends, one not only tries to defend one's idea, but also compromises, the emotions that arise do not grow into uncontrollable outbursts of anger and aggression.

It could not be said that the heroes of fairy tales of children growing up in families at social risk would not want a change in their lives. The analysis of the texts revealed the motifs showing that the heroes of fairy tales try to set further goals, show initiative, but when faced with new situations, they seem confused, no longer know how to proceed, and retreat – it is more comfortable for them to live as usual, although not always they feel good because of that. This is illustrated by Edita's (12) fairy tale about the tulip:

There was such a very beautiful flower garden in the very old days. A rose and many tulips were growing there. (...) heard someone crying. Realized that one tulip was crying there. And asked, "Can I help?" And the tulip replied, "What can you help me with? I want to be a rose." (...). And the tulip turned into a rose. But it was still very bad for her. (...) Turned her into a tulip again. And so the tulip continued to envy the beauty of the rose.

It can be said that the fairy tales of children growing up in families at social risk illustrate theoretical statements about the peculiarities of social and personality development characteristic of this age period, unsatisfied or insufficiently satisfied physiological, social, emotional needs of the child. However, the most important thing is that the fairy tales of children growing up in families at social risk allow to look at the phenomena of these children's world from the child's perspective and, paraphrasing the words of D. Malinauskienė and A. Juodaitytė (2019), to understand more clearly what it means to be a child in a family at social risk.

Conclusions

The fairy tales of children in middle childhood growing up in families at social risk are dominated by the themes of family relationships and relationships between children, the development of which provides information about the unsatisfied or insufficiently satisfied physiological, security and social needs of fairy tale heroes, and at the same time allows to hear the child's voice from the perspective of the authors of the fairy tales, i.e., to understand more clearly what it means to be a child in a family at social risk.

Physiological needs are among the most obvious unmet needs of the heroes of the fairy tales of children growing up in families at social risk. Although fairy tale heroes would like to live better and are very happy when living conditions improve, they do nothing for their own well-being – their well-being is taken

care of by an accidentally encountered magical agent or helper or better living conditions, money appears as if by itself. The impression is that, according to the understanding of the authors of the fairy tales, having something to eat, where to live, what to wear, as if should be given, donated by someone, received effortlessly – just unexpectedly.

In fairy tales on the theme of the family, unmet security and social needs are evident: there is a lack of parents' love and attention, care, emotional connection – fairy tale characters in the family feel unnecessary and unloved, therefore, the only way out seen by the heroes is to run away from home. However, they soon start to miss homes, parents, and look for ways to be with their family members again.

In cases when the main character has no family, the authors of the fairy tales find him/her a new family (and in all cases, that of the king), where the hero of the fairy tale feels happy. However, not all the heroes of the fairy tales would agree to live with guardians – some refuse to live in a new family, others run away not to be adopted. In the fairy tales of such a plot, a fear of trusting others can be seen.

In fairy tales on the theme of friendship, unmet needs for mutual understanding, friendship and recognition emerge as unsolvable problems. Although a motif of the importance of peers is felt in the fairy tales, however, the heroes of the fairy tales fail to build friendly relationships and maintain friendship – in case of conflict, the heroes fail to tolerate negative affect, do not try to solve the problem constructively, do not compromise, emotions turn into outbursts of anger and aggression.

The hero of the fairy tales of children growing up in families at social risk is not prone to solving problems – it is good if a donor has appeared, but if there is no donor, the problem remains unsolved. Perhaps because of this, the fairy tales of children growing up in families at social risk often end badly. In such plots, there is a clear perception of the hero about the hopelessness of the current situation, the inability to find within himself/herself internal resources to change something, the loss of faith. The painful experiences of the heroes due to unmet security and social needs are especially felt in fairy tales, in which the author himself/herself speaks on behalf of the main character.

In the fairy tales of children growing up in families at social risk, one can see the motifs showing that the heroes of fairy tales try to set further goals, show initiative, however, when faced with new situations, they seem confused, no longer know how to proceed, and retreat – it is more comfortable for them to live as usual, although not always they feel good because of that. This informs about the reconciliation of the heroes with the current situation and insufficient initiatives to change that situation.

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СОЦИАЛЬНО-ПЕДАГОГИЧЕСКАЯ РАБОТА С ДЕТЬМИ ГРУППЫ РИСКА СРЕДСТВАМИ АРТ-ТЕРАПИИ (ТАНЦА)

Social and Pedagogical Work with Children at Risk by Means of Art Therapy (Dance)

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Abstract. *This article is devoted to the problems of social and pedagogical support for children of the "risk group". The purpose of the article is to study the potential of using dance as a direction of art therapy in social and pedagogical work with children of the "risk group". Research tasks were solved using the provisions of personality-oriented, anthropological, facilitation and integrated approaches. The program of art therapy developed by us through dance has shown its effectiveness: adolescents have increased motivation for creativity; improved data on the socio-psychological climate, and also increased the number of adolescents with a high level of confident behavior.*
Keywords: *children of the "risk group", dance as a trend of art therapy, socialization.*

Введение
Introduction

Одной из актуальных проблем в современном обществе является проблема детей группы риска, которые требуют дополнительных мер социально-педагогической поддержки и помощи. Дети попадают в эту категорию в силу различных причин. Однако независимо от конкретных

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обстоятельств, все дети группы риска характеризуются двумя обстоятельствами: наличием большого числа проблем, осложняющих личностное развитие, социализацию и самореализацию таких детей, и неспособностью детей группы риска самостоятельно справиться с возникшими трудностями.

Поэтому **цель данной статьи** – изучение потенциала использования танца как направления арт-терапии в социально-педагогической работе с детьми группы риска.

В ходе исследования реализовывались следующие задачи:

- анализ литературы по проблеме социально-педагогической работы с детьми группы риска;
- уточнение и дополнение содержательного наполнения понятия «танец как направление арт-терапии»;
- разработка и апробация программы арт-терапевтических занятий с детьми группы риска посредством танца.

Основными методами, применяемыми в ходе исследования, являются: теоретический анализ, сравнительный анализ, тестирование (Suvorova, 1976; Lutoshkin, 1978; Zajceva, 2007)

Теоретико-методологическая база исследования
Theoretical and Methodological Basis of the Study

Теоретико-методологическую базу исследования составляет синтез положений следующих подходов:

- интегративного подхода представители которого рассматривают образовательный процесс с позиции субъектности, культуросообразности, креативности, диалогизации и вариабельности (Makarenko, 2005; Mardahaev, 2005);
- личностно-ориентированного подхода, который подразумевает, что у каждого обучающегося есть свои строго индивидуальные мысли, взгляды, мечты и интересы, обуславливающие необходимость поиска индивидуального подхода к каждому ребенку, создание условий для его развития, реализации его мечтаний и достижения поставленных целей (Amonashvili, 1996);
- антропологического подхода, представителями которого утверждается целостность человека, неделимость его духовной и телесной природы, необходимость сочетания умственного и нравственного воспитания с физическим воспитанием и обеспечением здоровья, для реализации чего танцевальная

терапия предоставляет широкие возможности (Bim-Bad, 2011; Ushinskij, 1996);

- фасилитарного подхода, ориентированного на создание благоприятных условий для развития ребенка, заключающихся в атмосфере доверия между воспитанниками и педагогом, поддержке и сотрудничестве (Rogers, 2014).

Понятие «дети группы риска» используется для обозначения детей, находящихся под воздействием различных негативных факторов медицинского, социально-экономического, психолого-педагогического характера: «к данной категории детей относят тех, кто испытывает трудности в обучении, психическом развитии, социальной адаптации, взаимоотношениях со взрослыми и сверстниками, социализации в целом» (Mit'kina, 2017). Ряд исследователей определяющей характеристикой детей группы риска называют дезадаптацию (Antonova, 2011; Voronin, 2006). Отмечается неспособность детей группы риска самостоятельно решить возникшие трудности, что объясняется, во-первых, тем, что дети не всегда осознают ситуацию, в которую они попали, как проблему; во вторых, неспособностью детей адекватно оценить ситуацию, определить причины ее возникновения; в третьих, отсутствием у детей необходимых знаний, навыков, недостаточной сформированностью личностных качеств, необходимых для решения проблемы (Suholenceva, 2014).

С психологической точки зрения, дети группы риска часто характеризуются такими переживаниями, как одиночество, ненужность, беспомощность (Surikova, 2013). Важнейшей особенностью детей группы риска, отмечаемой исследователями, является ощущение собственной несостоятельности, которая переживается ими «как неполноценность, ущербность, непохожесть, отрицательная исключительность и является источником психического дискомфорта, эмоционально отрицательных переживаний, конфликтов, агрессивности» (Suholenceva, 2014).

Танец - относительно малораспростаненное направление арт-терапии, которое может использоваться для решения широкого круга социально-педагогических проблем. По мнению ряда авторов (Vernon, 2010; Dalcroze, 2001), танец предоставляет широкие возможности для развития индивидуальности ребенка, поскольку в этом виде деятельности эмоциональная и моторная выразительность представляют собой единство: посредством движений раскрывается внутреннее состояние человека, обеспечивается индивидуальное самовыражение, в то же время эмоциональное состояние влияет на качество движения.

В отечественной литературе танец как направление арт-терапии малоизучен. Приоритетное внимание уделяется танцевально-двигательной

терапии (ТДТ), имеющей свою специфику и свою сферу применения, в первую очередь в области психотерапии. Реализация ТДТ требует специальной подготовки, глубокого погружения и длительного времени освоения, поскольку может включать в себя не только танец, но и трансовые техники (Churashov, 2018), что затрудняет ее использование социально-педагогической работе с детьми группы риска.

Изучение конкретного танцевального направления подразумевает не только освоение определенного набора движений, но и интенсивную коммуникацию с партнерами по репетициям и выступлениям, взаимодействие с музыкой, использование элементов драматического творчества, знакомство с определенным пластом культуры. Все это позволяет нам рассматривать танец как направление арт-терапии в качестве актуального средства гармоничного развития личности.

Организация и результаты экспериментального исследования
Organization and Results of an Experimental Study

Для подтверждения теоретических положений исследования было проведено опытно-экспериментальное исследование на базе Муниципального бюджетного учреждения «Молодежный центр г. Псков». Выборку составили подростки от 12 до16 лет в количестве 45 человек.
Диагностика личностных характеристик детей группы риска осуществлялась с помощью эмпирических методов исследования: «Определение эмоциональности» (Suvorova, 1976) методика оценки социально-психологического климата (Lutoshkin, 1978), тест «Уверенность в себе» С.Райдаса (Zajceva, 2007).

Методика «Определение эмоциональности» показала, что большинству подростков свойственен низкий уровень контроля эмоций – 47%. Таким людям свойственно часто испытывать неуверенность, обиду. У 33% человек выявлен средний уровень контроля эмоций, они чаще действуют в зависимости от ситуации. У 20% – высокий уровень контроля эмоций, что говорит о хорошей способности управлять своими эмоциями, конструктивно выходить из стрессовых ситуаций.

Применение методики оценки социально-психологического климата Л.Н.Лутошкина показало, что большинство подростков характеризуют социально-психологический климат как средне благоприятный – 33%. 27% охарактеризовали социально-психологический климат как неблагоприятный. Следовательно, большинство обучающихся не испытывают чувство комфорта в обществе. Благоприятный и неустойчивый климат выделили по 20% респондентов.

По данным теста «Уверенность в себе» С.Райдаса (Zajceva, 2007), подавляющее большинство - 47%, демонстрируют низкий уровень уверенности в себе. 33% подростков проявляют чувство уверенности на среднем уровне. Всего 20% испытывают высокий уровень уверенности в себе.

На основе результатов диагностики была разработана и реализована программа арт-терапевтических занятий с детьми группы риска посредством танца. По итогам теоретического анализа и проведенного диагностического исследования целью программы было определено развитие у детей уверенности в себе как средства преодоления возникающих жизненных трудностей. Задачами программы стали: повышение уровня контроля эмоций, улучшение социально-психологического климата, в котором существуют дети, и создание условий для развития уверенности в себе. В ходе реализации программы акцент делался не на хореографическую подготовку участников, разучивание ими конкретных танцевальных номеров, а на создание ситуации успеха для всех участников программы, формировании атмосферы поддержки и понимания, творческого поиска и самореализации. Элементы хореографии, музыкальное сопровождение, использовавшиеся в ходе реализации программы, выбирались с учетом возраста участников программы, их физической и хореографической подготовки, а также по возможности с учетом музыкальных и танцевальных вкусов участников. Занятия проводились педагогом, имеющим 15-летний опыт преподавания различных танцевальных направлений. Программа состояла из 3 блоков.

Первый блок представлял собой 2 занятия, направленных на раскрепощение детей, установление контакта, освоение детьми танцевальной базы. Содержание занятий первого блока:

- работа с ритмом (хлопки в ритм, шаги в ритм – работа с базовым ритмом, переход к паузам и ускорениям);
- постановка корпуса (выпрямление спины, раскрытие грудной клетки, «освобождение» рук) в статике и движение с сохранением осанки;
- упражнения на координацию (разнонаправленные движения);
- разучивание исторического танца Tourdion (занятие 1);
- разучивание фольклорного танца Gato (занятие 2).
- Второй блок из 3 занятий был направлен на развитие навыков выражения эмоций и коммуникации посредством танца и включал в себя:
- закрепление и развитие навыков, полученных в ходе занятий блока 1 (усложнение ритмической структуры, используемой в ходе упражнений, повышение скорости выполняемых упражнений);

- упражнения на взаимодействие (ведение партнера за руку, ведение прикосновением, «зеркальное движение» без физического контакта, выполнявшиеся с разной скоростью и под различную музыку);
- изучение элементов социальных танцев, разучивание простейших хореографических композиций на примере известных фильмов (Scent of a Woman, True Lies, Easy Virtue).
- Третий блок из 3 занятий был направлен на самореализацию участников программы. Он включал в себя:
- повторение и закрепление приобретенных навыков (исполнение ранее изученных танцев под другой аккомпанемент – реализация настроения разной музыки);
- разучивание танцевальных композиций на основе хореографии музыкальных клипов (по выбору детей), адаптация профессиональной хореографии под возможности участников программы (клипы на песни The Ketchup Song, Makarena и др.). Выбор клипов осуществлялся на основе мозгового штурма с последующим тайным голосованием.

К основным сложностям, возникшим в ходе реализации программы, следует отнести в первую очередь низкий первоначальный уровень мотивации детей; неуверенность в себе и страх неудачи, препятствовавшие активному включению детей в работу; различный уровень владения собственным телом, сформированности чувства ритма и других навыков; ограниченность по времени и необходимость получения быстрых результатов. Данные трудности были решены за счет последовательности и преемственности содержания программы, выражавшегося в движении от простого к сложному, опоры на ранее освоенные навыки.

Выбор используемых упражнений и изучаемых танцев был продиктован возможностью их освоения слабо подготовленным человеком и минимальным временем, необходимым для обучения. Предлагаемые в программе танцы могут быть освоены человеком, не имеющим большого танцевального опыта и специальной хореографической подготовки, что имеет принципиально значение при организации социально-педагогической работы.

По итогам реализации программы было проведено повторное диагностирование.

Данные использованной методики «Определения эмоциональности» показывают, что после реализации программы арт-терапевтических занятий количество подростков с низким уровнем контроля эмоций уменьшилось с 47% до 27%. Количество подростков со средним уровнем

контроля эмоций выросло на 7%, а количество респондентов с высоким уровнем контроля эмоций выросло на 13% (Рис. 1).

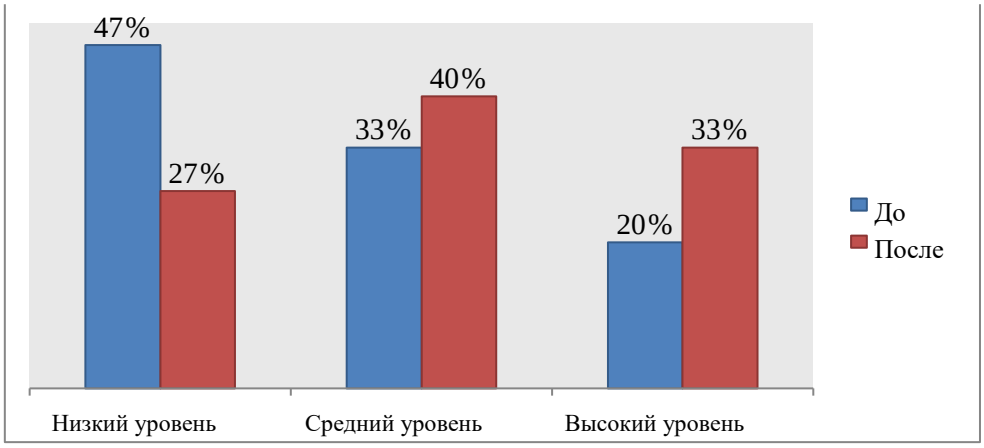

Рисунок *1* ***Сравнение результатов определения эмоциональности до и после реализации программы***
Figure 1 ***Comparison of the Results of Determining Emotionality before and after the Program Implementation***

Повторное применение методики оценки социально-психологического климата показало увеличение доли респондентов, характеризующих социально-психологический климат как благоприятный (с 20% до 33%). Также на 13% выросла доля респондентов, характеризующих социально-психологический климат как неустойчивый. При этом на 13% уменьшилось число респондентов, характеризовавших социально-психологический климат как средне-благоприятный и неблагоприятный (Рис. 2).

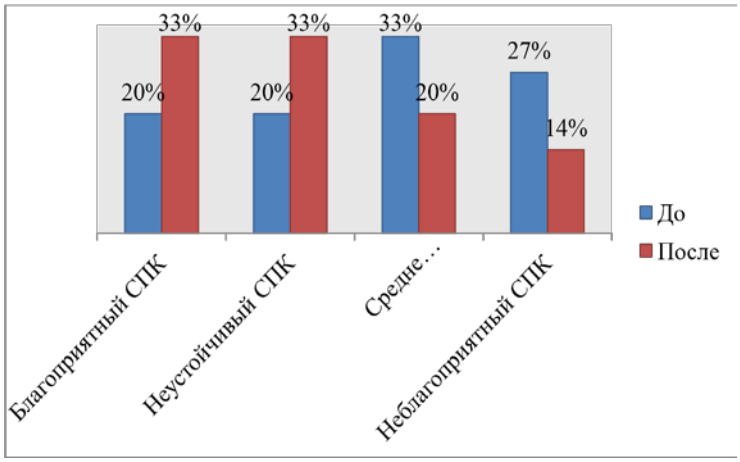

Рисунок *2* ***Сравнение результатов оценки социально-психологического климата до и после реализации программы***
Figure 2 ***Comparison of the Results of the Socio-psychological Climate Assessment before and after the Program Implementation***

По результатам повторного проведения теста «Уверенность в себе», количество подростков с низким уровнем уверенного поведения составило 27%, со средним уровнем – 40%, с высоким уровнем уверенного поведения – 33%. Сравнение результатов теста, проведенного до и после реализации программы арт-терапевтических занятий, представлено на Рис. 3.

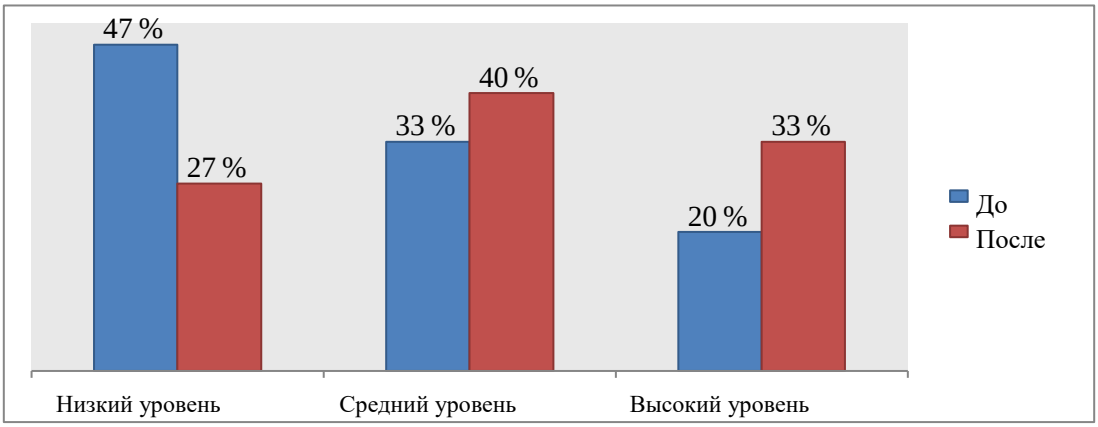

Рисунок *3* ***Сравнение результатов теста «Уверенность в себе» до и после реализации программы***
Figure 3 ***Comparison of the Results of the "Self-Confidence" Test before and after the Program Implementation***

Сравнительный анализ данных диагностики, осуществленной до и после реализации программы арт-терапевтических занятий с детьми группы риска посредством танца, показывает существенное изменение в поведении и самоощущении участников программы, что позволяет сделать вывод об эффективности использования танца как направления арт-терапии в социально-педагогической работе с детьми группы риска.

Обобщение
Conclusions

Работа с детьми «группы риска» - одно из важнейших направлений в современной социально-педагогической деятельности, требующее привлечения разнообразных форм и методов организации социально-педагогического взаимодействия. Танец как направление арт-терапии обладает большим потенциалом, который в настоящее время остается недооценен и в значительной мере не реализован.

Современная социально-педагогическая теория требует учета потребностей и интересов воспитанников, включение их в разнообразные виды деятельности, расширение их социального взаимодействия,

обогащение и идеализацию опыта детей и подростков. Традиционные формы и методы организации социально-педагогического взаимодействия не всегда соответствуют этим требованиям, что делает актуальной и значимой проблему поиска новых путей и средств решения социально-педагогических задач. С этой точки зрения танец, используемый не как элемент художественной самодеятельности, а как направление в арт-терапии, предоставляет широкие возможности для творческой самореализации, приобретения принципиально нового опыта взаимодействия, эмоциональных переживаний, создания ситуации успеха, личностного развития. Опыт разработки и реализации программы арт-терапевтических занятий с детьми группы риска посредством танца позволяет сделать вывод о высоком потенциале танца как средства решения целого ряда психолого-педагогических проблем, свойственных данной группе детей.

Научная новизна и теоретическая значимость исследования:

Разработана и апробирована программа арт-терапевтических занятий с детьми группы риска посредством которой у подростков, участвовавших в эксперименте, повысилась мотивация к творчеству; улучшились данные социально-психологического климата и уровня уверенного поведения как средства преодоления возникающих жизненных трудностей. Положительная динамика была достигнута благодаря тому, что в ходе реализации программы акцент делался не на хореографическую подготовку участников, разучивание ими конкретных танцевальных номеров, а на создание ситуации успеха для всех участников программы, формировании атмосферы поддержки и понимания, творческого поиска и самореализации.

В ходе исследования уточняются и дополняются представления о танце как направлении арт-терапии – инструмента решения социально-педагогических проблем в работе с детьми группы риска с позиций синтеза интегративного, личностно-ориентированного, антропологического и индивидуального подходов.

Summary

The program developed by us was aimed at psychological support and development of personal qualities of teenagers through dance. After performing the formative work at the control stage, we performed a number of diagnostic techniques. The comparative analysis showed the effectiveness of the program developed by us: adolescents have increased motivation for creativity; increased coverage of emotional control; improved data socio-psychological climate, as well as increased number of teenagers with high levels of confident behavior.

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BŪTISKI FAKTORI EFEKTĪVĀKAI MATEMĀTIKAS APGUVEI

Important Factors for More Effective Learning of Mathematics

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Abstract. *Mathematics is an important and complex subject, and research in the field of neuroscience shows that 50% of people have a fear of mathematics. However, it is a subject that students will need for the rest of their lives. Educators recognize that every student needs an individual approach, but the teaching methods are still the same for the whole class. The poor results in mathematics also suggest that students' perceptions and interests have changed, and that old teaching methods are no longer as effective as before and that new solutions need to be invented. The aim of the research is to identify important factors that are necessary for more effective learning of mathematics in general education schools. Qualitative research methods were used for the research strategy - in-depth interviews, focus group discussions, surveys of pupils and students, information analysis in the media, pedagogical and business experience, as well as world success stories. As a result of the research, the following have been identified: 1) problems that were identified using the distance learning during the Covid19 pandemic; 2) students' wishes that arouse interest in mathematics; 3) the interests of students, which indicate the need for interdisciplinary approaches; 4) advantages of artificial intelligence (AI) in education. The study points to the necessity for collaboration between educators, industry professionals, entrepreneurs and researchers, and for AI solutions to create deeper, faster and more personalized learning of mathematics in general education schools in the future, increasing the growth of every student.*
Keywords: *Artificial Intelligence, Distance Learning, Interdisciplinary Approaches, Mathematics.*

Ievads
Introduction

Mēs dzīvojam īpašā vēstures posmā, kad Covid19 pandēmija pieprasa straujas izmaiņas daudzos mūsu dzīves aspektos, un īpaši aktuāli tas attiecas uz izglītības nozari. 2020.gada martā skolas tika slēgtas gandrīz vienas nakts laikā, un skolēni mācības sāka jaunā "skolā" – paši savās mājās. Šo laiku uzņēmuma "Global Silicon Valley" izpilddirektors Michael Moe (Moe & Rajendran, 2020) nosauca par "Digitālā laikmeta rītausmu". Tas, ko mēs uzskatījām par nākotni, ir paātrināts līdz mūsdienām, un ir skaidri redzams, ka tehnoloģiju attīstība ir bijusi

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tik strauja, ka izglītības sistēma vairs netiek līdzi mūsdienu industrijas prasībām (Binde, 2020; Moe & Rajendran, 2020).

Katra jaunākā paaudze tehnoloģiju jomā ir arvien zinošāka un progresīvāka par iepriekšējām, ar atšķirīgu skatu uz dzīvi. Tomēr grūti gūt jaunu pieredzi bez pamata zināšanām. Daudzu profesiju pamatā ir tieši matemātikas zināšanas. Matemātika ir viens no visnozīmīgākajiem mācību priekšmetiem. Ja skolēni labi zina matemātiku, tad nākotnē viņiem ir sasniedzamākas daudzas nozares, piemēram, finanses, ekonomika, inženierzinātnes, informācijas tehnoloģijas. Savukārt, ja mēs paskatāmies uz Latvijas skolu matemātikas rezultātiem, tad jaunākajos starptautiskajos skolēnu novērtēšanas programmas PISA (Programme for International Student Assessment) 2018 pētījumos par piecpadsmitgadnieku matemātikas zināšanām Latvija ierindojas vien 29. vietā (IZM & LU, 2019), tāpat skolēnu vidējie rezultāti matemātikas eksāmenā pēdējo desmit gadu laikā ir ļoti zemi, kas īpaši satrauc inženierzinātņu un IT nozares uzņēmumus (Arāja, 2020).

2011.gada Eurydice pētījumā ir norādīts, ka matemātiskā kompetence ir atzīta par vienu no svarīgākajām kompetencēm, kas nepieciešama, lai cilvēki spētu gūt personīgo piepildījumu, aktīvi iesaistītos sabiedriskajā dzīvē un veiksmīgi veidotu savu profesionālo karjeru zināšanu sabiedrībā. Termins "matemātiskā kompetence" ietver ne tikai rēķinpratības pamatus, bet arī zināšanas, prasmes un attieksmi. Uzlabot attieksmi un gūt labākus mācību rezultātus matemātikā var, izmantojot mūsdienīgākas mācību metodes, pielāgojoties skolēnu vajadzībām, pielietojot tehnoloģijas, radot efektīvas mācīšanas stratēģijas, pētot mācību metožu un vērtēšanas instrumentus, iesaistot vecākus un uzņēmējus, pielāgojot skolas vidi. Kad skolēni ir motivēti apgūt matemātiku, viņi matemātikas uzdevumiem velta vairāk laika un risina tos neatlaidīgāk, kā arī labprāt apgūst matemātikas papildu kursus un izvēlas ar matemātiku saistītu nākotnes profesiju. Mācīšanas metodēm un uzdevumiem ir jābūt aizraujošiem, daudzveidīgiem un saistītiem ar skolēnu ikdienas dzīvi (Eurydice, 2011).

Matemātikas mācību rezultāti Latvijas skolās liek secināt, ka ir mainījusies skolēnu uztvere un interese, kā arī senās mācību metodes vairs nav tik iedarbīgas kā agrāk un ir jāmeklē jauni risinājumi. 2018.gada pētījumā "It`s Learning. Just not as we know it" uzņēmums *Accenture* norāda, ka ir pienācis laiks izmantot jaunākās mācību metodes un pieejas, kā arī palīdzēt politikas veidotājiem un izglītības iestāžu vadītājiem īstenot novatoriskas stratēģijas, kas mainīs veidu, kā mēs mācām un mācāmies (Accenture, 2018).

Pētījuma mērķis ir identificēt būtiskus faktorus, kas nepieciešami efektīvākai matemātikas apguvei vispārizglītojošās skolās.

Teorētiskais apskats
Theoretical Review

Mūsu smadzenes ir pielāgojamas, un, kad skolēni mācās vai maina pieeju mācībām, var tikt radīti neticami uz attīstību vērsti rezultāti. Pēdējos gados ir attīstījusies jauna zinātne neiroplastiskums, kas īpaši pēta smadzeņu darbības uzlabojumus un uzsver, ka smadzeņu darbību var un vajag uzlabot jebkurā vecumā (Boaler, 2019). Balstoties uz pētījumiem (Accenture, 2018; Boaler, 2019; Duval, 2019), var izdalīt septiņus pamatprincipus, kas būtiski uzlabo un paātrina matemātikas apguvi: (1) Lai notiktu izaugsme, mācību procesam ir jābūt regulāram un nepārtrauktam; (2) Kļūdīšanās un kļūdu labošana uzlabo matemātikas prasmju noturību ilgtermiņā; (3) Izaugsmes veicināšanai īpaši svarīga ir pozitīva komunikācija no vecāku un skolotāju puses, kas raisa ticību skolēna spēkiem; (4) Pielietojot starpdisciplināru pieeju, tiek aktivizēti neironu ceļi un mācīšanās kopumā; (5) Svarīgi ir atvērtie un radošie matemātikas problēmuzdevumi, kuri veicina dziļāku mācīšanos un notur uzmanību; (6) Jēgpilna sadarbība un ideju apmaiņa paātrina neironu plūsmu un uzlabo mācīšanos. Tāpēc matemātikas stundās ir tik svarīgi grupu un projektu darbi; (7) Ir spēcīga korelācija starp atmiņu un laiku, un atkārtojot mācību vielu, skolēni daudz ātrāk spēj apgūt matemātiku.

Neirozinātņu pētnieki (Boaler, 2019; Duval, 2019) norāda, ka zināšanas, kas mums pašlaik ir par smadzeņu darbību, ir tik nozīmīgas, ka tām būtu jāmaina veids, kā mēs mācām skolēnus un vadām skolas. Pētījumi (Wilson & Conyers, 2013; Bidshahri, 2017) uzsver, ka, sadarbībā ar mākslīgā intelekta (MI) iespējām, nākotnē varēs izmantot individuālos smadzeņu aktivitātes datus, lai izprastu katra skolēna stiprās un vājās puses un matemātikas mācības kļūtu daudz ātrākas, dziļākas un personalizētākas.

Mūsu smadzenēm ir milzīgas spējas augt un mainīties jebkurā dzīves posmā. To uzskatāmi pierāda Londonas taksometru vadītāju pētījums (Maguire et al., 2000), kurš parādīja, ka apjomīgu un sarežģīti telpisku apmācību ietekmē cilvēkiem ievērojami palielinājās smadzeņu hipokampa apjoms, kurš ir svarīgs visiem telpiskās un matemātiskās uztveres veidiem. Tāpat neirozinātņu pētnieki (Coyle, 2009; Duval, 2019) apstiprina, ka vislabākais laiks smadzeņu izaugsmei ir tad, kad cilvēki strādā pie izaicinājumiem, pieļauj kļūdas, labo tās un virzās tālāk. Bet skolotāji parasti dara visu iespējamo, lai atvieglotu skolēnu darbu, sadalot problēmas mazākos uzdevumos, vai pasakot atbildes priekšā, vai atvieglojot mācību saturu. Kā vēl vienu svarīgu neirozinātņu pierādījumu pētnieki (Menon, 2015; Boaler, 2016) norāda, ka, strādājot pie matemātikas problēmām, smadzenēs iedarbojas pieci impulsi, no kuriem divi saistīti ar vizuālu uztveri. Tas liek secināt, ka smadzeņu savienojumi būs daudz produktīvāki, ja matemātikas

uzdevumi tiks veidoti kā uzskatāmas skaitlisku izteiksmju un attēlu starpdisciplināras kombinācijas.

Izglītības jomā vārds "starpdisciplinārs" sastopams jau gadiem ilgi. Vairākos pētījumos (AldertKampAdvies, 2017; Kim, 2020) ir norādīts, ka starpdisciplinārā mācīšanās ir novatoriska, pievilcīga un aizraujoša, kā arī virza 21. gadsimta izglītības jomas reformas. Starpdisciplinārā mācīšanās ir mācīšanās un domāšanas veids, kas balstās uz vairākām disciplīnām, lai iegūtu jaunas zināšanas un prasmes.

Atbilstoši pētījumiem (Vlassenko & Bozhok, 2014; Sadeghi, 2019) tālmācība ir tāda veida izglītība, kurā skolēni ne vienmēr var fiziski atrasties skolā. Lielākā daļa tālmācības mūsdienās notiek, izmantojot internetu, un lielākajai daļai skolēnu tā ir pieejama no mājām. Tālmācība nav nākotnes iespēja, kurai būtu īpaši jāgatavojas, bet tā ir šodienas realitāte, kura rada arvien jaunas iespējas un izaicinājumus izglītības iestādēm. Arī tālmācībā skolotāju nodoma centrā ir skolēnu vajadzības un viņu specifiskās iezīmes (Kiryakova, 2009). Tālmācības ir efektīvas, ja tās rūpīgi plāno, ņemot vērā katra skolēna vajadzības un spējas, un tiek izvēlētas atbilstošas tehnoloģijas mācību kursu īstenošanai. Pēdējo gadu pētījumos (Sadeghi, 2019; Terada, 2020; ViewSonic, 2020) ir piedāvāti daudzi ieteikumi tālmācības efektivitātes palielināšanai, piemēram, (1) mācību kvalitāte kā svarīgākais faktors, jo tas ietekmē skolēnu apmierinātību, (2) saziņa ar skolēniem personīgā kontakta uzturēšanai, kas attīsta savstarpējo uzticību, (3) piemērotu mācību un vērtēšanas resursu izmantošana, (4) atbalsta sniegšana skolēniem laika un termiņu plānošanā, (5) uzturēt kārtību digitālajā mācību telpā, (6) sadalīt nodarbības mazākās un saprotamākās daļās, (7) žestu vietā izmantot efektīvas norādes ar bultiņām, zīmēm vai simboliem, lai radītu pozitīvas emocijas, (8) ik pa laikam veikt mazus, bet efektīvus pārbaudes darbus ar vienkāršu testu palīdzību, (9) rūpes par skolotāju emocionālo un psiholoģisko komfortu.

Pētījumā (Guo & Han, 2020) ir norādīts, ka MI ir starpnozaru disciplīna, kas sevī apvieno vairākas nozares, kā piemēram, neirozinātnes, psiholoģiju, matemātiku, informācijas zinātni un datorzinātnes. Pašlaik MI, ko reprezentē dziļā mācīšanās, kas balstīta uz lieliem datiem, strauji attīstās un tiek plaši izmantots daudzās jomās. Tiek uzskatīts (Southgate et al., 2019), ka MI algoritmi pastāv jau kopš 20. gadsimta 70. gadu beigām, taču to plašāka izmantošana ar pasaulē pieejamo skaitļošanas jaudu un modernajām MI mikroshēmām sākās vien pirms 5 - 7 gadiem. MI ir termins, kuru lieto, lai aprakstītu datorsistēmu un datorprogrammu kopumu, kas uzdevumu veikšanai izmanto cilvēkiem līdzīgas domāšanas iezīmes. MI sistēmas spēj analizēt attēlus un video, klausīties skaņas, saprast un sintezēt valodu, prognozēt valūtas kursu svārstības un veikt daudz citu uzdevumu, ko līdz šim spēja tikai cilvēks. Ja ražošanā rodas arvien vairāk jaunu MI risinājumu, tad skolu izglītībā MI joprojām ir agrīnā attīstības stadijā.

2019.gada uzņēmuma Accenture pētījumā norādīts, ka tehnoloģiju attīstība ir tik strauja, ka, lai izveidotu jaunus uz MI balstītus produktus, arī turpmāk ir nepieciešami padziļināti pētījumi tādās jomās kā skolotāju apmācība un izaugsmes vērtēšana (Accenture, 2019). Atbilstoši pētījumiem (John, 2018; Karsenti, 2019; Unesco, 2019; Kuprenko, 2020) MI var nest ļoti lielu pienesumu izglītībai, kur galvenās priekšrocības ir apkopotas pētījuma rezultātu sadaļā.

Pasaulē jau ir ļoti daudz veiksmīgu stāstu, kur uz MI balstīti produkti tiek veiksmīgi izmantoti matemātikas apguvē. Piemēram, pētnieki (Perera & Aboal, 2019) apraksta piemēru, kur Urugvajā ir izstrādāts tiešsaistes mācību risinājums ar nosaukumu "Matemātikas adaptīvā platforma" (PAM), kuras saturs ir pielāgots valsts matemātikas mācību programmai. PAM nodrošina personalizētu atgriezenisko saiti atbilstoši katra skolēna prasmju līmenim, pamatojoties uz skolēnu pieredzes analīzi. Tas sniedz skolēniem palīdzību, izmantojot vairāk nekā 25 tūkstošus diferencētu uzdevumu un 2800 atgriezenisko saišu, lai izskaidrotu katra uzdevuma risinājumu.

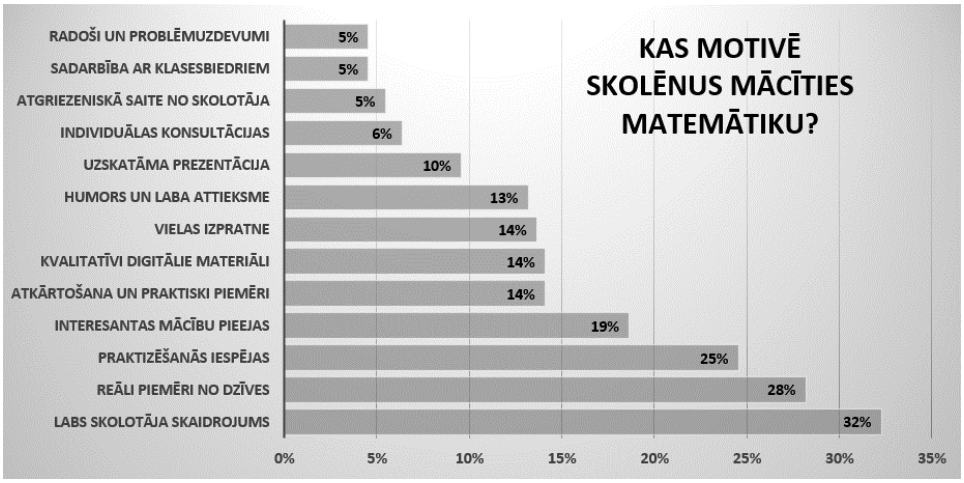
Metodoloģija
Methodology

Pētījums ir aktuālās informācijas un ilggadīgās pieredzes apkopojums ar starpdisciplināru pieeju, un metodoloģija ietver: (1) Aptauju 3 gadu periodā (2018., 2019. un 2020.) Vidzemes Augstskolas pirmā kursa 253 studentiem, kuri pārstāv visu Latviju; (2) Aptaujas rezultātu apkopošanu, analīzi, salīdzināšanu un motivāciju veicinošo faktoru, mācoties matemātiku, noteikšanu; (3) Skolēnu attieksmes pētīšanas metodes un studenta ikdienas interešu profila izveidi, kas parāda starpdisciplināru pieeju nepieciešamību; (4) Kvalitatīvās pētījumu metodes (novērojumi, fokusgrupu diskusijas, pārrunas, sociālo mediju profili), lai noskaidrotu skolēnu, skolotāju, studentu, vecāku un nozares profesionāļu viedokļus un pieredzi attālināto mācību laikā; (5) Sekundāros datus (esošos zinātniskos pētījumus un veiksmes stāstus no visas pasaules), lai noteiktu MI priekšrocības kvalitatīvai matemātikas apguvei atbilstoši identificētajām problēmām attālināto mācību laikā.

Pētījuma rezultāti
Study Results

Pētījuma ietvaros tika aptaujāti 253 pirmā kursa studenti, lai noskaidrotu, kas viņus motivē un iedvesmo mācīties matemātiku tā, lai tā radītu prieku un lielāku izpratni par mācību priekšmetu. Atbildes studenti varēja sniegt brīvā formā, atceroties savus skolas gadus un matemātikas mācīšanos dažādās klasēs pie

dažādiem skolotājiem. Kopsavilkumā tika iegūtas 220 konkrētas atbildes ar svarīgām pieejām, kuras varēja indeksēt 23 konkrētās vēlmēs, kas motivē skolēnus sekmīgāk iemācīties matemātiku.



1.attēls. ***Aptaujas rezultāti "Kas motivē skolēnus mācīties matemātiku?"***
Figure 1 ***Survey Results "What motivates students to learn mathematics?"***

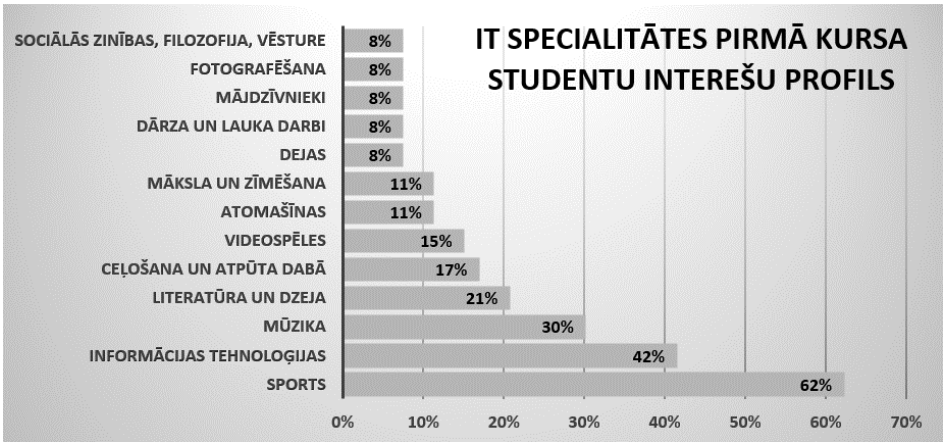
Kā redzams 1.attēlā, uz jautājumu "Kas iedvesmo skolēnus mācīties matemātiku labāk?" vislielāko popularitāti jeb 32% ir guvusi atbilde "Labs skolotāja skaidrojums". Savukārt 28% atbildes norāda uz vēlmi matemātikas stundās redzēt reālus piemērus no dzīves. 25% atbildēs ir norādīts, ka skolēniem ir svarīgi praktizēties, lai saprastu matemātiku arvien labāk. Daudzās skolēnu atbildēs ir norādīts, ka motivējoši faktori ir: interesantas mācību pieejas (19%), nepārtraukta atkārtošana un praktiski piemēri (14%), kvalitatīvi digitālie materiāli (14%), mācību vielas izpratne (14%), humors un laba attieksme (13%), uzskatāmas prezentācijas (10%), individuālas konsultācijas (6%), ātra atgriezeniskā saite no skolotāja puses (5%), sadarbība ar klases biedriem (5%), radoši un problēmu uzdevumi (5%). Kā būtiski iedvesmas raisoši faktori tika minēti arī: labs vērtējums, domāšanas attīstīšana, azarts un sacensība ar citiem, tehnoloģiju pielietojums, sarežģītāki uzdevumi, viena uzdevuma vairāki risināšanas paņēmieni.

Aptaujas rezultāti liek secināt, ka ir jāmeklē efektīvas mācību stratēģijas un tehnoloģiju atbalsta iespējas matemātikas apguvei, kas veicina skolēnu motivāciju un uzlabo attieksmi ilgtermiņā. Tas savukārt nākotnē sekmēs atbilstošas un kvalitatīvas atbalsta sistēmas izstrādi matemātikas skolotājiem, lai stimulētu novatorisku mācību pieeju rašanos, kas atbilst mūsdienu industrijas prasībām.

Studenti tika aptaujāti arī, lai noskaidrotu, kas ir viņu pamatintereses, kas aizņem lielu daļu no viņu dzīves un dara viņu ikdienu priecīgāku un radošāku. Kopsavilkumā tika iegūts ikdienas studenta profils (2.attēls), kurš precīzi parāda nepieciešamību pēc starpdisciplinārām pieejām, lai matemātiku varētu mācīties ar

interesi un prieku, kā radošu un daudzdimensionālu mācību priekšmetu. Kā redzams 2.attēlā, 62% studentu ir interese par sportu, 42% studentu interesējas par Informācijas tehnoloģijām, 30% studentu interesē mūzika, 21% studentu aizraujas ar literatūru un dzeju, 17% studentu interesē ceļošana un atpūta dabā, 15% studentu aizraujas ar videospēlēm, 11% studentu interesē automašīnas. Vēl studentiem ir intereses par mākslu un zīmēšanu (11%), dejām (8%), dārza un lauku darbiem (8%), suņiem un kaķiem (8%), fotografēšanu (8%), sociālām zinībām un vēsturi (8%), rokdarbiem (6%), loģiskām mīklām (4%), filmām (4%), kulināriju (2%), valodām (2%), teātri (2%), sevis pilnveidi (2%).

Aptauja norāda uz to, ka skolēni ir dažādi un ar dažādām interesēm. Un skolēnu lielā interese par sportu ir tikai atbalstāma, un bieži vien skolēni nevar sagaidīt matemātikas stundas beigas, jo domās jau atrodas sporta treniņos. Kustībā rodas emocionālā labsajūta un uzlabojas uztveres spējas. Īpaši pirmsskolas un sākumskolas pedagogi ir daudz domājuši, kā veidot starpdisciplināru pieeju starp sporta un matemātikas stundām. Bet visinovatīvāko pieeju ir radījusi Kanādas tehnoloģiju kompānija LÜ (https://play-lu.com/). Tā ir izstrādājusi interaktīvu laukums, kas izmanto gaismas, skaņas un video efektus, lai jebkuru sporta zāli pārveidotu par saistošu un visaptverošu mācību vidi. LÜ ir gudra telpa, kas reāllaikā izprot tajā esošo cilvēku uzvedību un mijiedarbību. Izmantojot informāciju, kas nāk no griestiem piestiprinātām 3D kamerām, skolēni var sportojot mācīties matemātiku no uzdevumiem, kas projicējas uz sienas.



2.attēls. ***IT specialitātes pirmā kursa studentu interešu profils***
Figure 2 ***IT Specialty Freshman Students Interest Profile***

Attālināto mācību laikā 2020.gadā Latvijas vispārizglītojošās skolās, balstoties uz informāciju intervijās un medijos (Akmene, 2020; Rātfelders, 2020; Rozenberga, 2020), uz diskusijām fokusgrupās un uz IZM aptauju (IZM, 2020), publikācijas autore identificēja 18 pamatproblēmas, kuras vistiešākā mērā attiecas

uz matemātikas apguvi un pieprasa mācību stratēģiju un pieeju maiņu, kā arī tehnoloģiju – īpaši MI atbalstu: (1) Datortehnikas un datu pārraides trūkums; (2) Digitālo prasmju trūkums; (3) Nesamērīgi lielā vecāku iesaiste mācību procesa nodrošināšanā; (4) Atšķirīgā ietekme uz pilsētu un lauku skolām, uz talantīgajiem un mazāk spējīgiem skolēniem; (5) Vienotas metodikas trūkums tehnoloģiju lietojumam matemātikas mācību procesā; (6) Vienotas platformas trūkums saziņai un dažādu uzdevumu risināšanai; (7) Cenšoties nodrošināt kvalitāti, palika neapgūta matemātikas mācību viela; (8) Neprasme plānot laiku, uztraukums un stress; (9) Motivācijas, uzmundrinājuma un atbalsta trūkums; (10) Skolēniem pacietības trūkums patstāvīgi izlasīt un izprast matemātikas uzdevumus; (11) Skolotāju aizdomas par skolēnu godīgumu uz patstāvīgu matemātikas uzdevumu risināšanu; (12) Skolotāju skaidrojuma trūkums īpaši sarežģītākiem matemātikas uzdevumiem; (13) Socializēšanās trūkums; (14) Pārāk ilgais laiks atgriezeniskās saites sniegšanai; (15) Pedagogu pārslodze, gatavojoties digitālajām tiešsaistes stundām, meklējot radošākus uzdevumus, veidojot vairākus uzdevumu variantus un labojot skolēnu darbus; (16) Trūkums pēc starpdisciplinārām pieejām un aktivitātēm dabā; (17) Mazkustīgs dzīvesveids un sporta aktivitāšu trūkums; (18) Sadarbības trūkums starp izglītības jomu un IT nozares speciālistiem, lai radītu inovatīvus risinājumus un mazinātu digitālo tehnoloģiju radīto spriedzi.

No aprakstītām problēmām redzams, ka 21.gadsimta tehnoloģiju izaicinājumi un izrāvieni izglītības jomā nav notikuši. MI, virtuālā realitāte, adaptīvie pasniedzēji, mācību analītika, MOOC (Massive Open Online Course) un citas inovācijas ir spēlējušas niecīgas lomas virzībā uz tiešsaistes mācīšanos Covid19 pandēmijas laikā. Tā vietā uzvaras gājienā devās citas divas 20.gadsimtā izstrādātas tehnoloģijas: (1) mācību vadības sistēmas (pirmsākumi 60-tajos gados), kā piemēram Moodle un (2) videokonferences (pirmsākumi 30-tajos gados), kā piemēram ZOOM. Skolotāji ir vienkārši pārvietojušies no klasēm uz savām mājām un turpina mācības ar iepriekšējām metodēm bez MI atbalsta iespējām, kamēr skolēni arī attālināto mācību laikā sagaida jēgpilnu mācību procesu, kas pietuvināts klātienes apmācībām skolās. Tas precīzi parāda izglītības sistēmas spēcīgo konservatīvismu (Moe & Rajendran, 2020).

Atbilstoši pētījumiem (John, 2018; Karsenti, 2019; Unesco, 2019; Kuprenko, 2020) un veiksmes stāstiem autore ir apkopojusi galvenās priekšrocības, ko MI var sniegt matemātikas apguvē. MI atbalsts var: (1) uzlabot skolēnu mācību rezultātus un izglītības kvalitāti; (2) veicināt individuālu pieeju katram, kā arī nodrošināt vienlīdzīgu un iekļaujošu pieeju visiem; (3) personalizēt mācīšanos, izmantojot algoritmus, kas palīdz skolēniem pārvietoties pa dažādiem mācību satura ceļiem; (4) radīt labāku profesionālo vidi skolotājiem, lai viņi vairāk strādātu pie skolēniem ar grūtībām; (5) pārņemt skolotāja ikdienas pienākumus, atbrīvojot skolotāju laiku un ļaujot viņiem koncentrēties uz skolēnu

vadīšanu; (6) skolotājiem strādāt kopā ar virtuāliem asistentiem, lai uzlabotu skolēnu mācību rezultātus; (7) palīdzēt noteikt katra skolēna individuālos mācību plānus un trajektorijas balstoties uz viņu stiprām un vājām pusēm; (8) veidot vērtēšanas instrumentus, tādējādi atbrīvojot skolotāja laiku, kas tiek pavadīts pārbaudes un mājas darbu vērtēšanā; (9) novērtēt ne tikai testa atbilžu variantus, bet arī rēķināšanas uzdevumus un pat mutiskus stāstījumus; (10) uzlabot reakcijas ātrumu, nepārtraukti trenējoties un atkārtojot mācību vielu; (11) nodrošināt skolēniem patstāvīgu, neatkarīgu un attālinātu mācību procesu; (12) viegli koriģēt mācību saturu; (13) saliedēt klases kolektīvu, veicot aizraujošas izglītojošas spēles; (14) veicināt grupu darbu un uzturēt diskusiju grupas; (15) pielāgoties ne tikai katra skolēna, bet arī katras klases atbilstošam ritmam un zināšanu līmenim; (16) piedāvāt ļoti lielu skaitu aktivitāšu vienlaicīgi; (17) pieņemt nozīmīgus uz lieliem datiem balstītus lēmumus izglītības kvalitātes nodrošināšanai; (18) nodrošināt tūlītēju atgriezenisko saiti skolēniem, skolotājiem un vecākiem par skolēnu progresu un mācību mērķu sasniegšanu; (19) sekmēt mūžizglītības procesus neatkarīgi no vietas, laika un zināšanu līmeņa.

Secinājumi
Conclusions

Pētījums norāda uz pedagogu, nozares speciālistu, uzņēmēju un pētnieku sadarbības, un MI risinājumu nepieciešamību, lai nākotnē veidotu efektīvākas matemātikas mācības vispārizglītojošās skolās, paaugstinot katra skolēna izaugsmi. Kad skolēni ir motivēti apgūt matemātiku, viņi matemātikas uzdevumiem velta vairāk laika un risina tos neatlaidīgāk, kā arī izvēlas ar matemātiku saistītu nākotnes profesiju.

Pētījumā tika identificēti būtiski faktori, kas nepieciešami kvalitatīvākai matemātikas apguvei: (1) atbilstoši skolēnu vēlmēm ir jāmeklē efektīvākas mācību stratēģijas matemātikas apguvei, kas veicina skolēnu motivāciju un uzlabo attieksmi ilgtermiņā; (2) ir jāveido atbalsta sistēma skolotājiem, lai stimulētu novatorisku pieeju rašanos; (3) atbilstoši skolēnu interesēm ir jāveido starpdisciplināras pieejas, lai matemātiku varētu mācīties ar prieku kā radošu un daudzdimensionālu mācību priekšmetu; (4) ir jāmeklē jauni risinājumi, jo ir mainījusies skolēnu uztvere un interese, kā arī senās mācību metodes vairs nav tik iedarbīgas kā agrāk; (5) ir nepieciešams MI atbalsts, jo skolēni arī attālināto mācību laikā sagaida jēgpilnu mācību procesu, kas pietuvināts klātienes apmācībām skolās; (6) lai izveidotu jaunus uz MI balstītus produktus, arī turpmāk ir nepieciešami padziļināti pētījumi tādās jomās kā skolotāju apmācība un izaugsmes novērtēšana; (7) tieši pedagogiem ir jāattīsta savas digitālās prasmes un pamatzināšanas par MI, lai paātrinātu MI jēgpilnu ieviešanu matemātikas

apguvē; (8) matemātikas apmācībai vispārizglītojošās skolās ir jāiet ciešā kopsolī ar tehnoloģiju sasniegumiem un neirozinātņu pētījumiem; (9) attālinātās mācības ir jāplāno daudz rūpīgāk, ņemot vērā katra skolēna vajadzības un spējas

Summary

The poor results in mathematics suggest that students' perceptions and interests have changed, and that old teaching methods are no longer as effective as before and that new solutions need to be invented. This article provides essential indications that more effective learning strategies and artificial intelligence support should be created in order to promote student motivation and improve attitudes in the long term. This will in turn contribute to the development of an appropriate and high-quality support system for math teachers in the future to stimulate the emergence of innovative learning approaches that meet the demands of the modern industry. Evaluating research by the authors of the various fields (Boaler, 2019; Duval, 2019; Sadeghi, 2019; Kim, 2020; Terada, 2020), led to significant factors pointing to the need to change the way we teach pupils and run schools. A number of studies (Bidshahri, 2017; John, 2018; Carsenti, 2019; Unesco, 2019; Kuprenko, 2020) identified the benefits of AI in education in order to provide students also during distance learning with a meaningful learning process similar to on-site training in schools. The survey of students on motivating factors and everyday interests of learning, as well as the findings of this work, indicate the need for (1) cooperation between teachers, industry specialists, entrepreneurs and researchers and (2) support of MI solutions to further develop deeper, faster and more personalised math teaching in schools, in the future increasing the growth of each pupil.

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THE RELATIONSHIP BETWEEN CIVIC FACTORS AND THE MIDDLE PROFICIENCY LEVEL OF CIVIC KNOWLEDGE

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Abstract. *This study explores the relationship between civic and citizenship factors and the middle proficiency level of students' civic knowledge in the Baltic countries: Estonia, Latvia and Lithuania. The study uses large scale data from the IEA's International Civic and Citizenship Education Study (ICCS) 2016. According to ICCS 2016, 39% of students from the three Baltic countries and only 26% of students from the Nordic countries had a middle proficiency level of civic knowledge. This middle proficiency level is the largest group in comparison to other levels. Therefore, the study aims to recognise the differences between the highest and lowest achievements in the middle proficiency level of civic knowledge and to examine the relationship between factors such as background, values, behaviour, citizenship activities and attitudes. Multivariable linear regression was used for the data analysis, creating several models. The results show that there are different factors associated with the highest and lowest achievements in the middle proficiency level. For example, the results indicate that students with a lower proficiency level participated in illegal protest activities more often and had lower critical thinking skills. Moreover, the research investigates differences inside the middle proficiency level of civic knowledge and between the lowest middle-level students and students from the lower level of civic knowledge.*
Keywords: *citizenship education, civic knowledge, citizenship activities, gender equality, Baltic countries, ICCS 2016, multivariable linear regression.*

Introduction

The results of the International Association for the Evaluation of Educational Achievement's (IEA) International Civic and Citizenship Education Study (ICCS) 2016 (Schulz et al., 2017) show that 30% of students from the three Baltic countries (Estonia, Latvia and Lithuania) had a higher proficiency level of civic knowledge, 39% a middle proficiency level, 24% a basic proficiency level and 7% a lower or below lower proficiency level. The middle proficiency level is the biggest group in the classification. The large number of students who are in the middle proficiency level allows us to think about factors

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that affect students' knowledge. In other words, this study assumes that there might be differences between students inside the middle level of civic knowledge. Indicating the differences between the upper-middle level and the lower-middle level will allow teachers to predict these factors and plan activities that raise students up to a higher level of civic knowledge. Highlighting the predictors that bring success in citizenship education is essential for citizenship education policy makers and also for teachers. Therefore, the research aims to recognise the differences between the highest and lowest achievements in the middle proficiency level of civic knowledge and to examine the relationship between factors such as the values, behaviour and attitudes of students.

Civic knowledge creates the cognitive component of citizenship, which helps to create an open classroom climate that promotes higher levels of civic knowledge and political efficacy (Torney-Purta, Lehman, Oswald, & Schulz, 2001) and develops such skills as interpreting political communication and promoting engagement in daily citizenship activities (Isac, Maslowski, & van der Werf, 2011; Kirlin, 2003). Another interpretation explains civic knowledge as outcomes from the educational system at the school, classroom and student levels (Isac et al., 2011; Creemers, 1994).

In civic and citizenship education, students' level of civic knowledge is often used as a factor to explain differences between divergent groups in comparative education studies. For example, their level of civic knowledge is used as a dependent variable to investigate differences between immigrant and native-born groups (Zhu & Chiu, 2020; Carolyn, Torney-Purta, & Wilkenfeld, 2015), socioeconomic compositions (Diego, Banerjee, Treviño, & Villalobos, 2020) and open classroom climates (Knowles & McCafferty-Wright, 2015; Lihong & Biseth, 2016).

Civic knowledge is necessary for civic participation and engagement (Zhu & Chiu, 2020). Levels of civic knowledge are reflected in citizenship activities, which are highlighted as important content in the context of European digital citizenship (Council of Europe, 2019). However, when considering citizenship activities, one can comprehend people's political and social participation in society (Whiteley, 2014; Manning & Edwards, 2014; Mycock & Tonge, 2012), community- and school-level engagement (Schulz et al., 2017; Torney-Purta, 2002), citizenship self-efficacy (Manganelli & Lucidi, 2015; Manganelli, Lucidi, & Alivernin, 2014) and ethical norms and values (Lin, 2015; Veugelers & Groot, 2019).

Methodology

The aim of the research is to investigate the relationship between civic and citizenship factors and the middle proficiency level of students' civic knowledge in the Baltic countries.

In doing so, three key research questions are raised:

1. Which are the related factors in the middle proficiency level of students' civic knowledge in the Baltic countries?
2. What are the differences between factors at the lower and higher ends of the middle proficiency level of students' civic knowledge?
3. What are the differences between the Baltic countries' results?

Data was taken from the IEA ICCS 2016 study for the analysis (data available at https://doi.org/10.3886/ICPSR37147.v1). The ICCS 2016 study is the fourth ICCS study that aimed to find out the ways in which young people are prepared to undertake their roles as citizens (Schulz, Ainley, Losito, & Agrusti, 2016, p. 34).

The following numbers of students (N=3273) were sampled from ICCS 2016: 740 from Estonia (EST), 1190 from Latvia (LVA) and 1343 from Lithuania (LTA). The authors obtained the results from the appropriate sampling weights and variance estimations based on the rules set out in the ICCS 2016 User Guide for the International Database (Köhler, Weber, Falk, Schulz, & Carstens, 2018).

ICCS 2016 presents students' achievements in citizenship education. Together with attitudes towards democratic perceptions of citizenship activities and values in the student questionnaire, civic knowledge is measured in a student cognitive test. Each country's students' civic knowledge is divided into four levels, ranging from A (higher) to D (lower). Each level has an amplitude score (Schulz et al., 2017). This research observes the middle proficiency level of students' civic knowledge and looks for related factors at the lower and higher ends of the middle proficiency level. Students who scored 479-563 points in the ICCS 2016 study are classified in the middle proficiency level. To highlight any variation in factors within the middle proficiency level, it was divided into two groups: lower (479-520 points) and higher (521-563 points).

To divide students into levels of civic knowledge, the mean of five plausible values that were provided with the dataset was used. In the regression models, each of the plausible values was used as a dependent variable separately, and then the results were aggregated. In total, 15 predictors were considered as explanatory variables (see Table 1), of which five (S_GENDER, C_URBAN, C_SCSIZE_CAT, S_TLANG and S_ISCED) are categorical and the other ten are continuous variables obtained from Likert scale questionnaires with item response theory (provided in the dataset).

Table 1 ***Descriptions of Explanatory Variables***

Explanatory variable	Description
S_GENDER	Student's gender
C_URBAN	Urbanisation level
C_SCSIZE_CAT	School size (by number of students)
S_ABUSE	Experience of physical and verbal abuse at school
S_INTACT	Perception of student's interactions at school
S_STUTREL	Perception of student-teacher relations at school
S_CNTATT	Positive attitudes towards their country of residence
S_ETHRGHT	Endorsement of equal rights for all ethnic/racial groups
S_CITCON	Perception of the importance of conventional citizenship
S_VALPARTS	Perception of the value of participation at school
S_GENEQL	Endorsement of gender equality
S_ILLACT	Expected participation in illegal protest activities
S_LEGACT	Expected participation in legal activities
S_TLANG	Test language use at home
S_ISCED	Expected educational attainment

First, the authors investigated the subset of all B-level students with some descriptive statistics. Then a multivariable regression analysis was conducted to inspect which factors are associated with students' civic knowledge. Since regression models were made with each plausible value separately, due to the variance between plausible values, standard errors of regression coefficients were larger and, consequently, the corresponding confidence intervals were wider than if only one response variable had been used. From p-values and confidence intervals alone, it would appear that most of the predictors in this analysis are statistically insignificant. However, to obtain deeper insight into the possible associations between civic knowledge and chosen predictors, the authors used subsampling, i.e. instead of using a stepwise algorithm to choose the predictors to keep in the final model, 1000 random subsamples were taken with 150 students each and a regression model was done with these subsamples. The authors could thereby observe which predictors were significant more often than they would only by chance, which is approximately 50 if a 5% confidence level is used. These predictors were then put into the final model. The results of each model are shown in the tables below. To judge the importance of predictors and their association with response variables, confidence intervals were used. If the interval is symmetric (around zero), it is considered insignificant; however, when it is asymmetric, then signs of possible association may be determined.

Research Results

To obtain an overall comparison between the Baltic countries, 95% confidence intervals were calculated for the mean civic knowledge of students with a middle proficiency level of civic knowledge. These were (518.32, 521.32) for Latvia, (520.48, 523.36) for Lithuania and (521.80, 525.49) for Estonia. One could conclude that the means of Latvia and Estonia are significantly different at a 95% significance level since the intervals do not overlap, however it should be taken into account that quite large sample sizes were used. For large enough samples, even the tiniest differences will be significant. Therefore, we rather choose to base our conclusions on confidence intervals instead of p-values which can sometimes be misleading, although both are reported in this study. To get a more robust central tendency measure, medians were also calculated: 519.45 for Latvia, 523.4 for Lithuania and 526.18 for Estonia. While that of Latvia lies in the middle of the confidence interval for the mean, the medians for Lithuania and Estonia are above the corresponding confidence intervals, indicating negative skewness. The distribution for Latvia seems to be fairly symmetrical, but Lithuania and especially Estonia are left-skewed with more students on the higher end. It may also be of interest to look at how gender may relate to civic knowledge in this middle level. The authors obtained a median civic knowledge score of 518.4 for boys and 520.3 for girls in Latvia, 521.9 for boys and 524.0 for girls in Lithuania, and 523.8 for boys and 527.3 for girls in Estonia. Medians depending on urbanisation level were also calculated: 519.0 (non-urban) and 520.5 (urban) for Latvia, 522.9 (non-urban) and 523.2 (urban) for Lithuania, and 525.8 (non-urban) and 527.5 (urban) for Estonia.

To investigate associations of civic knowledge with other factors, the authors used a multivariable regression analysis. In the following analysis, variation inflation factor (VIF) values are not reported, but this was not above 1.5 for any of the variables in the models considered, i.e. multicollinearity is not an issue for this dataset. When significance is mentioned, the authors mean a 5% level of statistical significance. In Figure 1, the results of the subsampling simulation are shown. Subsets of 150 students were taken 1000 times for the B level in full, the lower B level and the upper B level. Each dataset model was constructed five times with each of the plausible values as a dependent variable. The corresponding bars in the plot represent how many of those 1000 models had statistically significant predictors. For example, in this case of Latvia, it seems that students' expected educational attainment could be significant for both the lower and upper B level, however test language use at home appears to be more significant at the lower level, and likewise for equal rights for all ethnic

and racial groups. The dashed line is a 5% reference line to help differentiate predictors that have been sufficiently significant.

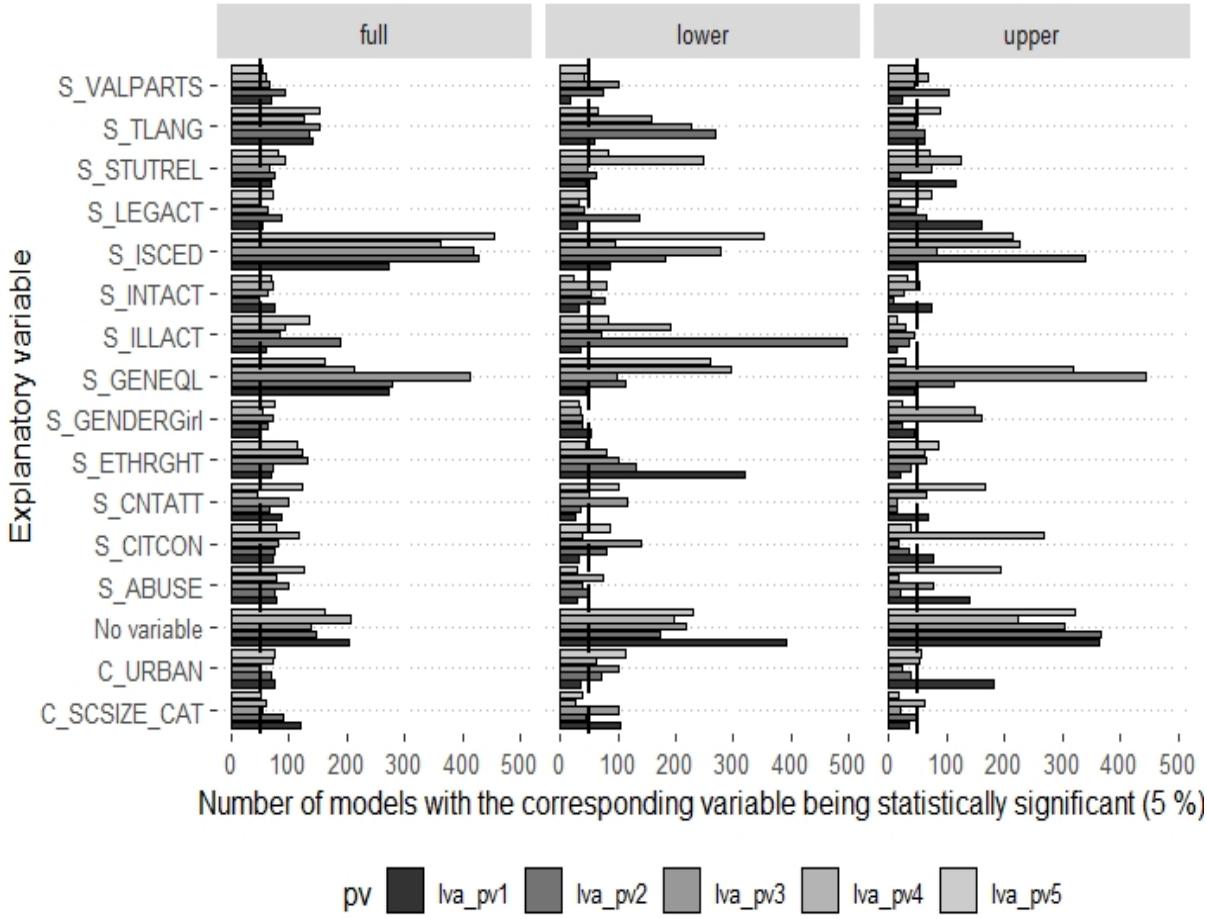

Figure 1 ***Results of the Subsampling Simulation on Latvian Students***

Based on the simulation above, a regression model was constructed for each case. For the whole B level, based on the plot above, the authors included test language use at home, expected educational attainment and endorsement of gender equality, the student's experience of physical or verbal abuse, and endorsement of equal rights for all ethnic and racial groups as factors in the model. This model had an adjusted R-squared of 3.5% which indicates low explanatory power, however in this study, the model is used for inferential purposes and not for prediction as it is the significance of the predictors that is mostly of interest. Therefore, no R-squared values are reported since all were in the range of 1-5%. In this final model, only S_ISCED and S_GENEQL can be considered as statistically significant. This may be concluded by p-values but, more importantly, by the asymmetry of confidence intervals, which indicates a positive association.

Table 2 ***Linear Regression Models for Students of the Middle Proficiency Level of Civic Knowledge***

Variable	Std. error	Estimate	Conf. interval	p-value
Latvia				
S_GENEQL	0.31	0.75	(0.03, 1.46)	0.04
S_ISCED	3.89	8.84	(-0.55, 18.23)	0.06
S_TLANG	11.46	-1.92	(-25.62, 21.79)	0.87
S_ABUSE	0.19	-0.16	(-0.57, 0.24)	0.41
S_ETHRGHT	0.31	0.26	(-0.38, 0.91)	0.41
Lithuania				
S_VALPARTS	0.36	0.27	(-0.61, 1.14)	0.49
S_STUTREL	0.19	-0.04	(-0.43, 0.35)	0.85
S_LEGACT	0.20	0.23	(-0.18, 0.63)	0.27
S_ISCED	6.06	11.42	(-3.73, 26.56)	0.11
S_ILLACT	0.30	-0.73	(-1.42, -0.04)	0.04
S_GENEQL	0.30	0.80	(0.11, 1.47)	0.03
S_GENDER	4.51	-5.32	(-14.89, 4.26)	0.26
S_ETHRGHT	0.19	0.24	(-0.16, 0.63)	0.23
S_CNTATT	0.17	-0.40	(-0.74, -0.05)	0.02
S_CITCON	0.23	-0.04	(-0.52, 0.43)	0.86
S_ABUSE	0.22	-0.17	(-0.65, 0.31)	0.46
C_URBAN	3.06	-0.18	(-6.21, 5.86)	0.95
C_SCSIZE_CAT	1.85	1.49	(-2.27, 5.24)	0.43
S_TLANG	9.84	6.11	(-13.56, 25.77)	0.54
Estonia				
S_LEGACT	0.29	0.33	(-0.28, 0.94)	0.28
S_ISCED	2.72	6.63	(0.78, 12.47)	0.03
S_ILLACT	0.28	-0.50	(-1.07, 0.07)	0.09
S_GENEQL	0.41	1.08	(0.10, 2.05)	0.03
S_ABUSE	0.20	-0.24	(-0.65, 0.16)	0.23

It appears that students with higher expected educational attainment on average tend to score higher on the civic knowledge test. Endorsement of gender equality is also associated with a higher level of civic knowledge. Test language use at home, although not significant at the 5% level in this final model, may however have a negative association since it was significant in more than 15% of the models constructed.

Following the same procedure for Lithuania, the authors constructed a model with fourteen predictors of which three (S_ILLACT, S_CNTATT and S_GENEQL) appear to be significant, with the first two being negatively related to civic knowledge and the latter one positively. However, through confidence intervals, some other associations may also be noticed. S_TLANG may be

positively associated with civic knowledge, which means that native-speaking Lithuanian students on average score higher on the civic knowledge test. One of the main factors is S_ILLACT, which is negatively associated with civic knowledge. Lithuanian students who are expected to participate in illegal activities tend to score lower. Positive attitudes towards Lithuania seem to be negatively associated with civic knowledge, which indicates that more patriotic students on average score lower, while participation at school is related to higher knowledge on average. School size also seems to have some effect, indicating higher civic knowledge for those at larger schools.

The same steps were applied to the Estonia dataset, and a model with five predictors was obtained. Three (S_ISCED, S_ILLACT and S_GENEQL) appear to be significant (at a 10% confidence level), and it seems that S_LEGACT may have some positive association and S_ABUSE a negative association. One thing in common to all three countries is that endorsement of gender equality and expected educational attainment are two of the main factors that have some association with civic knowledge. Similarly to Lithuania, Estonian students on average score lower if they expect to participate in illegal activities and protests.

Table 3 ***Linear Regression Models for Students with a Lower Middle Proficiency Level of Civic Knowledge***

Variable	Std. error	Coefficient	Conf. int.	p-value
Latvia				
S_TLANG	9.62	2.79	(-17.07, 22.65)	0.77
S_ISCED	4.16	4.07	(-5.20, 13.33)	0.35
S_ABUSE	0.26	0.04	(-0.50, 0.57)	0.88
S_ILLACT	0.37	-0.44	(-1.30, 0.42)	0.27
S_GENEQL	0.34	0.44	(-0.30, 1.18)	0.23
S_ETHRGHT	0.31	-0.01	(-0.64, 0.61)	0.97
S_STUTREL	0.25	0.20	(-0.33, 0.72)	0.46
Lithuania				
S_VALPARTS	0.36	0.37	(-0.47, 1.22)	0.34
S_ISCED	6.63	11.50	(-4.23, 27.22)	0.12
S_ILLACT	0.27	-0.43	(-1.00, 0.15)	0.14
S_GENEQL	0.45	0.63	(-0.42, 1.67)	0.20
S_INTACT	0.29	-0.26	(-0.93, 0.42)	0.41
S_CITCON	0.26	-0.03	(-0.57, 0.51)	0.90
S_ABUSE	0.33	-0.19	(-0.94, 0.56)	0.58
Estonia				
S_GENEQL	0.63	0.81	(-0.71, 2.34)	0.24
S_CNTATT	0.24	-0.01	(-0.51, 0.49)	0.96
S_CITCON	0.33	0.26	(-0.44, 0.98)	0.43
S_ABUSE	0.27	-0.14	(-0.68, 0.39)	0.59

The authors will now investigate the differences between the lower and higher proficiency levels of civic knowledge within and across Baltic countries. First, we compare the lower levels. By applying the same steps as above for Latvian students with a lower proficiency level, we constructed a linear model with seven predictors (see Table 3).

It seems that the model has an extremely poor fit; none of the seven predictors are significant at a 10% significance level. However, expected educational attainment and endorsement of gender equality seem to have some positive association with civic knowledge, while S_ILLACT appears to be negatively related.

For Lithuanian students, we constructed a model with seven predictors (see Table 3). Confidence intervals indicate a possible positive association for S_VALPARTS, S_GENEQL and S_ISCED and a negative one for S_ILLACT. Due to the symmetry of the other three confidence intervals, S_INTACT, S_CITCON and S_ABUSE cannot be considered to have any effect.

For Estonian students, a model with four explanatory variables was constructed, of which S_GENEQL appears to have some positive effect.

Table 4 ***Linear Regression Models for Students with a Higher Middle Proficiency Level of Civic Knowledge***

Variable	Std. error	Coefficient	Conf. int.	p-value
Latvia				
S_ISCED	5.87	7.35	(-6.17, 20.88)	0.25
S_GENEQL	0.42	0.52	(-0.44, 1.47)	0.25
S_ABUSE	0.31	-0.23	(-0.92, 0.47)	0.49
S_TLANG	17.57	-11.52	(-48.77, 25.72)	0.52
S_STUTREL	0.24	-0.17	(-0.64, 0.31)	0.49
Lithuania				
S_ISCED	6.25	9.85	(-5.48, 25.18)	0.17
S_ILLACT	0.41	-0.56	(-1.56, 0.44)	0.22
S_GENDER	5.55	-4.76	(-16.50, 6.98)	0.40
S_ABUSE	0.22	-0.10	(-0.55, 0.35)	0.66
S_GENEQL	0.32	0.35	(-0.36, 1.05)	0.31
S_ETHRGHT	0.26	0.29	(-0.26, 0.84)	0.29
C_SCSIZE_CAT	3.46	1.90	(-5.79, 9.60)	0.60
C_URBAN	3.78	4.24	(-3.36, 11.84)	0.27
Estonia				
S_STUTREL	0.31	-0.13	(-0.75, 0.49)	0.67
S_ISCED	5.26	8.23	(-3.97, 20.45)	0.15
S_GENDER	6.30	-7.27	(-20.69, 5.23)	0.23
S_ABUSE	0.27	-0.14	(-0.70, -0.40)	0.58
S_ETHRGHT	0.37	0.30	(-0.44, 1.06)	0.41

When the higher-middle proficiency level was investigated for Latvian students, the authors constructed a linear model with five predictors (see Table 4). Similarly to the above, S_ISCED and S_GENEQL appear to have some positive association. Judging again by the asymmetry of the confidence intervals, S_TLANG is negatively associated and, likewise, S_ABUSE and S_STUREL.

The model for Lithuanian students with a higher middle proficiency level was constructed with eight predictors. As in all instances above, S_ISCED and endorsement of gender equality seem to have a positive association. In this case, urbanisation level and endorsement of equal rights for all ethnic and racial groups also appear to have a positive relation with civic knowledge, while gender and S_ILLACT seem to have a negative effect.

Finally, a model with five explanatory variables was constructed for Estonian students. As above, S_ISCED appears to have a positive effect, and endorsement of equal rights for all ethnic and racial groups also seems to be positively related. Gender seems to be negatively associated, meaning that boys tend to score higher on average.

Discussion

This research was done with the aim of investigating the relationship between civic and citizenship factors and the middle proficiency level of students' civic knowledge in the Baltic countries. The results show that there may be some relationship between student and school factors and the middle proficiency level of civic knowledge. The three Baltic countries considered share some similarities – for example, expected educational attainment seems to be positively related with higher achievements on civic knowledge tests in all instances above – but there are also some factors such as language used at home and participation in illegal activities that indicated some differences.

There were factors that were highlighted in the middle proficiency level of civic knowledge in general but which are not detected when analysing the higher middle and lower middle proficiency levels separately: Estonian students do not have a relationship with willingness to take part in illegal protest activities, and Lithuanian students have value factors that report them as having positive attitudes towards their country's flag and their sense of belonging to the country.

The results show that there are different factors that are associated with the highest and lowest achievements in the middle proficiency level. There are four outcomes to emphasise.

First, for Latvian students, expected participation in illegal activities seems to have some effect only in the lower proficiency level of civic knowledge, while there are a few that appear only in the higher middle level, such as

experience of abuse at school, test language use at, home and student-teacher relations at school. Endorsement of gender equality and expected educational attainment seem to be important factors in the lower as well as higher B level. What can be noticed about Lithuania is that both expected educational attainment and expected participation in illegal activities appear in the lower as and higher B levels. However, students' perception of the value of participation at school and experience of abuse at school seem to have some effect only at the lower proficiency level, while at the higher level, background factors such as gender, urbanisation and school size appear.

Our results show that Estonia and Lithuania are those Baltic countries where gender seems to be associated with civic knowledge at higher proficiency levels. In general, ICCS 2016 demonstrates that civic knowledge has a significant relationship with students' gender in 19 of the 24 participating countries (Schulz et al., 2017). There are similar findings in other IEA and PISA comparative surveys (Baye & Monseur, 2016). For example, PIRLS 2016 shows a tight relationship between reading literacy and gender (Nonte, 2018).

Second, we can see more positive attitudes towards gender equality from students with a middle proficiency level of civic knowledge. Also, we can see that students' expected educational attainment is a significantly important factor in the middle proficiency level.

Third, experience of physical or verbal abuse seems to be an important factor for all three countries, but this also somehow divides the middle proficiency level because it appears to be important when the whole B level is considered but not as much when the lower and upper B levels are investigated separately. The results show that those students who are in the lower middle proficiency level acknowledge the existence of violence in the school and classroom environment more often. All the results of the Baltic countries show the importance of this factor. There are other surveys that have indicated similar observations about the relationship between victimhood and achievements. A large-scale longitudinal study of TIMSS results from Italy also highlighted that the effect of being a victim of school violence on student achievement is larger for students at the age of 13 than at the age of 9 (Ponzo, 2013), and the Canadian National Longitudinal Survey of Children and Youth shows that children who are bullied at school are likely to obtain low levels of achievement (Beran, Hughes, Ginger, & Lupart, 2008). Another study's results show the adverse impact of perceived safety and community violence exposure on primary school children's academic performance (Milam, Furr-Holden, & Leaf, 2010). Hypothetically, according to the study results, we can accept that the systematic reduction of any violence can be a reason that will help students to rise up from the lower to the higher middle proficiency level of civic knowledge. Our findings provide guidance for education policy-makers to develop anti-violence

and emotional intelligence programmes as a precondition to get higher levels of students' civic knowledge and support both students who have had experience of violence and students who are violent.

Forth, since the country context is highlighted as an important factor in ICCS 2009 (Diazgranados Ferrans, 2016), our study supports other authors' findings according to ICCS 2016 data (Schulz et al., 2017). We found evidence that the country context is significant in the lower middle proficiency level because there are different factors that affect it. For example, significant important factors in the Estonian context are gender and living in highly populated areas. The significance of gender was also found in relationships between the efficacy beliefs and civic knowledge variables (Lucidi & Alivernin, 2014). For the Lithuanian context, the study's results highlighted radical citizenship activities. Lithuanian students in the lower middle proficiency level mentioned the importance of conventional citizenship activities, while Latvian students mentioned ethnic rights.

This study has demonstrated the relationship between civic factors and the lower and higher middle proficiency levels of civic knowledge using the examples of Estonia, Lithuania and Latvia. The research investigated differences inside the middle proficiency level of civic knowledge and explored the differences between the lowest middle-level students and students from the lower level of civic knowledge. The results lead the authors to draw the conclusion that when analysing factors by proficiency level, students must be divided into two in each of the civic knowledge levels to show the similarities between the lower higher proficiency level and higher middle proficiency level and the higher lower proficiency level and lower middle proficiency level.

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ПОДГОТОВКА БУДУЩИХ ПЕДАГОГОВ К РАЗВИТИЮ ОДАРЕННОСТИ ДЕТЕЙ ДОШКОЛЬНОГО И МЛАДШЕГО ШКОЛЬНОГО ВОЗРАСТА СРЕДСТВАМИ ТЕАТРАЛИЗАЦИИ

Preparation of Future Teachers for the Development of Giftedness of Preschool and Primary School Children by Means of Dramatization

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Abstract. *The necessity and main directions of preparation of future teachers for work with gifted children of preschool and primary school age are shown. The author's definition and structure of readiness of future educators to work with gifted children are presented. The signs of giftedness are analyzed and the characteristics of different types of giftedness are presented. The importance of identifying talented individuals in an educational institution and creating a developmental environment for the development of their abilities and creative self-realization is substantiated. The importance of theatrical activity for the development of general and special abilities, creativity, talent and the formation of non-cognitive qualities of preschool and primary school children is shown. The results of diagnostics of awareness of future teachers with the theoretical and methodological principles of using theatrical activities as a means of developing children's talents are presented. The main directions of training future teachers in the educational process of higher education institutions, aimed at mastering students' special knowledge, development of professional qualities, skills and abilities necessary for the use of dramatization in working with different categories of potentially gifted children.*

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Keywords: *giftedness, gifted child, gifted children, types of giftedness, creativity, preparation of educators to work with gifted children, theater, theatrical activity.*

Введение
Introduction

Разработка различных аспектов теории одаренности остается актуальной на протяжении последних десятилетий как в зарубежном, так и в украинском психолого-педагогическом дискурсе. Продолжается изучение природы, структуры способностей и одаренности, особенностей проявления талантов и творчества в детей разных возрастных групп. Одаренность в детские годы считается потенциалом личности, для успешной реализации которого важно включать детей в разностороннюю, творчески насыщенную деятельность. Поэтому все чаще научные исследования предполагают изучение возможностей создания благоприятных условий, поиск путей, разработку эффективных технологий и методов развития детей с проявлениями различных видов одаренности. В связи с этим, внимание исследователей и практиков привлекает театральная деятельность как эффективное средство работы с одаренными детьми, развития их способностей и талантов.

Цель статьи – теоретическое обоснование значения театральной деятельности в развитии одаренной личности, определение содержания подготовки будущих педагогов к использованию театра в работе с способными и талантливыми детьми дошкольного и младшего школьного возраста, представление опыта такой работы в учреждениях высшего образования Украины.

Методы исследования: теоретические – изучение и анализ литературы по театральной педагогике, вопросам подготовки педагога к работе с одаренными детьми средством театральной деятельности; эмпирические – карта самооценки, опросник, анализ рефлексивних заметок; методы статистического анализа для преобразования эмпирических данных в количественные показатели.

Теоретическая основа темы
The Theoretical Background

Театральное искусство считается синтетическим, поскольку сочетает в себе элементы драматургии, музыки, выразительного слова, актерского, изобразительного, хореографического искусства. Проведение ретроспективы показывает, что в прошлом известные философы, просветители, классики педагогики обосновывали значение театра как эффективного

педагогического средства. На необходимости использования театрального искусства в учебном процессе указывал Я.Коменский (Komenskyi, 2006). Педагог оценивал театр как средство косвенного, «короткого» и «приятного» воздействия на личность, воспитания через пример и подражание учениками лучших личностных качеств, развития умения коммуникации с другими людьми. На научных принципах, системно и эффективно использовал этот жанр искусства в своей педагогической дельности А.Макаренко (Makarenko, 1988). В «Педагогической поэме» раскрыты идеи педагога о значении театрального вида искусства в воспитании ребят, представлен опыт социально-воспитательной и культурно-просветительной работы самодеятельного театра в учреждениях, которые возглавлял А.Макаренко.

В разные годы ученые обосновывали психологические механизмы влияния искусства, театральной деятельности на регуляцию психического состояния и эмоционального раскрепощения, личностное становление и творческую самореализацию ребёнка. В работах современных исследователей раскрыты педагогические особенности использования театра как средства всестороннего развития детей, начиная с дошкольного возраста. В частности, отмечается, что «школьная театральная педагогика как форма образовательной художественно-эстетической деятельности, которая отвечает потребностям личности в сохранении достижений культуры, в самосохранении и развитии, имеет мощный потенциал универсального воздействия. Она способствует становлению личности динамического типа, которая идентифицирует себя с родной культурой, окружающей средой; воспринимает и понимает общечеловеческие гуманистические ценности» (Chervinska & Kiral, 2014, p.10). В исследованиях (Antonova, 2006; Liubchak, 2018; Chervinska & Kiral, 2014 и др.) показан потенциал в социально-воспитательной работе театральной деятельности детей и подростков, которая:

- Является *способом познания окружающего мира*, благодаря использованию которой развивается познавательная культура личности, расширяется мировоззрение, знания об окружающей действительности и одновременно формируется эстетическое отношение к ней.
- Создает условия для *реализации потребности талантливого ребенка* в самовыражении, общении, познании себя и мира через воссоздание различных образов и ситуаций.
- Способствует *эстетическому воспитанию* одаренных детей в целом, развитию их общих и специальных (актерских, музыкальных, художественных и др.) способностей, их творческой самореализации.

– Включает потенциально одаренных детей в длительный творческий и коммуникативный процесс подготовки и постановки театрального действия. Это создает условия для *развития в них «soft skills»*, способности к продуктивному общению и решению ряда социально-личностных проблем, которые часто возникают у таких личностей.

Опыт использования элементов театрализации находим в европейских педагогических системах (Вальфдорской педагогике Р.Штейнера (Shtainer, 1996), «Школе успеха и радости», С.Френе (Freinet, 1997) и др.) и в современных образовательных практиках стран ЕС (Англии, Латвии, Литвы, Германии, Польши, Словении, Венгрии, Франции и др.). Л.Волынец (Volynets, 2009), изучая особенности политики в области общего художественного образования в странах Восточной Европы, выделила несколько тенденций: разработка и утверждение современных программ и стандартов художественного образования, введение новых обязательных предметов (например, драмы и танца); увеличение количества учебного времени на изучение учениками искусств; создание специализированных художественных, музыкальных школ для детей в рамках государственной системы образования; государственная поддержка различных центров досуга, культурных центров и др.

В Украине в последние десятилетия также уделяется большое значение художественному образованию детей и подростков. В частности, в «Государственном стандарте начального образования» (Derzhavnyi standart pochatkovoi osvity, 2018) среди ключевых компетентностей, которые должны приобрести младшие школьники, названа и художественная. Соответственно, в этом документе также выделяется «художественная образовательная область».

Воспитатели и учителя, которые хотят использовать различные виды театрализации в образовательном процессе, организовывать школьный театр, должны в контексте профессиональной подготовки овладеть специальными знаниями и навыками, основами театральной педагогики, базовыми принципами режиссуры и сценического мастерства. Особенности подготовки будущих педагогов к применению театральных технологий в образовательном процессе разрабатываются в трудах современных исследователей. В частности, В.Шахрай (Shakhrai, 2012) считает одним из главных условий использования театральных методов в образовательном процессе школы наличие в учителя театрально-педагогической готовности, овладение основными элементами режиссуры и актерской игры. Л.Любчак (Liubchak, 2018, p. 94), обобщив опыт подготовки будущих воспитателей дошкольных учреждений и учителей начальных классов, показывает значение в профессиональной подготовке

будущего воспитателя уровня его готовности к театральной деятельности (знание видов театров и методики их организации в работе с детьми; мотивы участия в данной деятельности и способность ее организовывать).

Методы, организация и результаты исследования
Methodology, Organization and Results of the Research

Развитие в будущих воспитателей дошкольных образовательных учреждений и учителей начальной школы понимания целесообразности и эффективности использования театральных средств в работе с талантливыми и творческими детьми, овладение необходимыми для этого знаниями и умениями считаем частью их профессиональной подготовки к развитию одаренности детей. Целью которой является формирование готовности студентов к развитию одаренности детей как результата специально организованной работы в заведении высшего образования. По нашему мнению, это интегративное личностно-профессиональное качество, которое синтезирует в себе взаимосвязанные компоненты: аттитюдно-ориентировочный, когнитивно-содержательный, операционно-деятельностный, личностно-синтонный, рефлексивно-аутопсихологический. В структуре такой готовности выделяем профессиональные установки, знания, умения и качества, необходимые педагогам для использования театральной деятельности как средства работы с одаренными детьми.

С целью диагностики готовности будущих педагогов к использованию театральной деятельности в работе с одаренными детьми было спланировано и проведено пилотное исследование. В опросе приняли участие 73 студента 2-3 курсов ВГПУ им. М. Коцюбинского (г.Винница, Украина), которые обучаются на образовательной бакалаврской программе «Начальное образование. Дошкольное образование». Сначала была использована карта самооценки «Диагностика парциальной готовности к профессионально-педагогическому саморазвитию по использованию театральной деятельности в работе одаренными детьми». Она является адаптированным вариантом методики Н.Фетискина (Fetyskyn, Kozlov & Manuilov, 2002), в которой были частично изменены названия компонентов и их показатели в соответствии с авторским определением понятия «готовность будущих педагогов к развитию одаренности детей». Участники эксперимента оценивали каждый показатель по 9-балльной шкале, определяя уровень наличия у себя умений и навыков использования театральной деятельности в работе с одаренными детьми, потребности саморазвития.

Анализ и обобщение полученных результатов самооценки по всем компонентам, приведение их к среднему показателю (Табл. 1), показали, что респондентов оценили их наличие следующим образом: 42,3% – от 20-ти до 30-ти баллов, средний уровень (С); 37,4% – от 9-ти до 19-ти баллов, низкий уровень (Н). 15,1% опрошенных достаточно высоко оценили свою мотивацию к использованию театральной деятельности в работе с одаренными детьми, знания, умения и качества, необходимые для этого. Респонденты этой группы поставили себе: 31-41 балл (высокий уровень – В) – 11,0%, 52-45 баллов (творческий уровень Т) – 4,1%. 5,2% будущих педагогов оценили себя по всем критериям (5-8 баллов), что соответствует критическому уровню (К). Для проведения дополнительного анализа подготовленности будущих педагогов к работе с одаренными детьми средствами различных видов театрализации респондентам после заполнения карты самооценки было предложено еще написать рефлексивные заметки. Поскольку было сказано, что рефлексию они проводят по желанию, то выполнили эту задачу 49 студентов, что составляет 67,1% от общего количества участников эксперимента. Анализ показал, что в эту группу вошли преимущественно студенты творческого, высокого и среднего уровней, которые наиболее настроены на работу с одаренными детьми в целом, осознают значение театральной деятельности в решении социально-воспитательных и развивающих задач с такой категорией учащихся в частности.

Таблица 1. ***Уровни готовности будущих педагогов к использованию театрализованной деятельности в работе с одаренными детьми***
Table 1 ***Levels of Readiness of Future Teachers to Use Theatrical Activities in Working with Gifted Children***

Уровни	Творческий 42-45 бал.	Высокий 31-41 бал.	Средний 20-30 бал.	Низкий 9-19 бал.	Критический 5-8 бал.
Компоненты	*%*	*%*	*%*	*%*	*%*
Аттитюдно-ориентировочный	5,5	12,3	42,5	34,2	5,5
Когнитивно-содержательный	4,1	9,8	43,4	38,6	4,1
Операционно-деятельностный	1,4	5,5	39,7	45,2	8,2
Личностно-синтонный	6,8	15,1	45,2	30,2	2,7
Рефлексивно-аутопсихологический	2,7	12,3	40,9	38,6	5,5
Средний показатель	4,1	11,0	42,3	37,4	5,2

Для успешной организации театральной деятельности у будущих педагогов должны быть сформированы ряд профессиональных качеств, к перечню которых относим также актерские способности. Для определения уровня педагогического артистизма и склонности к импровизации была использована методика «Оценка артистичности педагога» (Bulatova, 2001), которая включает 12 вопросов. После обработки полученных данных опроса, была выделены три группы студентов, соответственно уровням развития педагогического артистизма: достаточному – 16,4%; среднему – 47,9%; низкому – 35,7% (Рис. 1).

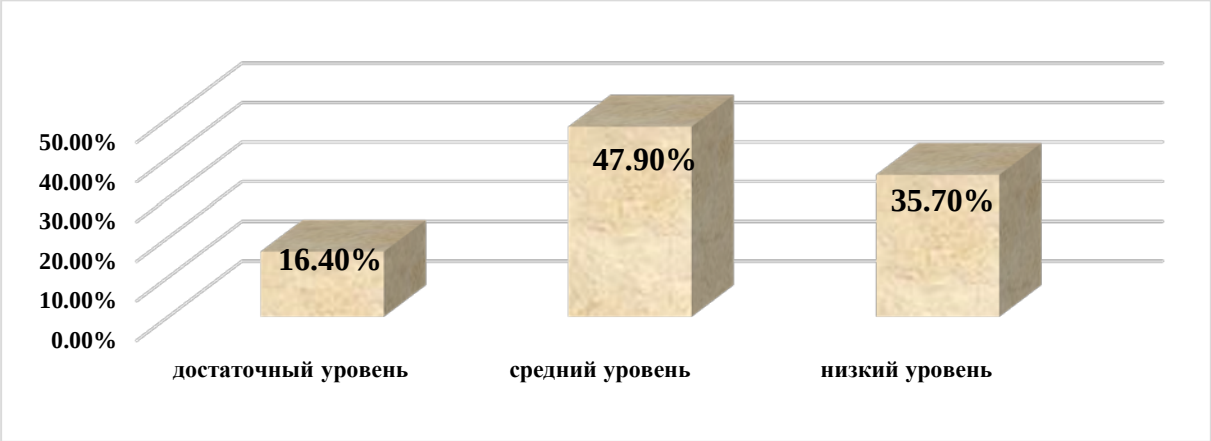

Рисунок 1. ***Уровни развития в студентов педагогического артистизма*** *(по О.Карпову)*
Figure 1 ***Development Levels in Students of Pedagogical Artistry*** *(according to O. Karpov)*

Исходя из полученных результатов, преимущества среднего и низкого уровней, считаем, что систему подготовки будущих воспитателей и учителей начальных классов к работе по развитию одаренности детей средствами театральной деятельности необходимо разрабатывать комплексно, в **нескольких направлениях**.

Во-первых, *в контексте общекультурной и общепедагогической подготовки развитие в студентов на высоком уровне качеств, необходимых для создания благоприятных условий по творческой самореализации способных и талантливых детей.*

Такая задача в украинской профессиональной педагогике постепенно решается как на теоретико-методологическом, так и на технологически-практическом уровнях. Во многих ВУЗах нашей страны в ходе совершенствования подготовки будущих педагогов к профессиональной деятельности в целом системно используются инновационные технологии и методы, которые способствуют формированию в будущих организаторов театральной деятельности одаренных детей важных качеств:

– *Профессиональной и социальной субъектности.* Студент, который проявляет во время учебы в университете высокую заинтересованность, инициативность на лекционных и практических занятиях, лидерство в различных видах внеаудиторной работы, в будущей профессиональной деятельности чаще всего также занимает активную позицию. Он, как правило, не ждет указаний от руководства, а самостоятельно организовывает эффективные формы работы с одаренными детьми, в том числе, и школьный театр (Demchenko, Kit, Goljuk, & Rodjuk, 2018).

– *Рефлексивности.* Такое качество является важной составляющей общения и межличностного восприятия, специфическим свойством познания человека человеком, способностью к размышлению о ком-то с целью понимания его мотивов и поступков, эмоционального состояния. Основой театральной деятельности является разнообразное общение педагога с творческой личностью, поэтому высокий уровень развития рефлексии будет способствовать повышению его эффективности. взаимодействуя с одаренными детьми, включая их в постановку театрального действия, педагоги должны уметь анализировать результаты своей работы, смотреть на себя как со стороны, понимать, как их воспринимают и оцениваем, дети, коллеги (Demchenko, Koval, Vatso, Limar, & Turchina, 2020).

– *Компьютерной грамотности.* Работа над постановкой спектакля среди прочих направлений предполагает разработку авторского сценария, подготовку декораций, костюмов, побор музыкального сопровождения. Для этого педагог должен использовать современные информационно-коммуникационные технологии, искать необходимый материал и информацию в Интернете, обрабатывать их различными компьютерными программами. Современная постановка театрального действия часто предполагает создание виртуального эстетического пространства, работу на персональных устройствах в режиме online с использованием Smart Learning Suite Online (Imber, 2018).

– *Эстетической культуры*. Использование театра как вида искусства в работе с одаренными детьми является средством развития музыкальных, художественных, литературных, артистических способностей, творческой самореализации. Поэтому современных способных и талантливых детей должен воспитывать педагог с высоким уровнем развития эстетической культуры, сам должен быть артистической и творческой натурой. Ученые к основным компонентам эстетической культуры относят музыкально-эстетическое мировоззрение, потребности, навыки, умения, творческие способности личности педагога (Davydova, Kovtun, & Shevchenko, 2020).

– *Коммуникативной культуры.* Для успешного использования элементов театрализации на уроках и во внеклассной работе, организации

театрального кружка у педагога на достаточном уровне должны быть развиты логика и техника речи. В связи с этим педагогический артистизм предполагает наличие умений внимательно анализировать текст, готовясь к его воспроизведению; демонстрировать образцы искусства красноречия, выразительно читать художественные произведения; образно и логически излагать мысли, описывать чувства и события; эмоционально выступать перед аудиторией; владеть голосом, дикцией, орфоэпическими нормами литературной речи и др. (Lazarenko, 2016).

– *Инклюзивной компетентности.* Дети с проявлениями различных видов одаренности считаются в современной инклюзивной педагогике одной из категорий лиц с особыми потребностями. Включение талантливых и одаренных ребят в театральную деятельность будет способствовать удовлетворению их образовательных и личностных потребностей: творческой самореализации, самоутверждению, в общении, положительной оценке таланта и др. Педагог, который будет работать с одаренными детьми, должен владеть умениями использования театральной деятельности как составляющей инклюзивного компетентности (Khilya, Kolosova, Sarancha, Kazmirchuk, 2020).

Таким образом, реализация компетентностного, технологического, субъект-субъектного и других подходов в подготовке будущих педагогов к профессиональной деятельности будет способствовать повышению ее уровня в целом. В тоже время, качества, которые будут сформированы во время обучения студентов в ВУЗе, станут основой для овладения ими специальной готовностью к работе с одаренными детьми.

Во-вторых, *использование контента обязательных педагогических дисциплин для овладения студентами основами театральной деятельности, методикой использования театра как вида искусства в работе со способными и талантливый детьми.*

Для этого в силабус учебного курса можно включить темы и вопросы по теории одаренности, технологическим и методическим аспектам развития детской одаренности, основам режиссуры, сценического мастерства, использования театральных игр и спектаклей в работе с одаренными детьми. Во время практических занятий и профессионально направленной внеаудиторной работы уместно самих студентов включать в различные виды театрализации. Такая работа уже проводится преподавателями украинских ВУЗов в процессе изучения обязательных педагогических дисциплин.

– *«Теория и методика воспитания»* (Е.Демченко, И.Стахова, ВДПУ им. М.Коцюбинского), тема «Театр как социокультурное явление и средство воспитания». Проводится лабораторное занятие с целью ознакомления студентов с методикой и опытом использования разных

видов театрализации в работе с младшими школьниками. Практическое занятие предусматривает разработку авторского сценария постановку спектакля во время прохождения педагогической практики.

– *«Методика обучения математической образовательной сферы»* (С.Стрелец, НУ «Черниговский коллегиум» им. Т.Г.Шевченка). организуются игры-конференции «Математический Оскар», «Математическое телевидения», «Математические новости», «Математическая Grammy Award» и др., для участия в которых студенты готовят доклады с элементами театрализации.

– *«Педагогические технологии в начальной школе»* (Ю.Лымар, НУ «Черниговский коллегиум» им. Т.Г.Шевченка). Тема «Педагогические технологии на основе активизации и интенсификации деятельности учащихся». Цель: ознакомление студентов с интерактивными технологиями ситуационного моделирования, разыгрывание ролевых ситуаций («Ролевая игра», «Воспроизведение сценки», «Драматизация»).

Таким образом, преподаватели используют возможности педагогических дисциплин в подготовке студентов к работе с одаренными детьми, использованию театра как средства развития их способностей и талантов. Для этого учебные программы дополняются как отдельными темами, так и вопросами, соответствующими этой проблематике.

В-третьих, *введение в образовательные программы подготовки будущих педагогов специальных учебных дисциплин,* непосредственным предметом изучения которых являются научно-методические основы работы с одаренными детьми, театральной педагогики, режиссуры и сценического мастерства. В последние годы «школьная театральная педагогика» разрабатывается как отдельная отрасль, которую Е.Антонова (Antonova, 2006) рассматривает как традицию национальной культуры и составную часть образовательного процесса в школе, средство достижения культуротворческих целей и нравственно-эстетического воспитания.

Такие возможности появились в последние годы в условиях реформирования украинского высшего образования, предоставления университетам права в пределах автономии разрабатывать и модернизировать образовательные программы подготовки соискателей высшего образования, вводить выборочные курсы и др. Например, в ВГПУ им. М.Коцюбинского (Украина) студентам предлагаются для выбора такие дисциплины: «Театральная педагогика», «Социоигровой практикум», «Основы музыкально-практической деятельности младших школьников», «Развитие творческих способностей детей в театрализованной деятельности», «Обучение и воспитания одаренного ребенка» и др. Также в контексте реализации проекта Erasmus + Module Jean Monnet 620252-EPP-1-2020-1-UA-EPPJMO-MODULE620252-EPP-1-2020-1-UA-EPPJMO

для будущих педагогов преподается факультативный курс «Подготовка будущих педагогов к внедрению европейского опыта формирования soft skills детей дошкольного и младшего школьного средствами театральной деятельности». Целью курса является: теоретико-методическая подготовка студентов к использованию театра как средства развития «soft skills» в детей с особыми образовательными потребностями, в том числе талантливых, в контексте изучения и адаптация западноевропейских педагогических концепций. В ХНПУ им. Г.С. Сковороды (Украина) для студентов бакалавриата специальности «Дошкольное образование» преподается дисциплина «Театральная деятельность в учреждениях дошкольного образования». Цель изучения которой базовая подготовка будущего специалиста к теоретическому и практическому применению знаний, развитие творческого потенциала путем усвоения и закрепления основных элементов актерского мастерства. Изучение дисциплины позволит студентам стать организаторами детских театральных и кукольных спектаклей в учреждениях дошкольного образования.

Обобщение
Conclusions

Театр является эффективным средством развития и воспитания способных и талантливых детей. Театральная деятельность влияет на развитие многих психических процессов и сфер жизнедеятельности ребенка, способствует развитию интеллектуальной, физической, коммуникативной, морально-волевой, поведенческой сторон личности. Обобщение полученных результатов эмпирического исследования, показало, что в будущих педагогов преобладают низкий и средний уровни развития готовности к использованию театральной деятельности в работе с одаренными детьми и педагогического артистизма. Это обусловливает необходимость активизации специальной работы по формированию в студентов всех компонентов исследуемого нами вида готовности. Формирование в будущих педагогов готовности к развитию детской одаренности средствами театральной педагогики нужно начинать в контексте общепедагогической подготовки. Уместным также считаем введение в образовательные программы подготовки будущих воспитателей учреждений дошкольного образования и учителей начальных классов учебных дисциплин, непосредственным предметом изучения которых является научно-методические основы работы с одаренными детьми, театральная педагогика, основы режиссуры и сценического мастерства. **Перспективным направлением** подготовки будущих педагогов к развитию одаренных детей средством театральной деятельности считаем

продолжение разработки и преподавания курсов по основам театральной педагогики, использование возможности участия международном проекте программы ЕС Erasmus + Module Jean Monnet.

Summary

The problem of giftedness remains relevant and has been actively developed for a long time in recent decades in Ukrainian and world psychology and pedagogy. The subject of scientific research is also the creation of favorable conditions and the search for effective technologies, methods and tools for the development of children with manifestations of various types of talents, starting with preschool education. Great potential in working with gifted children lies in theatrical activities, which are considered a cultural phenomenon and a pedagogical tool. Work on staging a theatrical action includes the organization of various creative activities of children: intellectual, literary, musical, dance, art, technical. The inclusion of children in such a process will promote the development of general and special abilities, their creative self-realization. Through diverse communication, conditions are created for solving social and educational problems related to personal growth and overcoming the problems that arise in the lives of gifted children. In order to effectively use theatrical activities as a pedagogical tool in working with gifted children, future educators and teachers must master the relevant knowledge and skills, basic principles of directing and screenwriting skills in the course of professional pedagogy while studying in free educational institutions. The results of diagnosing students based on the use of a self-assessment card of readiness to use theatrical activities in working with gifted children revealed some problems and shortcomings. It was found that future teachers are not sufficiently familiar with the basics of theater pedagogy, do not understand the potential of theater art in solving problems of development and creative self-realization of talented children. Acting skills of a large proportion of students are mainly at medium and low levels of formation. Accordingly, in the context of preparing future educators of preschool institutions and primary school teachers to work with gifted children, it is necessary to introduce separate disciplines in theater pedagogy. We have also supplemented the curricula of psychological and pedagogical disciplines with topics and questions about the peculiarities of the use of theatrical in work with gifted children.

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JOB SATISFACTION: ANALYSIS OF SOCIO-DEMOGRAPHIC DATA RELATED TO JOB SATISFACTION AMONG TEACHERS IN THE VIDZEME REGION

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Abstract. *This study analyses the socio-demographic factors of a group of teachers and school headmasters and their job satisfaction. It explores potential correlations and links between socio-demographic factors, the subjects which they teach, their role at the educational institution and the level of job satisfaction. The data were collected from 128 female respondents (N=128) from nine regional communities in the Vidzeme region of Latvia. Respondents were between 22 and 73, with an average age of 49. They were divided into five categories on the basis of age. There were also eight categories for subjects, teaching levels and the performed roles - the arts, the humanities, the social sciences, other sciences, preschool teachers (with students aged 1-7), primary school teachers (7-10), elementary school teachers (7-16) and headmasters. The study shows that job satisfaction among teachers is closely linked to the issue of whether they do or do not have children. Socio-demographic indicators such as partnership, the number of marriages, the number of marriages of their parents, and the existence of siblings - these indicated links, but not statistically significant ones in relation to the job satisfaction of teachers. The Likert scale was used to measure job satisfaction. The collected data were analysed with non-parametric methods.*
Keywords: *job satisfaction; educators; pedagogue; socio-demographic data of pedagogues; subject teachers; Vidzeme region.*

Introduction

Schools and systems of education undergo constant changes that relate to new scientific discoveries, new educational paradigms, as well as the overall economic market, development and improvement to ensure the best possible quality of education for students. The E-class Internet site: "There are active efforts at this time not just in Latvia, but all over the world, to turn the ship of the educational system into a more modern direction, mostly in terms of the content of learning. It can be said that education is currently undergoing the most important paradigm shift during the past 100 years" (E-klase, 2015). As an organisation, a school is usually seen as a special entity that is not linked to the business world. It must be noted, however, that schools are organisations which are equal business partners for other business organisations, albeit with their own

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specifics. Processes related to schools provide services (teachers) and buy services (students and their parents). Schools also involve competition, because parents can choose the school to which they will send their children. They also think about the criteria for that choice. These are subjective criteria, but parents usually communicate among themselves so as to discuss the reputation of schools. This most often has to do with student achievements at educational Olympiads, as well as with school results. Persevica has argued that much attention is focused on the quality of education, but not enough attention is focused on human resources which ensure this quality (Peršēvica, 2013). Psychologist Zegele, for her part, argues that an important aspect of the quality of work is the satisfaction of employees with their work: "Employees with a higher level of satisfaction with their work care more about the quality of their work, are more productive, are more loyal to the organisation, and keep their jobs for a longer time, as opposed to looking for a new job" (Zeģele, 2008, p.34). This shows that the quality of a teacher's work depends very importantly on the teacher's satisfaction with the job. Persevica's dissertation included research about links between the satisfaction of pedagogues with tier work and the quality of education, finding that interpersonal relationships are a key factor in increasing job satisfaction and in ensuring the quality of education (Peršēvica, 2013). It is universally known that the first interpersonal relationships of a person emerge in the family when an infant first makes contacts with parents or other family members. This continues to the time when interpersonal relationships start to expand and become richer with relationships with people outside the family. Arvey and colleagues have studied twins to see how satisfied they are with work, finding that this partly depends on genetic factors (Arvey, Bouchard, Segal & Abraham, 1989). Persevica, in turn, argues that it is necessary to take a more in-depth look at how demographic factors influence the quality of work (Peršēvica, 2013). She surveyed high school teachers to find out how satisfied they were with their work (Peršēvica, 2013). This issue does not relate just to the pedagogical sector. It is an updated problem for the entire European Union. The European Commission released a press release to note that on April 7, 2014, the European Agency for Safety and Health at Work (EU-OSHA) launched a campaign, "Healthy Workplaces Manage Stress," the aim being to increase the level of information about psychological, physical and social risks that relate to stress at work (Eiropas komisija, 2014). According to data from the Latvian Central Statistical Board, 21,789 teachers were working for general education schools in Latvia at the beginning of the 2019 school year (Centrālās Statistikas Pārvaldes datu bāze, 2020).

Goal of the research: To examine links between the satisfaction of teachers with their work and socio-demographic indicators.

Research questions:

1) How satisfied are teachers from the preschool to the elementary school level with their work?
2) What are links between this level of satisfaction and the socio-demographic indicators of the teachers?

The Research

Literature review

According to Lim, satisfaction with work is a driving force to ensure that employees are more productive, innovative and focused on the provision of high-quality services (Lim, 2007). The Cambridge Dictionary defines the concept of job satisfaction as such: "The feeling of pleasure and achievement that you experience in your job when you know that your work is worth doing, or the degree to which your work gives you this feeling" (Cambridge Dictionary, 2020). Locke has argued that job satisfaction is a relationship between expectations and that which happens, i.e., considering what a person expects from the job and the things that are received from the job (Locke, 1976). Graham, for his part, has argued that job satisfaction is a measurement of one's total feeling and attitudes towards one's job (Graham, 1982). Hoppock has offered a broader definition, arguing that job satisfaction is any combination of psychological, physiological and environmental circumstances that cause a person truthfully to say I am satisfied with my job (Hoppock, 1935).

Vroom focuses more on the role of an employee at work, arguing that job satisfaction speaks to affective orientations on the part of individuals toward work roles which they are presently occupying (Vroom, 1964). Vroom further emphasises the individual when it comes to job satisfaction, as opposed to some random and impersonal employee.

Pool points out that a person is a dynamic organisation with individual characteristics (Pool, 1998). Mullins, for his part, argues that job satisfaction is a complex and multi-faceted concept which will be different for each person and have a different content. Mullins also argues that job satisfaction usually relates to motivation, but also noting that the link between job satisfaction and motivation is not clear. Mullins insists that satisfaction is not the same as motivation, arguing that job satisfaction may be more an issue of a person's attitude and internal situation. For instance, that may relate to personal feelings about qualitative and quantitative achievements (Mullins, 2005). Zembylas and Papanastasiou have examined the job satisfaction of teachers and found that this is basically based on how effective relations between the duties of schoolchildren and the duties of schoolteachers are Zembylas & Papanastasiou, 2006).

Hughes, et al., in turn, argue that it is important to note that job satisfaction does not have to do with how well an employee feels about the work that has been done and how much effort the employee has invested. Instead, the issue is how much the employee enjoys the job (Hughes et al., 2006). These various theories show that job satisfaction is based on personal factors such as heredity (Arvey, Bouchard, Segal & Abraham, 1989), as well as external environmental factors (Hoppock, 1935).

Spector (Spector, 1997) divided job satisfaction factors into two categories - environmental and individual. Individual factors include psychological factors such as personality, attitude, behaviour, while demographic factors speak to age, gender, educational levels, etc. (Rauf, 2012; Ramanaidu, 2011). Other researchers have differentiated between cognitive and affective categories (Organ and Near, 1985). Ebru (1995), as well as other researchers (Dewar & Werbel, 1979; Parasuraman, 1982), argue that personal factors such as experience and age will have an effect on job satisfaction.

Suma and Lesha (Suma & Lesha, 2013) identify two aspects of job satisfaction - satisfaction with facts and general satisfaction. Judge and Watanab for their part, argue that job satisfaction is closely linked to overall satisfaction with life (Judge & Watanab, 1994).

Methodology

Cohort

The research cohort represents 128 (N=128) teachers from 22 to 73 years of age (Mean=48.97; Median=50.00). Research data were collected at a teacher conference involving teachers from the Amata, Priekuli, Ligatne, Pargauja, Rauna, Vecpiebalga, Jaunpiebalga and Cesis administrative districts. 237 questionnaires were filled out, and six of them were only partly completed and were thus destroyed. Of the utile questionnaires, 128 were filled out by women, and three were filled out by men. Because the number of questionnaires from men was insufficient to analyse the results from the gender perspective, these questionnaires, too, were removed from the cohort, leaving only the ones that had been filled out by women for further consideration.

The cohort's socio-demographic indicators

Because the research is focused on socio-demographic indicators, a wide range of them were included in the questionnaire. They are summarised in Table 1.

Data about socio-demographic indicators (Table 1) shows that the age varies from 22 to 73, which is why five age categories were identified, as opposed to the initial 35 categories. That made data processing easier. There was a similar approach toward identifying subjects which pedagogues have studied, and these

are grouped in accordance with Cabinet of Ministers regulations on educational classifications (Izglītības klasifikācija, 2017) - chemistry, biology, etc., and math are grouped under "Sciences." The same Cabinet of Ministers regulations were used to group topics under "Teaching Subject Group," although this was insufficient in that some teachers teach several topics that should be put into two groups (mathematics and language); instead they were put in a single group. A teacher who teaches maths, Latvian and crafts is listed under "Sciences," empirically assuming that maths are a leading scientific topic which teachers teach. This grouping of topics was necessary because many teachers teach several unrelated subjects.

Table 1 ***The Socio-demographic Indicators of Respondents***

Soc.Dem.Factors	Soc.Dem. Sub- factors	Frequency	Percent %
Age Groups	22-30	7	5.5
	31-40	11	8.6
	41-50	51	39.8
	51-60	53	41.4
	61-73	6	4.7
Current Residence	With parents	6	4.7
	Private house	60	46.9
	Flat	62	48.4
Living Environment	City/ Town	40	31.3
	Country side	88	68.8
Marriage	Unwed	13	10.2
	Married	89	69.5
	In partnership	9	7.0
	Divorced	15	11.7
	Widowed, living with partner	2	1.6
Marriage Nr.	Unwed	13	10.2
	Once	102	79.7
	Twice	13	10.2
Children	I do not have children	7	5.5
	I have children	121	94.5
Parents' Marriage	Mother first, father first marriage	116	90.6
	Mother first, father second marriage	7	5.5
	Mother first, father other version of marriage	3	2.3
	Mother second, father second marriage	2	1.6
Level of Education	Higher education	123	96.1
	Master's degree	3	2.3
	Currently a student	2	1.6
Major	Humanities	22	17.2
	Arts sciences	19	14.8
	Preschool pedagogy (from 1 to 7)	18	14.1
	Primary school pedagogy (from 7 to 10)	23	18.0
	Elementary school pedagogy (from7 to 16)	17	13.3
	Sciences	19	14.8
	Social sciences	10	7.8
Job Position	Headmaster	7	5.5
	Teacher	121	94.5
Teaching Subject Group	Arts	20	15.6
	Humanities	33	25.8
	Preschool teacher (from 1 to 7)	18	14.1

	Sciences	46	35.9
	Social sciences	8	6.3
	Headmaster	3	2.3
My Nationality	Latvian	123	96
	Russian	4	3.1
	Belarussian	1	.8
Father's Nationality	Latvian	114	89.1
	Russian	9	7.0
	Belarussian	2	1.6
	Ukrainian	2	1.6
	Polish	1	.8
Mother's Nationality	Latvian	118	92.2
	Russian	7	5.5
	Belarussian	2	1.6
	Ukrainian	1	.8
Parents' Marriage	Living together	45	35.2
	Divorced	15	11.7
	Father dead	29	22.7
	Mother dead	2	1.6
	Father and mother dead	37	28.9

Job satisfaction was ranked on the Likert scale, ranging from 1 ("very dissatisfied") to 10 ("very satisfied"). Data processing found that there were four larger satisfaction groups. "Dissatisfied" included data related to "Very dissatisfied," "Dissatisfied," and "Nearly dissatisfied.". "Average, but more dissatisfied" included "More dissatisfied than satisfied" and "Average, but a tendency to be dissatisfied," while "Satisfied" covered "Nearly satisfied," "Satisfied," and "Very satisfied."

Data processing and analysis were based on non-parametric statistical methods, because the cohort was not in line with a normal distribution of parameters. The author used descriptive statistical methods such as Crosstab and the Spearman rank correlation.

Results

These are the results of the general "Job satisfaction" cohort:

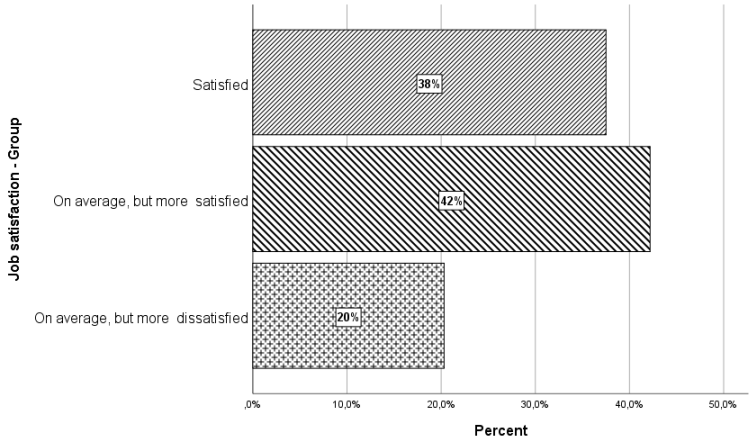

Figure 1 ***Teacher Job Satisfaction Groups***

The results show that 20% of respondents have an average level of dissatisfaction with their work, while the remaining 80% have an average level of satisfaction or satisfaction about their work. Because the data were collected at a teacher conference, it may be that the cohort tilted toward delegates who were interested in continuing their career. None of the respondents indicated that he or she was "dissatisfied" with the work.

A look at job satisfaction and age groups found no major links (rs (126) = .44, p = .619), though there are some positive linkage tendencies.

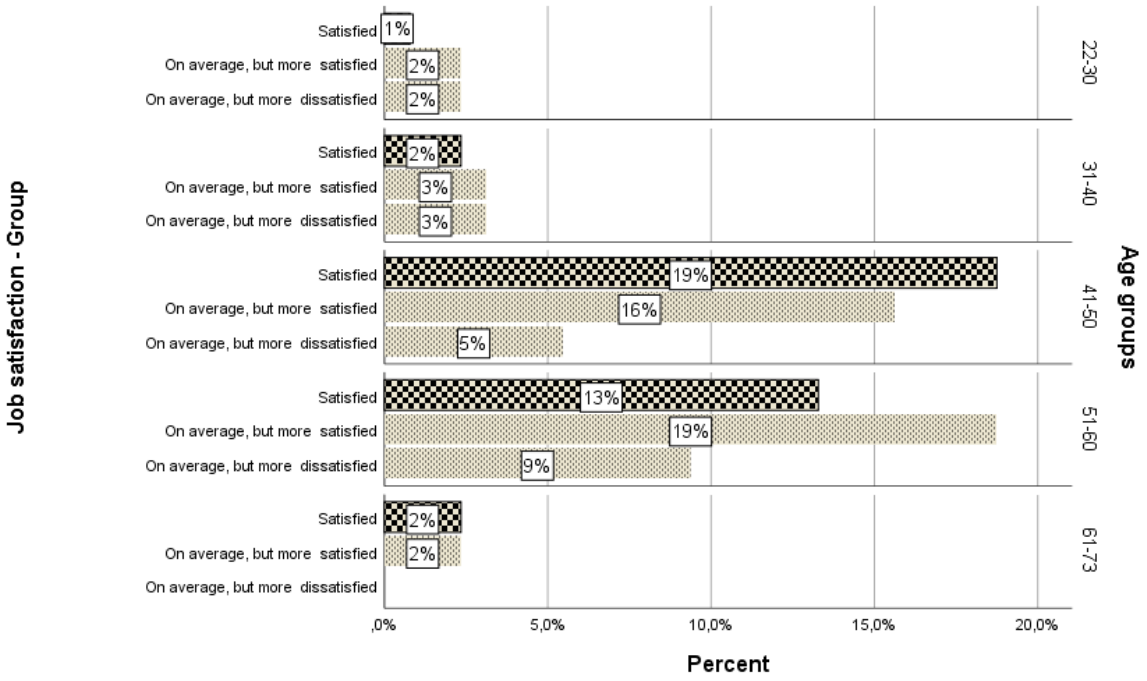

Figure 2 ***Job Satisfaction Divided by Age Group***

A look at job satisfaction on the basis of age group (Figure 2) shows that the largest differences are found in the 41-50 and 51-60 age groups. Crosstab data analysis shows trends between the two indicators. When it comes to the internal data set of age groups, 11.5% of respondents from the 22-30 age group were more dissatisfied with their work, while the percentage for the 31-40 group was 15.4%, it was 26.9% for the 41-50 age group, and at a level of 46.2% in the 51-60 group. None of the teachers from the 61-73 age group indicated dissatisfaction. A look at the indicators "Average, but more satisfied" and "Satisfied" shows a level of 5.6% and 2.1% in the 22-30 group, 7.4% and 6.3% in the 31-40 group, 37% and 50% in the 41-50 group, 44.4% and 35.4% in the 51-60 group, and 5.6% and 6.3% in the 61-73 group. There were no statistically meaningful links between age and job satisfaction (rs(126)=.44; p=.619).

Table 2 ***Job Satisfaction and Place of Residence***

Soc.Dem.Factors / Soc.Dem. Sub- factors			Job Satisfaction			
			On average, but more dissatisfied	On average, but more satisfied	Satisfied	Total
Current residence	With parents	Count	2	2	2	6
		% within Job satisfaction	7.7	3.7	4.2	4.7
		% of Total	1.6	1.6	1.6	4.7
	Private house	Count	11	25	24	60
		% within Job satisfaction	42.3	46.3	50.0	46.9
		% of Total	8.6	19.5	18.8	46.9
	Flat	Count	13	27	22	62
		% within Job satisfaction	50.0	50.0	45.8	48.4
		% of Total	10.2	21.1	17.2	48.4

Analysis of the "Current residence" indicator found no statistically important links (rs (126) = -.024, p = .789). Trends (Table 2) do not also speak to any distinct tendencies that would speak to some kind of link with the place where the teacher lives and the extent to which the teacher has job satisfaction.

A look at links between "Living environment" and "Job satisfaction" also found no statistically important links (42(126) =-.117; p=.189). There were also no linkage tendencies.

Next, there is the issue of "Marriage," which included the categories "Unmarried," "Married," "Partnership," "Divorced" and "Widowed, but living with partner". Here, again, no statistically important links, but if the five indicators are grouped into two - "Relationship" and "Alone," then there are linkage trends, but no statistically important links (rs (16) =.059; p=.509). Crosstab shows that 35% of teachers who do not have a relationship have more of a tendency to be dissatisfied at work, while 65% of teachers with a relationship indicated that. The tendency of being more satisfied (85%) and satisfied (77%) with work is seen among teachers who have a relationship, while among those who do not, only 15% are satisfied at an average level, while 23% are satisfied.

Analysis of the "Number of marriages" and "Satisfaction with work group," 65% of respondents said that they were dissatisfied about teachers who had married just once, while 12% disliked those who were married several times. 23% of teachers who had never been married were dissatisfied with the internal group. Similar trends were seen in terms of average satisfaction or satisfaction with work. 7% of unmarried women had average satisfaction, as did 6% of the internal group. Among women married once, the figure was 83% and 83%, while for women who had been married more than once, it was 9% and 10%. These are trends, but they are not statistically important links (rs(126) =.112; p =.208).

Next, there is the issue of links between "Satisfaction with the work group" and the issue of whether the respondents have children. 3% of women with no children were more dissatisfied with their work, 2% were more satisfied, and only 1% were totally satisfied. Among teachers with children, 17% were more

dissatisfied, 41% were more satisfied, and 37% were satisfied with their work. This has statistically important links (rs(126) =.186; p =.35).

There were no statistically important links when looking at the linkage between job satisfaction and the marriage model of parents (rs(126) =.83; p =.35). Crosstab analysis shows that teachers whose parents had only been married once were more satisfied with work than teachers whose parents had married more than once. 34% of those who had parents who only married once said that they were satisfied with their work, while 38% were at an average level or more satisfaction, with only 21% saying that they are at an average level, but more dissatisfied with their work. Among those teachers whose parents had married repeatedly, 3% were satisfied at an average level, and 5% were more satisfied (there were no data about those who were dissatisfied).

Links between job satisfaction and siblings were recategorized into new groups because of the limited amount of data - "Only child," "Older brother," "Younger brother," "Younger sister," "Many brothers and sisters." There were no statistically important links here (rs(126)=.167; p=0.59). Still, there were tendencies of linkage.

Table 3 ***Job Satisfaction and Siblings***

Soc.Dem.Factors / Soc.Dem. Sub- factors			Job satisfaction			Total
			On average, but more dissatisfied	On average, but more satisfied	Satisfied	
Siblings Rec	Only child	Count	5	10	6	21
		% of Total	3.9	7.8	4.7	16.4
	Older brother/s	Count	5	8	6	19
		% of Total	3.9	6.3	4.7	14.8
	Younger brother/s	Count	5	11	8	24
		% of Total	3.9	8.6	6,3	18.8
	Younger sister/s	Count	5	9	6	20
		% of Total	3.9	7	4.7	15.6
	Many brothers and sisters	Count	6	16	22	44
		% of Total	4.7	12.5	17.2	34.4

Data in Table 3 show that teachers with several younger and older brothers and sisters show more satisfaction and dissatisfaction.

Data about job satisfaction and the level of education were not analysed in greater depth, because there was insufficient data in the cohort (123 respondents had a higher education, three had a master's degree, and two were students at the time of the study).

Table 4 ***Job Satisfaction and Area of Science***

Soc.Dem.Factors / Soc.Dem. Sub- factors			Job satisfaction			Total
			On average, but more dissatisfied	On average, but more satisfied	Satisfied	
Studied group of science	Humanities	Count	6	11	5	22
		% of Total	4.7	8.6	3.9	17.2
	Arts & sciences	Count	2	9	8	19
		% of Total	1.6	7	6.3	14.8
	Preschool pedagogy (from 1 to 7)	Count	5	9	4	18
		% of Total	3.9	7	3.1	14.1
	Primary school pedagogy (from 7 to 10)	Count	4	9	10	23
		% of Total	3.1	7	7.8	18
	Elementary school pedagogy (from7 to 16)	Count	4	7	6	17
		% of Total	3.1	5.5	4.7	13.3
	Sciences	Count	3	5	11	19
		% of Total	2.3	3.9	8.6	14.8
	Social sciences	Count	2	4	4	10
		% of Total	1.6	3.1	3.1	7.8

Data related to links between job satisfaction and the area of science were not statistically important (rs(126)=.134; p=.130). Crosstab results (Table 4) show that the level of job satisfaction among teachers with various groups of science are quite comparable.

Links between job satisfaction and the job of the pedagogue (headmaster, teacher) had no statistically important linkages (rs(126) =.-.127;p=.153). But there are trends to show that no headmaster had an average and more level of dissatisfaction, though 20% of teachers said so. Other job satisfaction aspects between these two categories of work are comparable.

Analysing data between subject group and job satisfaction, again, found no statistically important links (rs(126=.025; p=.778).

Table 5 ***Job Satisfaction and Area of Teaching***

Soc.Dem.Factors / Soc.Dem. Sub- factors			Job satisfaction			Total
			On average, but more dissatisfied	On average, but more satisfied	Satisfied	
Subject group teach	Arts	Count	3	8	9	20
		% within Subject group teach	15	40	45.0	100
		% within Job satisfaction	11.5	14.8	18.8	15.6
		% of Total	2.3	6.3	7.0	15.6
	Humanities	Count	8	14	11	33
		% within Subject group teach	24.2	42.4	33.3	100
		% within Job satisfaction	30.8	25.9	22.9	25.8
		% of Total	6.3	10.9	8.6	25.8

	Preschool teacher (from 1 to 7)	Count	5	8	5	18
		% within Subject group teach	27.8	44.4	27.8	100
		% within Job satisfaction	19.2	14.8	10.4	14.1
		% of Total	3.9	6.3	3.9	14.1
	Sciences	Count	10	17	19	46
		% within Subject group teach	21.7	37.0	41.3	100
		% within Job satisfaction	38.5	31.5	39.6	35.9
		% of Total	7.8	13.3	14.8	35.9
	Social sciences	Count	0	5	3	8
		% within Subject group teach	0	62.5	37.5	100
		% within Job satisfaction	0	9.3	6.3	6.3
		% of Total	0	3.9	2.3	6.3

Crosstab analysis of job satisfaction and subject area (Table 5) shows that there are no social sciences teachers who have an average and more dissatisfied level with work, while teachers who teach natural science subjects are the most satisfied or at an average, but more satisfied level.

No statistically important links between the teacher's nationality and job satisfaction (rs(126)=.008; p=.927). Crosstab analysis does not indicate any possible tendencies of linkage.

Statistically important links were not found when analysing the nationality of the respondent's father and job satisfaction (rs (126)=-.014; p=.877), and crosstab analysis also did not show any trends of linkage. Comparable results related to the mother's nationality (rs (126=-0.54; p-.546), and here, again, crosstab does not show any tendencies of linkage.

No statistically important links between parent's marriage and job satisfaction (rs (126)=-0.28; p=.751), and crosstab analysis showed no tendencies of linkage.

An examination of a cohort of 434 respondents with 132 men and 302 women led Bolin to argue that statistically meaningful effects on teacher job satisfaction relate to the age of teachers, the length of their experience and the subject that they teach. Bolin also analysed various dimensions of relationships, including the existence of siblings, as well as the age difference with brothers and sisters. Bolin did not, however, offer data about the link between these indicators and teacher job satisfaction (Bolin, 2008). Chirchir (2016) has also argued that gender and age have statistically meaningful links with job satisfaction. This study did not find statistically important links with job satisfaction, and that may be because of the size of the cohort. Bolin's cohort (2008) had 434 respondents, Chirchir's had 848, and this study had 128 respondents, all of whom were women (Chirchir, 2016).

Conclusions

1. In the Amata, Priekuli, Ligatne, Pargauja, Rauna, Vecpiebalga, Jaunpiebalga and Cesis administrative districts in the Vidzeme region have 80% of teachers who are almost satisfied or fully satisfied with their work.
2. There are statistically meaningful links between job satisfaction and socio-demographic indicators such as whether the respondent had children. Teachers with kids were more satisfied with work than teachers who had none.
3. There were no statistically important links between job satisfaction and socio-demographic factors such as age, place of residence, a relationship or living alone, the number of marriages, the marriage model of parents (number of marriages) and the life model of parents at the time of the study, whether or not there are siblings, the level of education, the area of science that was studied, the topics that are taught, and the nationality of the teacher and her parents.
4. Significant trends related to job satisfaction apply to socio-demographic factors such as the relationship status of teachers, with those who were in a partnership tending to be more satisfied with their work that those who did not have a relationship and lived alone. There was also the issue of marriage. Teachers who had married once or had not married tended to be more dissatisfied with their jobs than teachers who had married several times. Teachers whose parents were only married once showed the tendency of being more satisfied with work than those whose parents had married several times. When it came to siblings, teachers with many brothers are sisters tended to be more satisfied their work, particularly if they were a "middle child," as opposed to an only child or an oldest or youngest child. These factors and their relationship with job satisfaction should be studied further with a larger cohort of respondents.
5. Additional research with more respondents will be needed to come up with recommendations on how to improve the job satisfaction of teachers. Data from this study are insufficient to produce such recommendations.

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VALUES SUPPORTING THE SUSTAINABILITY OF INCLUSIVE EDUCATION IN DIFFERENT PRACTICES

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Abstract. *This article analyses how fundamental values underpin educational practices that have emerged in the development of society and create the preconditions for the sustainability of inclusive education. Through the analysis of the scholarly literature, the expression of inclusive values in the application of approaches to integrated, individualised inclusive education and Universal Design for Learning is analysed. It has been established that the effectiveness of inclusive education is substantiated in practices which are based on real existing inclusive values: equity, equality, communality and respect for diversity. Based on the results of the study, it is concluded that the sustainability of inclusive education coincides with the real existence of inclusive values in practice, equally applying to all students.*
Keywords: *inclusive values, inclusion, integration, special needs education, Universal Design for Learning.*

Introduction

The practice of inclusive education is forming in the contexts of historical, cultural and economic experiences and is based on values that prioritise unalienable human value. It is in the process of constant change and covers modifications in content, approaches, strategies and structures addressing the needs of children and adults (UNESCO, 2003). It gradually develops in educational policy and practice, following the general values that lead to a more just society (UNESCO, 2009). The Salamanca Statement and Framework for Action on Special Needs Education emphasise the value of inclusive education:

We believe and proclaim that: "regular schools with this inclusive orientation are the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society and achieving education for all; moreover, they provide an effective education to the majority of children and improve the efficiency and ultimately the cost-effectiveness of the entire education system" (UNESCO, 1994, ix).

The research results of the European Agency for Special Needs and Inclusive Education (EASIE) (2019a) confirm the value of inclusive education. It is stated

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that the implementation of inclusive education can contribute to finding solutions to problems of failures at school and early dropout and enhance the achievement of all students if the school and national education system is based on the value of equity and inclusive practice.

The origins of inclusive values are linked to the fundamental values encompassed in the Universal Declaration on Human Rights (UN General Assembly, 1948), which affirms the prerogative of human rights and freedoms and of the principle of non-discrimination with respect to every human being, regardless of his or her 'race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status' (Article 2). The concept of discrimination is defined in the UN Convention Against Discrimination in Education as actions depriving of access to education of any type and at any level, limiting to education of an inferior standard, establishing or maintaining separate educational systems or institutions and inflicting conditions that are incompatible with the dignity of man on any person or group of persons (UN, 1960, Article 1).

Inclusive values derive from the above-mentioned world-level agreements and are specified by acknowledgement of equity, establishment of conditions for full participation, assurance of equal rights, creation of communal relations, respect for diversity, and sustainability (Ainscow, Booth, & Dyson, 2006). Fundamental inclusive values and equity first permeate educational policy and management (Ainscow, 2020) and are reflected in the community goals, beliefs, attitudes, traditions and behaviour (Mitchell, 2015) and in child-centred teaching approaches and educational practice based on the wellbeing of all learners, self-directed learning, and development of creative, emotional and cognitive powers (Mitchell, 2008).

Booth and Ainscow (2002) determine the concept of inclusive education through dimensions of culture, policy and practice. It concretises inclusive culture through the formation of the school community and the hierarchy of inclusive values; inclusive policies – the development of a school for all and the organisation of support for student diversity; and inclusive practice – the concept of orchestrative education and the accumulation of necessary educational tools. However, the understanding and implementation of inclusive principles differ in the structures of different countries due to political and economic development and cultural experience (Vislie, 2003; Magnússon, Göransson & Lindqvist, 2019). The majority of school principals in European Union countries understand inclusive education as a narrow issue related to organising education for pupils with special educational needs (EASIE, 2019b).

The scientific and practical relevance of this study is to reveal the preconditions for the sustainability of effective inclusive education practices. Given that inclusion processes evolve under the influence of cultural, political and

economic decisions, it is important to analyse the expression of inclusive values in different practices, as they can lead to social justice; collaborative, success-oriented learning; and support for learners (Sorkos & Hajisoteriou, 2020), as well as equal opportunities (Medina-García, Doña-Toledo & Higueras-Rodríguez, 2020).

This study seeks to answer the question: How are the educational practices that have emerged in the development of society based on fundamental values, creating the preconditions for the sustainability of inclusive education?

Method

In order to answer the question, an analysis was conducted using the method of scholarly literature overview with an inductive approach (Harding, 2019). From the EBSCO and Google Scholar databases, 36 sources were selected for analysis according to these criteria: (a) analyses the construct of inclusive education approaches; (b) reveals experiences of applying inclusion in the context of societal development; and (c) substantiates the results of the inclusion practice.

Based on a theoretical analysis of inclusive values, the values chosen are *acknowledgement of equity; establishment of conditions for full participation; assurance of equal rights; creation of communal relations; respect for diversity; and sustainability* (Ainscow, Booth & Dyson, 2006). It is assumed that the sustainability of inclusion practices is based on their effectiveness and their link to the universally recognised values of inclusive education.

Inclusion approaches formed in the historical development of society and current practice were selected for the analysis: *integration; individualised inclusive education; and Universal Design for Learning*. In the analysis of the selected literature, the components of the implementation of inclusive approaches are distinguished, reflecting the existence of inclusive values. Summaries are associated with results that reflect the effectiveness of inclusion.

Expression of Inclusive Values in the Integration Approach

The origins of inclusive education practice are related to the beginning of the phenomenon of integration and its development. The idea of integration actualises the principles of desegregation and normalisation with regard to marginalised groups (Winzer, 2007) and is frequently related to public movements for the implementation of rights of all people (Salend & Garrick Duhaney, 2011). Political leadership and legitimate decisions that open up the possibility for legal actions are relevant for the beginning of integration processes.

In 1954, the Supreme Court of the United States of America declared education of Afro-American children and white children in separate schools to be

a racial segregational practice and therefore a violation of constitution. This served as a strong impetus for African-American rights movements, which initiated educational integration (Frankenberg & Lee, 2002; Bartz & Kritsonis, 2019). Responding to pressure from the public and on the requests of parents, a six-year-old African-American girl, Ruby Bridges, began attending an all-white elementary school. The value of equity and non-discrimination on the grounds of race was put into practice physically, but community relations were still marked by deep segregational experiences. During the first year at that school, the girl underwent complete isolation within the pupil group, suffered from parents' protests, and witnessed the exclusion of her teacher in the teachers' community (Coles, 2010).

Striving for the integration of disabled children into local communities in Norway in the period from 1950 to 1960, special schools and special classes were established in various regions of the country. During that period, the number of disabled children attending schools in Norway increased from approximately 4,000 to 20,000 pupils. The process created conditions for implementing the right of disabled pupils to education. However, schools still remained closed institutions, which were poorly involved in the lives of local communities (Ogden, 2014).

The restoration of Lithuania's independence and liberation from the Soviet regime fostered a public movement for integration of the disabled in the country. This was particularly noticeable after the adoption of the Law on Education of Republic of Lithuania in 1991, which ensured the right of the disabled to learn in general education schools. Non-governmental organisations promoted the movement of disabled children from homes to schools and from special schools to general education institutions. From 1995 to 2002, the number of pupils with special educational needs (SEN) in Lithuanian general education increased by about 150% – i.e. from 19,643 to 49,989 pupils (Open Society Institute, 2005). However, the research shows that the integration of SEN pupils by physically transferring them into educational institutions grounded on the paradigm of traditional education triggered experiences of inner segregation. Teachers failed to maintain systemic and productive pedagogical interaction in the learning process with these pupils, personalise their educational goals, and create confidence-based interpersonal relations in the pupils' community (Kaffemanienė, 2005; Galkienė, 2017).

The integration processes for national minorities are the most frequently stimulated, with an aim of cultural contact or economic equality. In Norway, the indigenous nation of Sami has been involved in the processes of 'Norwegisation' for more than 100 years (Keskitalo & Olsen, 2019). A large number of countries have been investing in efforts to integrate the Roma people into society to improve their economic status (Curcic, Miskovic, Plaut & Ceobanu, 2014; Kostka, 2015).

However, the research shows that in the case of externally stimulated cultural or economic integration, there is a move towards acculturation and assimilation, or the fight for protecting one's own identity is encouraged (Keskitalo & Olsen, 2019; Magazzini, 2020).

The phenomenon of integration focuses on the implementation of the value of equity in regard to society groups that differ from the majority and encourages a transition of society to new cultural and educational equilibria. However, this approach highlights the limitations of full participation and the realisation of community values. The existence of these values requires the openness of the majority to be integrated as well as the desire of the minority to maintain relations with them (Berry, 1997), acknowledgement of significant differences between the minority and majority (Eriksen, 2007) and clear self-awareness of the majority in the process of integration, including the adoption of new values and preserving their own identity (Mačiulytė, 2012).

Expression of Inclusive Values in the Approach of Individualised Inclusive Education

In the practice of inclusive education, the emphasis is laid on planning for all, achievement assessment, active collaborative participation, and support accessible to all (Booth & Ainscow, 2002). Organisation of inclusive education for SEN learners gives sense to the links of general and special education elements (Florian, 2019; Paju, Kajamaa, Pirttimaa, & Kontu, 2021). In this way, the practice of differentiation and individualisation of the curriculum, its implementation (Griful-Freixenet et al., 2020; Padia & Traxler, 2020) and value-based priorities of inclusive education acquire importance. The results of research conducted by Florian and Black-Hawkins (2011) show that in the cases when teachers apply the approach of individualised inclusive education through differentiation of curriculum and providing support to certain pupils, experiences of inner segregation are formed that distinguish and stigmatise these pupils. According to Aas (2019), teachers who use differentiated instruction characteristic of traditional education experience a lack of time for lesson planning and implementation. During lessons they are not able to allocate time to coping with pupils' difficulties, which frequently occur because they apply the approach of traditional education. They then tend to withdraw from it, deciding that some lessons are not useful to certain pupils.

Experience in individualised inclusive education is linked to the theory of inclusive special education, which was elaborated by Hornby (2015). This theory acknowledges inclusive education as a value, but its practice is grounded on the paradigm of special education. The essential goal is education of SEN pupils in special or general education institutions in early childhood, preparing them for

inclusive participation in public life when they graduate from school. Supporters of this theory advocate the education of SEN pupils by special education teachers, doubting the competence of teachers in general education to achieve this goal. Although the theory of inclusive special education is rarely mentioned in the scientific literature, it explains the construct of individualised inclusive education and its application in practice (Florian & Black-Hawkins, 2011; Galkienė, 2017; EASIE, 2019b). In many cases, this practice does not create conditions for the equal participation of all students and the formation of community values.

Expression of Inclusive Values in the Approach of Universal Design for Learning

The system of traditional education focuses on average-ability learners and their homogenous groups, fails to respond to diverse needs and therefore is frequently characterised as discriminatory towards pupils with special needs (Meyer, Rose, & Gordon, 2014). The approach of inclusive education referred to as Universal Design for Learning (UDL) acknowledges learners' diversity, which consists of pupils' intellectual and cognitive differences, as well as their various interests and learning styles (Hymel & Katz, 2019; Lee, 2019; Van Boxtel & Sugita, 2019). UDL aims for every learner's success, ensured through the practices of education differentiation and common learning (Swanson, Ficarra & Chapin, 2020; Van Boxtel & Sugita, 2019). Taking into consideration the peculiarities of three brain networks (affective networks, recognition networks, and strategic networks) and following Vygotsky's socio-cultural theory and idea of the zone of proximal development (Vygotsky, 1962; Vygotsky, 1978), pupils are given challenging but potentially surmountable assignments that take their interests into account and promote their thinking. Recognising the individual differences of all learners, there is a transition from satisfying the individual needs of learners to creating a barrier-free educational environment which is capable of meeting the individual needs of all pupils (Meyer, Rose & Gordon, 2014). Thus, all learners are enabled to participate in common learning activity (Rose & Strangman, 2007), and the teacher's competence of empowering differentiation becomes an essential criterion for the learner's success and the teacher's professionalism (Van Boxtel & Sugita, 2019; Swanson, Ficarra & Chapin, 2020). Elements of special support are naturally integrated into common educational activity. They are accessible to all, and support is provided to everyone, whenever it is needed. Teachers, specialists and learners, including those with SEN, join a collaborative learning community. According to Farmer et al. (2018), learners' personal narratives are formed in social relations, which, according to Nieminen and Pesonen (2020), are of utmost importance to pupils' engagement in learning activities.

The analysis of this approach to education reveals the existence of clear inclusive values, such as respect for the diversity of all students, equity for all students, conditions for full participation, equal rights and community building, and the effectiveness of evidence-based practice outcomes. Therefore, it can be assumed that the sustainability of inclusive education requires the realisation of universally recognised inclusive values, not only for some but for all students.

Conclusions

In response to the research question of how the educational practices that have emerged in the development of society are based on fundamental values, creating the preconditions for the sustainability of inclusive education, an analysis of the results of research substantiating the effectiveness of inclusive practices was performed.

The results of this study reveal the basis of the sustainability of inclusive education in the processes of societal change, which coincides with the existence of universally recognised inclusive values in educational practice. The results of the study show that a practice constructed on the basis of the values defined by international agreements and concretised by Ainscow, Booth & Dyson (2006) (equity, participation, equality, community, respect for diversity and sustainability) ensures full participation and quality education for all students.

Integration processes are dominated by the values of equity and equality. However, the practice of integration is more frequently implemented by external stimulation than by natural involvement in prepared and anticipating communities. Therefore, the value of the community is lost. This reveals that the following elements are essential for sustainability of inclusion: preparation of the community for changes and openness to acknowledge otherness to provide it with the right to exist, as desynchronisation of goals to be achieved and preparation for their implementation impede the sustainability of inclusive processes.

In the case of individualised inclusion, the existence of special education elements in the system of inclusive education realises the value of respect for diversity. However, the practice, when this value is applied to some learners, it neutralises the values of equity and equality and thus leads to segregation. Sustainability of inclusive education requires an organic link between elements of special and general education, creating a flexible educational practice that is accessible to all and allows full and successful participation in the process of education.

Application of Universal Design for Learning creates a flexible education environment for all learners and implements the values of full participation, equity and respect for diversity. The analysis of this approach reveals that sustainability of inclusive education requires elements of acknowledgement of individual

differences of all learners, formation of a barrier-free educational environment, empowering differentiation and common learning experiences and collaboration.

The research results show that prerequisites for the sustainability of inclusive education lie in the close relationships of inclusive values and effective educational practices based on them. Therefore, favourable legal regulation and individual initiatives are not sufficient for the development of inclusive education and its sustainability. It is necessary to ensure that the values of inclusive education truly exist in educational practice and equally apply to all students.

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THE IMPACT OF FAMILY AND INDIVIDUAL FACTORS ON 4TH GRADE STUDENTS' SELF-CONFIDENCE IN READING LITERACY: RESULTS FROM PIRLS 2016

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Abstract. *The self-confidence of a child and an adult is associated with performance and achievement results. It is well-studied, and the correlation has been proved that higher self-efficacy leads to higher achievements and performance, including better performance in reading literacy. It is also known that both a family and a home environment have a tremendous impact on the child's development and academic performance. This article focuses on the 4th graders and their family factor impact on the development of a child's self-confidence and concepts related to self-confidence.*
The purpose of this article is to define concepts that are closely related to self-confidence and to identify family factors that influence students' self-confidence. The research question is as follows: which family and individual factors impact students' self-confidence in reading?
Authors of the article used a linear regression and correlation analysis of the data from the IEA's PIRLS 2016 study. The data from Latvia and seven countries of comparison were analysed.
The results of data analysis showed that, in general, the 4th graders' self-confidence in reading literacy is higher if they come from a household where a computer or a tablet with Internet connection is available and if students like to chat using a mobile device. Parents' attitudes to reading and the students' readiness for 1st grade promote higher self-confidence as well.
Keywords: *PIRLS, self-confidence, self-efficacy, self-esteem, students' reading literacy.*

Introduction

The role of family in the development of a child can never be overestimated, furthermore, a family has a significant impact on child's academic achievement, including reading literacy (Geske & Ozola, 2020). Reading begins with language acquisition and communication, besides, reading, by definition, can be described as a specific type of communication (Tubele & Serova, 2020). The involvement

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of family in a child's education, including activities that promote reading, are one of the strongest factors for child's school success, and not only school success (Weiss, Bouffard, Bridglall, & Gordon, 2009; Mullis, Kennedy, Martin, & Sainsbury, 2006), as there is a significant investment of the family into child's emotional, cognitive and social development from birth through adulthood. Numerous studies (Geske & Ozola, 2020; Geske & Zizlāne, 2020; Jarmakoviča, Ozola, & Zizlāne, 2020; Mullis, Martin, Foy, & Hooper, 2017) have shown that if a child has a supportive home environment that provides positive insights into one's reading process, i.e., there are books at home, parents spent time reading books and telling stories to a child, a child tends to spend his/her free time reading books, then the child is more successful in reading than a child who has no supportive environment at home. Often high achievement or high performance is associated with high self-confidence, high self-efficacy and even high self-esteem; some studies have indicated that they have reciprocal effects. For example, Marsh and Craven's (2005) study states that when raising an academic self-concept also academic achievement and other educational outcomes raise, and vice versa. But there is much unknown about a child's sense of self-confidence in reading literacy and the family impact on this concept. This leads to the research question for this article, which family and individual factors impact students' self-confidence in reading?

Literature Review

PIRLS 2016 claims to study motivation and subject-specific self-concept through students' confidence in reading scale, defining self-concept as students' perceived competence (Hooper, Mullis, & Martin, 2015) in reading activity, i.e., for students to engage in reading they have to believe in their competence or the success in reading. Haslam (2007) defines self-concept as a structured set of beliefs, whereas Larson (2009) states that self-concept displays a subjective set of attributes and feelings that are understood and interpreted by a person, evaluating oneself in the given context, as it is viewed in self-efficacy. Understanding of one's efficacy might be one of the fundamental beliefs of the human being. Bandura (2001) states that self-efficacy is a belief of success that produces motivation and persistence. Branden (2011) defines self-efficacy as confidence that helps to gain knowledge and skills and experience success. Therefore, as self-efficacy, confidence is a belief and it is determined by success (Pervin & Cervone, 2010; Shehzad, Lashari, Lashari, & Hasan, 2020). Larson (2009) points out studies where students with higher self-esteem have higher levels of self-confidence. Dweck and Leggett (1988) found that low self-confidence can trigger anxiety and loss of self-esteem; moreover, Mruk (2006) states that individuals with weak or unrealistic self-confidence are prone to low self-esteem and sensitive

to negative feedback or failures. In addition, Branden (2011) declares that self-esteem has two dimensions, one of them is confidence in one's ability to cope with challenges, i.e., self-efficacy, but the other dimension is a belief of worthiness or self-worth. He also emphasises that self-concept indicates the level of self-esteem. Self-esteem, self-concept and self-efficacy all fall under self-system and are viewed in context of self-regulation.

It is stated that the concept of self begins to develop in early infancy (Larsen & Buss, 2014). With reference to several studies, Bjorklund (2000) highlights that by the age of 18 months a child can distinguish self from the surrounding environment. By the end of the 3rd to 4th grade, child's assumptions about own abilities come close to reality. Filippin and Paccagnella (2011) describe numerous studies where it is believed that a child inherits one's belief of self-confidence from the family, thus without a proper intervention one can maintain a wrong belief even when the impact of family becomes less important.

According to Bowlby's (1988) theory of attachment, one of the most important tasks of family is to create a secure attachment that can serve as a socioemotional basis throughout a child's life. Landy (2009) mentions a research where a low parental self-efficacy has shown correlation with child's lower socioemotional skills. The research has found that children who have a secure attachment also have a more adequate self-esteem and a more precise self-concept (Cassidy, 1988). Other studies, described in Houser-Carm & Howell (2003), show that highly controlling parents can reduce opportunities for a child to develop an adequate self-efficacy, what is more, that the quality of relationships between mother and child will impact the child's cognitive, socioemotional development and the regulation of behaviours. The feedback provided by parents and first caregivers builds the child's understanding of one's effectiveness (Bjorklund, 2000) and understanding of one's capabilities, i.e., judgement of own self-efficacy (Harwood, Miller, & Vasta, 2008). Above all, Mullis, Kennedy, Martin and Sainsbury (2006) stress that the parental involvement is crucial throughout the child's development.

Methodology

In this article the authors analysed the data from PIRLS 2016 Student and Home Questionnaire from Latvia and seven other countries of comparison in the Baltic Sea Region, i.e., Denmark, Finland, Germany, Lithuania, Poland, Russian Federation and Sweden. A linear regression and correlation analysis of the data was used.

PIRLS gathers data about students' confidence in reading using "Students Confident in Reading Scale", further in the article referenced as "Self-confidence

Scale". Students' answers are measured based on the degree of agreement, i.e. in the Likert scale from *agree a lot* to *disagree a lot* on six statements. These six statements are as follows (Mullis & Martin, 2015):

1. I usually do well in reading;
2. Reading is easy for me;
3. I have trouble reading stories with difficult words;
4. Reading is harder for me than for many of my classmates;
5. Reading is harder for me than any other subject;
6. I am just not good at reading.

Answers to the third to sixth statements were inverse coded, i.e., the answers marked with *agree a lot* to the statement would get 1 point, whereas the answers marked with the same choice on the first statement would get 4 points. As it is described in the document "Methods and Procedures in PIRLS 2016" (Martin, Mullis, & Hooper, 2017), the values varied from around 3 to 13 for every student in this scale. From this scale an index of student's self-confidence was created. Student's self-confidence was the dependent variable in the linear regression analysis.

The independent variables were created from the following scales:

1) "Could Do Early Literacy Tasks When Beginning Primary School Scale", further in this article referenced as "Early Literacy Skills Scale";

2) "Parents Like Reading Scale";

3) "Students Like Reading Scale";

4) students' answers to the question "How much time do you spend each day using a computer or tablet for any of the following activities?" and the activity "Chatting", which was measured in the range from 1 to 5 with the following options: "No time" (1 point), "30 minutes or less" (2 points), "30 minutes up to 1 hour" (3 points), "From 1 hour up to 2 hours" (4 points), "2 hours or more" (5 points), further in this article referenced as "Time Students Spent Chatting";

5) students' answers to the question "Do you have any of these things at your home?" and its two statements "A computer or tablet" and "Internet connection", from which a dichotomous variable was created. If a student indicated that one had both, i.e., both statements were marked as "yes" – a computer or tablet and Internet connection, then the value for this variable was 1, otherwise, the value was set to 0; further in this article referenced as "Has PC/tablet and Internet".

The Early Literacy Skills Scale included a question "How well could your child do the following when he/she began the first grade of primary/elementary school?" with the following statements, measured in the Likert scale from *very well*, *moderately well*, *not very well* and *not at all* (Mullis & Martin, 2015):

1) Recognize most of the letters of the alphabet;
2) Read some words;
3) Read sentences;

4) Read a story;
5) Write letters of the alphabet;
6) Write some words.

As it is described in the document "Methods and Procedures in PIRLS 2016" (Martin et al., 2017), the values varied from 5 to 14 for every student in this scale.

The Parents Like Reading Scale included two questions (Mullis & Martin, 2015):

1) "When you are at home, how often do you read for your own enjoyment?" The answers to this question were evaluated according to the Likert scale and included such options as "Every day or almost every day", "Once or twice a week", "Once or twice a month", "Never or almost never";

2) "Please indicate how much you agree with the following statements about reading." The answers were measured based on the degree of agreement, i.e., in the Likert scale from *agree a lot* to *disagree a lot*, and included the following statements (Mullis & Martin, 2015):

1) I read only if I have to;
2) I like talking about what I read with other people;
3) I like to spend my spare time reading;
4) I read only if I need information;
5) Reading is an important activity in my home;
6) I would like to have more time for reading;
7) I enjoy reading;
8) Reading is one of my favourite hobbies.

The answers to the first statement were reverse coded. With reference to the document "Methods and Procedures in PIRLS 2016" (Martin et al., 2017), the values varied from 3 to 14 for every student in this scale.

The Students Like Reading Scale was designed from the question in student questionnaire "What do you think about reading? Tell how much you agree with each of these statements" (Mullis & Martin, 2015). The answers to this question were evaluated in the Likert scale based on the degree of agreement from *agree a lot* to *disagree a lot*. A student had to indicate his/her level of agreement for the following statements:

1) I like talking about what I read with other people;
2) I would be happy if someone gave me a book as a present;
3) I think reading is boring;
4) I would like to have more time for reading;
5) I enjoy reading;
6) I learn a lot from reading;
7) I like to read things that make me think;
8) I like it when a book helps me imagine other worlds.

According to "Methods and Procedures in PIRLS 2016" (Martin et al., 2017), the values varied from 2 to 15 for every student in this scale.

The Cronbach's Alpha reliability coefficients were gathered for all variables (see Table 1).

Table 1 ***The Cronbach's Alpha Reliability Coefficients for Dependent and Independent Variables***

Country / Name of the scale and CA	Latvia	Denmark	Finland	Germany	Lithuania	Poland	Russian Federation	Sweden
Students Confident in Reading Scale	0.8	0.83	0.8	0.82	0.8	0.83	0.79	0.82
Early Literacy Skills Scale	0.91	0.91	0.92	0.89	0.91	0.92	0.91	0.92
Parents Like Reading Scale	0.87	0.9	0.91	0.89	0.89	0.88	0.86	0.89
Students Like Reading Scale	0.89	0.85	0.89	0.88	0.86	0.9	0.85	0.88

** CA - Cronbach's Alpha Reliability Coefficient*

As it is seen in Table 1, all the created scales are well-designed, and their internal consistency is good or even excellent.

Research Results

Before the chosen linear regression and correlation data analysis was performed, the authors analysed the data from PIRLS 2016 reports (Martin et al., 2017; Mullis et al., 2017). In Table 2, there are gathered values for the coefficient of determination (R^2) of two linear regression models: one for the Students Confident in Reading (self-confidence) Scale with reading achievement as independent variable and the other for self-confidence explained by all independent variables of this research mentioned earlier.

Table 2 ***Coefficient of Determination (R^2) for Dependent Variable and Reading Achievement and Coefficient of Determination (R^2) for Dependent Variable and Independent Variables***

Country	Latvia	Denmark	Finland	Germany	Lithuania	Poland	Russian Federation	Sweden
Coefficient of determination (R^2) for self-confidence scale with reading achievement	0.17	0.25	0.18	0.16	0.22	0.16	0.17	0.17
Coefficient of determination (R^2) for self-confidence scale with all independent variables in linear regression models	0.26	0.32	0.24	0.20	0.29	0.24	0.27	0.24

As it is shown in Table 2, reading achievement is closely related to students' confidence in reading. For all the countries of comparison, reading achievement explained around 20% of the variance of self-confidence with the highest value of 25% in Denmark. Adding other independent variables to the linear regression model, the authors found that for Latvia, Poland and Russian Federation they explain for around 10% more of students' self-confidence than achievements alone.

Analysing the data with linear regression models, the authors discovered that for all the countries of comparison students' self-confidence was significantly influenced by reading achievement, "Students Like Reading" and "Early Literacy Skills", the impact from these and other factors are illustrated in Table 3.

Table 3 ***Linear Regression Coefficients of Six Regression Equations Representing How Students' Self-Confidence Is Affected by the Selected Factor and the Average (Mean) Values for the Students' Self-Confidence Scale***

		Latvia	Denmark	Finland	Germany	Lithuania	Poland	Russian Federation	Sweden
CHT	Beta	0.06*	0.05*	0.02	0.01	0.05*	0.05	0.06*	0.06*
	Mean	2.05	2.07	1.81	1.85	2.22	2.06	2.28	2.11
SLR	Beta	0.25*	0.19*	0.20*	0.23*	0.17*	0.22*	0.23*	0.22*
	Mean	9.62	9.13	9.41	9.55	10.02	9.55	10.24	8.97
ELT	Beta	0.14*	0.16*	0.18*	0.06*	0.22*	0.16*	0.20*	0.12*
	Mean	11.14	10.48	10.31	9.01	10.51	10.93	10.14	10.42
PLR	Beta	0.03*	0.02	0.03	0.05	0	0.03	0.03*	0.04*
	Mean	9.34	10.08	10.03	9.75	9.33	9.89	9.42	10.11
CPR	Beta	0.04*	0.1	0.02	0.03	-0.02	0.02	0.04*	0.04*
	Mean	0.93	0.99	0.95	0.66	0.92	0.96	0.88	0.98
RA	Beta	0.34*	0.40*	0.29*	0.30*	0.37*	0.33*	0.32*	0.31*
	Mean	558	547	566	537	548	565	581	555
SSC	Mean	9.3	10.3	10.6	10.5	10.0	10.7	9.9	10.8

** Standardized regression coefficient statistically significant for confidence interval of 95%*
CHT – factor "Time Students Spent Chatting"
SLR – factor "Students Like Reading"
ETL – factor "Early Literacy Skills"
PLR – factor "Parents Like Reading"
CPR – factor "Has PC/tablet and Internet"
RA – Reading Achievement
SSC – Students Self-Confidence Scale

As it can be seen in Table 3, the factor "Time Students Spent Chatting" was significant for Latvia, Lithuania, Russian Federation, Denmark and Sweden. The factor "Students Like Reading", which was the second strongest factor after reading achievement that impacted students' self-confidence, was significant for all the countries and for the 4th grade students in Latvia. Analysing the gained results among the countries of comparison, it was identified that Latvian students did not like reading as much as students in Lithuania and Russian Federation, although they liked reading more than students in Sweden, Finland, Denmark, Germany and Poland. The same can be seen by looking at the average values of scale. Dividing the results by the average values of scale in the PIRLS 2016 "Students Like Reading", all the countries of comparison fell under the category of "Somewhat Like Reading" that was made by the IEA PIRLS 2016 (Mullis et al., 2017). "Early Literacy Skills" was the third factor that was significant for all the countries of comparison and, also, the third most significant factor for Latvian students, having the highest mean value in Latvia and the lowest in Germany. Latvian children began school as the most prepared among the countries of comparison, followed by Lithuania, Denmark, Sweden, Finland, Russian Federation and Germany (see Table 3). The "Parents Like Reading" factor was significant only in Latvia, Russian Federation and Sweden, having the highest mean value for Sweden. Examining the scale mean values, it can be noted that Latvian parents were inactive readers. Only Lithuanian parents liked reading even less among the countries of comparison. Parents in Denmark and Sweden liked reading the most. Although having a computer or tablet with Internet connection at home could be associated more with students' socioeconomic situation, it was a significant factor only for Latvian, Swedish and Russian students' self-confidence with a relatively small impact.

As the PIRLS scale centerpoint for reading achievement was 500 points, by examining the mean values in Table 3, it can be stated that all the counties of comparison had a relatively high reading achievement, and the mean values of students' self-confidence scale. One can see that children in all the countries of comparison, except Latvia, had appropriate self-confidence in reading, i.e., the Students Confident in Reading Scale had values around 10 points. Latvia had the lowest average value in students' self-confidence. However, as it is illustrated in Table 3, Latvia is at the 4th place regarding the average in reading achievement scale. Among the countries of comparison, the highest reading achievement is for Russian Federation, followed by Finland, Poland, Sweden, Lithuania, Denmark and Germany, but the most confident students in reading live in Sweden, followed by Poland, Finland, Germany, Denmark, Lithuania and Russian Federation.

Correlation coefficients of students' self-confidence with independent variables for Latvia were the following: 0.41 with Reading Achievement, 0.28 with Students Like Reading, 0.29 with Early Literacy Skills, 0.17 with Parents

Like Reading, and 0.13 with PC/Tablet and Internet Connection at Home. The correlation coefficient with Chatting was small but significant – 0.07.

Conclusions and Discussion

The PIRLS study gathers data about child's self-confidence in reading at the end of Grade 4; however, it does not obtain any data about self-confidence in general or its development throughout childhood. By the end of Grade 4 children's assumptions about their abilities come close to reality. It means that the data of PIRLS study reflect these children's assumptions about reality or very close to that.

During the research of the PIRLS 2016 data, the authors discovered that self-confidence for Latvian 4th grade students was lower than the average, despite the above-average achievements. The linear regression analysis of data showed that the strongest impact factor of students' self-confidence in reading was students' reading achievement for all the countries of comparison. The second strongest impact factor was the fact that students liked reading in all the countries, except Lithuania. The third most important factor for students' self-confidence was Early Literacy Skills, i.e. "Could Do Early Literacy Tasks When Beginning Primary School"; this was an exception in Lithuania where the particular factor was the second strongest.

As it is described in the literature review, the family and the home environment have a significant impact on students' achievement, especially it is very strong on the activities done with children at the preschool age. Parents' attitudes impact child's attitudes, and, to succeed in reading literacy, a home environment is the first place where a child can get positive impressions about books and reading. The research shows directly measurable parents' attitudes towards reading in the Parents Like Reading Scale as significant; however, the analysed factors occurred to be the weakest predictor of students' self-confidence in reading in Latvia, Russian Federation and Sweden, and it was not significant for other countries of comparison. Students' chatting was a significant but less strong impact on students' self-confidence in comparison with the reading achievement and students' attitude towards reading, it was observed in Latvia, Russian Federation, Denmark and Sweden. The more time students spent chatting on digital devices, the more self-confident in reading they were or vice versa. The more confident they were, the more time they spent chatting. Having a computer or tablet at home with Internet connection promotes students' self-confidence in Latvia, Russian Federation and Sweden, and this fact had no significant impact for other counties of comparison. Having a computer or tablet with Internet connection at home correlated significantly with the time students spent chatting,

the correlation coefficients being the highest in Russian Federation (0.30) and the lowest in Denmark (0.04).

Summarising the answers to the research question "Which family and individual factors impact students' self-confidence in reading?", the authors discovered that the following factors were significant for Latvian students: individual factors – reading achievement, enjoyment of reading and frequency of chatting; family factors – early literacy skills, a PC/tablet with Internet connection at home and parents' enjoyment of reading.

In this article the authors discovered individual and family factors, but there is a need for further analysis to discover other factors that have significant impact on students' self-confidence in reading and to compare whether these factors are domain-general or domain-specific.

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‘E-TAP’ CURRICULUM FOR VIRTUE EDUCATION: A FIT ANALYSIS TO THE ‘SKOLA-2030’ CURRICULUM

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Abstract. *The virtue education curriculum ‘e-TAP’ is one of the recent efforts for improving character and virtue education at school in Latvia from preschool till grade nine. The objective of this research was to provide evidence regarding whether this curriculum is appropriate (‘fits’) to the Latvian context, in particular in reference to the Skola-2030 curriculum. Based on fit and feasibility theory, this work addressed the research question: “How does the treatment of virtues of the e-TAP curriculum fit to the treatment of virtues of the new Skola-2030 curriculum?”. The analysis used statistical descriptive frequency analysis of the virtues of each programme and comparative analysis between the two document sets included in each of them, using Excel software. The results show that Skola-2030 programme stresses performance and civic virtues, while the e-TAP programme underlines moral and intellectual virtues. Performance virtues are the most important ones in Skola-2030 (38 %), but account only for 17 % in the e-TAP curriculum. In addition, in Skola-2030 curriculum civic virtues account for 23 %, while in e-TAP they are only 8 %. In the e-TAP curriculum, moral virtues account for half of all the mentions (50 %) and intellectual virtues for 25 %, whereas in Skola-2030 those virtue groups account for 22 % and 18 %, respectively. The high ‘complementarity fit’ of both programmes suggests that the e-TAP curriculum could considerably enrich the Skola-2030 educational offer. Suggestions for e-TAP programme improvement and further research are put forward.*
Keywords: *character education, curriculum research, fit and feasibility analysis, Skola-2030, virtue ethics.*

Introduction

This research analyses one of the recent contributions to the improvement of the implementation of moral education in Latvian schools. Since 2016 Latvia is gradually moving to competence-based education, where the focus is on the student who learns to think creatively, understands how to search and to find answers, uses knowledge in different situations; a student who is able to cooperate, thinks critically, plans his / her development and is civilly responsible

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(Skola-2030). The transition to competency-based education imposes a great deal of responsibility and work on teachers, as they need to change the way they organize pupils' learning and to elaborate most of their own teaching materials. This situation was further complicated by the epidemiological situation caused by Covid-19, which required teachers to switch very quickly to the online teaching and learning environment.

The framework of the improved curriculum Skola-2030 also includes virtues and values, which are embedded in the curriculum alongside study areas and transversal skills (Skola-2030, pp. 7-8). This moral dimension of the curriculum is based on the values set out in the Constitution of the Republic of Latvia, the Universal Declaration of Human Rights and the European Convention on Human Rights (Skola-2030, p. 7). In general, Latvian teachers consider this dimension to be very important (Surikova & Pigozne, 2018).

The online virtue education programme e-TAP is one of the recent efforts for improving character and virtue education at school in Latvia. Elaborated on the bases of previous work of the Jubilee Centre for Character and Virtues of the University of Birmingham (https://www.jubileecentre.ac.uk/1844/character-education/) and of recent need analysis research in Latvia (Fernández González, 2019; Fernández González et al., 2019), this curriculum for pupils from preschool till grade nine contributes to the goals set by Skola-2030 programme, providing 118 lesson plans for character and virtue education, as well as presentations and worksheets for each lesson, which are organized around 16 topics (e.g., health, cyberbullying, fake news, drug dependence, family, friendships etc.) (https://www.arete.lu.lv/parnese-izglitiba/tikumiskas-audzinasanas-programma/). It includes also an introductory 'Virtue Toolkit' for providing pupils with the vocabulary of virtue ethics and a better understanding of virtue growth processes. See in Table 1 some comparative features of both programmes.

Table 1 ***Main Topics and Virtues in the Skola-2030 and the e-TAP Programme***

Skola-2030 learning areas (subject matters)	'Natural science' (5) 'Cultural understanding and artistic self-expression' (4) 'Mathematics' (1) 'Social and civic education' (2) 'Technology' (3) 'Languages' (10) 'Health and sports' (1).
'e-TAP' topics	'Flourishing individuals' (healthy eating, exercise, harmful substances, screen time) 'Flourishing relationships' (friendships, families, peer pressure, managing conflict) 'Digital flourishing' (time spent online, cyber bullying, fake news, online relationships) 'Societal flourishing' (communities, volunteering, careers, democracy).

Skola-2030 virtues	Compassion, courage, grit, honesty, justice, kindness, responsibility, self-control, solidarity, temperance, tolerance, wisdom.
'e-TAP' virtues	Compassion, courage, critical thinking, curiosity, flexibility, friendliness, gratefulness, helpfulness, honesty, motivation, respect, self-control, sincerity etc.

Considering that the scientific foundations of the e-TAP curriculum are solidly established, the objective of this research was to provide evidence regarding whether the curriculum is appropriate ('fits') to the Latvian context, in particular in reference to the Skola-2030 curriculum. This curriculum research would also be useful to improve the e-TAP programme for further implementation.

The research question guiding the enquiry was: "How does the treatment of virtues of the e-TAP curriculum fit to the treatment of virtues of the new Skola-2030 curriculum?" The methods for answering this question included content analysis, both thematic and quantitative, focussing of the similarities and differences of the sets of virtues that are present in Skola-2030 and e-TAP curriculum.

Literature Review

To outline the theoretical perspective at the foundation of this research, the literature review was chosen as a method of analysis. According to Eldridge et al. (2016), who explored fit and feasibility theory at large, 'feasibility' is described as a prevalent notion for studies evaluating whether a forthcoming research or learning programme may be implemented. The 'fit' approach emphasizes the necessity for clarity concerning the appropriateness of the research or programme to a concrete cultural or institutional context. Furthermore, specifically in the field of character education, Davison et al. (2014) mentioned that, despite the acknowledged fact that students and teachers have in general a positive attitude towards character education, it is significantly more difficult to provide evidence about what students actually gain from participation in character education learning. Nonetheless, Arthur et al. (2015) argued that providing students with constant self-reflection activities and involving them as co-creators and co-authors of the improvement of character education would help to harmonize educators' and students' values and worldviews. In addition, this collaboration would produce new character education resources from which both may benefit, including the exploration of opportunities for combining traditional learning techniques with the Internet technologies.

In this study, the primary reference frame for the analysis of the virtues included in the e-TAP and Skola-2030 programmes was provided by the Latvian

normative documents. In relation to the promotion of virtue education in Latvian schools, the Cabinet of Ministers of Latvia (2016) set the task of helping students to develop critical thinking skills, learning to think freely and independently. Self-awareness, improvement of self-esteem and lifelong learning are to be encouraged in lessons, and students' freedom, self-discipline, healthy-life habits, purposeful attitude towards work, preservation of the values of intergenerational unity, and responsibility for the protection and sustainability of nature and the environment are also promoted. In addition, awareness of national identity, understanding of general human and Christian values, and civic participation in strengthening democratic society are to be fostered in all grades at school through the educational process and beyond. Those values may be taught in form time (*klases stundas*) or in other subject lessons through the whole curriculum. It is suggested that educators may cooperate with parents for obtaining better outcomes both in academic results and in virtue education. Twelve specific virtues, which manifest individual's free thinking and action, are to be nurtured in the process of pupils' upbringing: responsibility, diligence, courage, honesty, wisdom, kindness, compassion, temperance, self-control, solidarity, justice, and tolerance (Cabinet of Ministers, 2016).

Those twelve virtues are completely integrated in the Skola-2030 curriculum, and this is why this list of 'official virtues' was used for the comparison between the Skola-2030 and the e-TAP programme content. The new Skola-2030 curriculum framework, whose implementation started in 2020/2021 in grades 1, 4, 7 and 10 and in preschool education in 2019/2020, includes virtues, transversal skills, understanding and basic skills for each curriculum area. Pupils' and students' learning achievements are formulated in terms of 'competence', and it is assumed that teachers will integrate these content dimensions in the teaching and learning process, focusing both on the students' ability to use practically their knowledge and skills in various situations, and on the development of transversal skills and virtue-based habits. One of the aims of school education, as understood in Latvian legislation (Cabinet of Ministers, 2016), is to develop a common understanding of values such as life, human dignity, freedom, family, marriage, work, nature, culture, the Latvian language and the Latvian State in children and young people, developing a flourishing attitude and responsibility for themselves and their actions. The vision of the student that is at the basis of the Skola-2030 curriculum, includes the systematic reinforcement of crucial habits which would result in pupils' acquisition of the twelve key virtues (Skola-2030, n.d.).

In the 'Framework for Character Education' elaborated by the Jubilee Centre (Jubilee Centre, 2017) it is argued that virtues constitute a person's character and that they can and should be 'taught' and 'caught'. It is also stated that the more people enact character traits and virtues, the more society as a whole improves. The Framework provides support for students to both learn and expand their

character development by using self-reflection together with activities that enhance virtues, which are classified in four major categories: 'intellectual', which are needed for developing interest in knowledge acquisition; 'moral', which allow to act well in various situation; 'civic', which are necessary for responsible citizenship; and 'performance' virtues, which are useful at work and build up moral and intellectual virtues (Harrison, Arthur, & Burn, 2015; Jubilee Centre, 2017). This classification of virtues is used in the empirical analysis presented further.

Methodology

The documental base of the research included the whole e-TAP and Skola-2030 programmes. The 'e-TAP document set' included the 118 lesson plans. For the Skola-2030 curriculum, two sets of documents were analysed. The 'Preschool education set' included 8 documents: the 'Preschool curriculum' and the seven 'Instructional materials', one for each thematic area. The 'Basic education set' included all the 26 subject-matter programmes from grade 1 to 9 for each thematic area: 'Natural science' (5), 'Cultural understanding and artistic self-expression' (4), 'Mathematics' (1), 'Social and civic education' (2), 'Technology' (3), 'Languages' (10) and 'Health and sports' (1).

Data collection and analysis: In e-TAP programme, at the beginning of each lesson plan a number of target virtues for the lesson are specified. Some of them coincided with the twelve 'official virtues' included in the Latvian legislation, but many others did not, and they were labelled as 'nonofficial virtues'. Regarding Skola-2030, within the 'Preschool set', virtues were listed mostly (but not exclusively) in the section 'Significance' (*nozīmīgums*) of each document. As some of these virtues were 'nonofficial', for facilitating the comparative analysis, the 'official virtues' were also retrieved in this document set by using keyword research in each document. As regards the 'Basic education set', explicit references to the 'official virtues' were included in one of the Appendices of each document (often called "Habits to be developed by students"), and additional references were also retrieved in the text of the instructional materials after each lesson plan.

The quantitative content analysis was implemented in two stages: first, statistical descriptive frequency analysis of the virtues and values of each project was implemented using Excel software. A subsequent comparative analysis between the two data sets was implemented, revealing similarities and differences between e-TAP and Skola-2030 treatment of virtues.

Research Results

Descriptive analysis (see Table 2). In the Skola-2030 *preschool* programme 116 mentions to the 12 official virtues were found: 45 % of them in the 'Social and civic' area, and 22 % in the area 'Cultural understanding and artistic self-expression'. The virtues most often retrieved were 'responsibility' (N=41, 39%) and 'goal-orientation' (N=28, 27%). 'Kindness' was mentioned 10 times. Surprisingly, 'tolerance', 'solidarity' and 'temperance' were mentioned only once, and 'honesty' twice. In addition, also 116 'nonofficial' virtues were retrieved in the preschool document set. The top-three virtues most often mentioned were 'joy' (N=16, 13%), 'enthusiasm' and 'orderliness' (9 times each). 'Self-assertiveness', 'sensitivity/tenderness', 'respect', and 'attention' came next (8-7 times each). Interestingly, 'gratefulness' was mentioned only twice, and 'self-control' 3 times. In the Skola-2030 *basic education* materials (grades 1-9), 1980 mentions to virtues were found. The two performance virtues ('responsibility' and 'grit') were the most often mentioned (n=748). The intellectual virtue ('wisdom') was the second most often mentioned (n=357) after 'responsibility' (n=499). Among the civic virtues, 'tolerance' and 'solidarity' are the most often mentioned (245 and 110 times, respectively), and among the moral virtues – 'courage', 'honesty', and 'kindness' (158, 107 and 106 times, respectively).

Table 2 ***Virtues Retrieved in the Skola-2030 and the e-TAP Programme***

Virtue category	Skola-2030 (only official virtues) (examples by frequency)	N (%)	N (%)	e-TAP (all virtues) (examples by frequency)
Moral virtues	Courage, honesty, kindness, compassion, temperance, self-control	474 (24 %)	104 (50 %)	Compassion, respect, courage, gratefulness, honesty, sincerity, self-control, humility, kindness
Civic virtues	Solidarity, justice, tolerance	401 (20 %)	16 (8 %)	Friendliness, helpfulness, voluntariness
Intellectual virtues	Wisdom	357 (18 %)	53 (25 %)	Curiosity, critical thinking, self-confidence, reasoning, wisdom, reflectivity
Performance virtues	Responsibility, grit	748 (38 %)	36 (17 %)	Motivation, flexibility, perseverance, initiative, responsibility
	Total	*1980*	*209*	*Total*

In the e-TAP materials, overall, 209 explicit mentions to virtues were found (53 of them in the preschool document set). Moral virtues were the most often mentioned (n=104, 50%), in particular 'compassion' (20), 'respect' (19), 'courage' (14), 'gratefulness' (12) and 'honesty' (11). 'Motivation' and 'flexibility' were the performance virtues most often mentioned (12 and 11 times, respectively), and among the intellectual virtues (n=53, 25%), 'curiosity' and 'critical thinking' came first (18 and 11 times). Only 16 civic virtues were mentioned, the most important of which was 'friendliness' (8 times).

The comparative analysis was done at two levels: First, a comparison of the most often mentioned in both data sets at different education levels is presented at the level of single virtues (Table 3); and then, a general comparison between both programmes at the level of virtue categories (Figure 1). See below the top 10 virtues in the different data sets (Table 3).

Table 3 ***Top-ten Virtues by Education Level in Skola-2030 and the e-TAP Programme***

	Preschool		Basic education	
Rank	*e-TAP*	*Skola-2030*	*e-TAP*	*Skola-2030*
1	Respect	Responsibility	Compassion	Responsibility
2	Curiosity	Goal-orientation	Curiosity	Wisdom
3	Courage	Joy	Respect	Grit
4	Gratefulness	Kindness	Flexibility	Tolerance
5	Honesty	Enthusiasm	Critical thinking	Courage
6	Helpfulness	Orderliness	Motivation	Solidarity
7	Compassion	Self-confidence	Honesty	Kindness
8	Motivation	Initiative	Courage	Honesty
9	Self-control	Courage	Sincerity	Self-control
10	Friendliness	Wisdom	Friendliness	Justice

Only three virtues in the top 10 were common between e-TAP and Skola-2030: 'courage' appeared in all education levels in both sets; 'honesty' also, except in Skola-2030 preschool (in fact, it appeared later, in 16th position); and 'self-control' (top ten in e-TAP preschool and Skola-2030 basic education sets but appeared in a lower position in the other document sets). Seven of the top 10 virtues were the same in preschool and in basic education in e-TAP programme, while only four virtues appeared both in preschool and in basic education top ten in Skola-2030.

At the level of virtue categories (see Figure 1), the most striking difference between the two programmes was the treatment of moral virtues, which accounted for 50% of the e-TAP virtues and only 22% in Skola-2030. Contrarily, performance virtues were the most important in Skola-2030 (38%), but accounted only for 17% in the e-TAP programme. Another striking difference was that in

Skola-2030 civic virtues accounted for 23%, while in e-TAP they were only 8%. In the e-TAP programme intellectual virtues accounted for 25%, while in Skola-2030 – for 18%.

Figure 1 ***Skola-2030/e-TAP Comparison by Types of Virtues (%)***

Discussion

This discussion of the results highlights the complementarity of those two programmes. While the Skola-2030 programme stresses performance virtues, the e-TAP programme underlines moral and intellectual virtues. This complementarity suggests that the e-TAP programme considerably enriches the educational offer of the Skola-2030 programme and has therefore a high 'complementarity fit' with Skola-2030. Given that both programmes are just entering the Latvian education system, this study makes a significant contribution to both Skola-2030 in-depth understanding and e-TAP further potential for integration within the Skola-2030 curriculum.

However, the different accent points of those two programmes presents some challenges. Skola-2030 subject curriculum proposes values and virtues as a desired outcome that can be achieved mainly through how the activity takes place, for example by placing musical instruments in the intended place, developing responsibility, (https://mape.skola2030.lv/resources/312, p. 16). The e-TAP programme also helps to recognize and understand these values and virtues through questioning: "what is responsibility", "what are you responsible for?"

(Preschool – 6-year-old group, Internet safety, 3rd lesson). However, the emphasis on some different virtues in the programmes could lead to a situation where not all the virtues which Skola-2030 intends to put forward would receive a similar treatment (the overlapping virtues would be better understood than the others), while some of the specific virtues actualized by e-TAP would not be given sufficient attention in the rest of the learning process. However, in turn, these different emphases, provide a wider range of virtues.

The programme e-TAP offers a thematic approach to understanding virtues. Many of those themes are closely related to the content of the Skola-2030 curriculum, so the integration of the e-TAP programme and Skola-2030 programmes can be realized not only in form time, but also in concrete subject lessons. For example, in the 4th grade, the thematic area 'Social sciences' includes the topic "How to preserve traditions and participate in the community" (https://mape.skola2030.lv/resources/200, pp. 133) and the e-TAP programme offers the topic "Participation in democracy-building" for 4th grade. However, it must be acknowledged that this work direction (thematic comparison) requires a more detailed study of common topics grade by grade. Another possibility of using the e-TAP programme can be to implement it during form time lessons within the six thematic groups proposed by the National Centre of Education of the Republic of Latvia (NCE, 2016).

The results of the research indicate also future directions for improving the e-TAP programme in practice. First of all, by elaborating lessons that address performance virtues and civic virtues, which are currently the weakest virtue categories in this programme. Given the educational trends of the 21st century, as well as the fact that new online materials are being developed (e.g., https://www.tavaklase.lv/), especially now, when distance learning is taking place, the e-TAP programme is also a timely response to the need of constantly reviewing and supplementing the teaching materials. At a time when the goal of education and school, the content of curricula, and the forms of work organization are topical issues around the world and each country is looking for ways to overcome the education crisis, the e-TAP programme provides serious support to teachers in implementing education reform in Latvia.

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GENDER REPRESENTATION IN THE NATIONAL ASSESSMENTS OF MATHEMATICAL ACHIEVEMENTS

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Abstract. *Balanced gender representation allows stereotype threat effect to be avoided so it is important in any type of educational materials, but it is even more so in national assessments as in some cases their outcome determines opportunities for young people. This study is centered on gender representation in the country-wide [Lithuanian] assessments of students' mathematical knowledge and skills, particularly, on the national assessments and exams level. The research data was analyzed using the authors' evaluation matrix. There were seven categories of topics found in contextual problems: free time and socialization, housework, movement, sagacity, shopping, skillfulness and sports. Study shows that some types of assessments represent genders in a more balanced way than others. When compared to other educational or entertainment sources of written information, national assessments of mathematical achievements seems to represent gender in a more balanced way.*
Keywords: *gender equality; gender representation; gender stereotypes; mathematics; assessments.*

Introduction

Gender equality is stated as one of the core priorities of the European Union (European Institute for Gender Equality, 2020) and also of Lithuania (Ministry of Social Security and Labour, 2020). To evaluate whether desired progress is being made, European Institute of Gender Equality uses the Gender Equality Index. Most recent data (European Institute for Gender Equality, 2020) shows the Gender Equality Index in Lithuania in the year 2020 to be 56.3, European Union average being 67.9. Compared to the last available data, Lithuanian index is even lower now than two years ago (56.8), while European Union average grew significantly (from 66.2 to 67.9). Situation in Lithuania is getting worse despite aiming towards a more gender-balanced society. Knowing gender equality is yet to be achieved, it is very important to analyze if tools used in education are appropriate regarding gender depiction.

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There is no doubt that gender stereotypes contribute to gender inequality. Damaging and undermeaning stereotypes are inevitable as they are factored mostly by society and its norms. Therefore as women grow up, they are progressively shaped to suit societal norms. While the majority of cultural factors can not be avoided or scientifically measured, education allows some control to be implemented.

As for Lithuanian research, several studies about gender representation related to gender equality were held, one of which was our study about gender stereotypes in the fifth grade mathematics teaching materials. Study concludes undeniable stereotypical representation of genders (Grigaliūnienė & Kačinskaitė, 2020). This study is a much needed sequel centered around gender representation in the national assessments.

Not only do assessments have psychological effects on people, some of the assessments are very important because of their outcomes. For example, exam results determine what study (and, therefore, career) opportunities young people have. It is because exam results factor competitive scores when applying for higher education. Even more so, mathematics exam has to be passed in order to apply for a state scholarship (Lietuvos Respublikos Seimas, 2020).

Given the effect of stereotype threat and the overall impact of assessments' outcomes, balanced gender representation in national assessments is undeniably very important. In this paper we present findings of contextual content of national mathematics assessments that were evaluated and a brief comparison with the results of our previous research (Grigaliūnienė & Kačinskaitė, 2020).

The aim of the research - to evaluate contextual content of mathematics assessments in order to determine how genders are represented.

Literature Review

Stereotype threat is a theory that emphasises the effect of stereotypical information for negatively stereotyped groups of people. The effect is observed when members of the stereotyped group are negatively impacted dealing with a task that makes stereotype salient (Steele & Aronson, 1995).

There are many areas in which stereotypical depiction poses as a threat to performance. Such as racial stereotypes e.g. African Americans as less intelligent than European Americans (Steele & Aronson, 1995), age stereotypes e.g. elderly performing poorer on memory tests as they age (Lamont, Swift, & Abrams, 2015) etc. One of the most studied stereotype threats is about females and their mathematical abilities in comparison with males. In many studied cases, women were shown to be impacted when experimenting with moderation of stereotypical information regarding their gender and mathematical abilities (Casad, Hale, & Wachs, 2017; Cavanagh, 2008; Ganley et al., 2013; Schmader, 2002; Shaffer,

Marx & Prislin, 2012; Smith & White, 2002; Spencer, Steele, & Quinn, 1999; Van Loo & Rydell, 2013). It is worth noting, that not all women experience stereotype threat the same therefore its impact is depending on particular women. For example, women who consider mathematics to be important are affected more severely in comparison to women, who are not interested in mathematics (Lesko & Corpus, 2006) also, women that believe in themselves more are less impacted compared to less confident women (Van Loo & Rydell, 2013).

The latter fact is very important to be noted when dealing with research that observes lack of stereotypical threat effect (e.g. Flore, Mulder, & Wicherts, 2018). While authors point out possible reasons for this, one more thing to notice is the community in which testing takes place. For this study, Dutch students were tested. Netherlands is known to be one of the highest rated countries regarding gender equality (European Institute for Gender Equality, 2020), therefore females are part of the communities that generally don't see them as less capable in mathematics or expect them to underachieve compared to males. As mentioned already, confidence in self significantly decreases the impact of stereotype threat.

Taking everything into consideration, there is no denying that gender representation should aim to be as balanced as possible. While there are cases when stereotype threat seems to be a thing of the past as the females are not impacted by the way information is presented, there is no need for gender representation to be unbalanced and stereotypical.

Methodology

The epistemic basis for this research was critical theory as defined by Paulo Freire in his book "Pedagogy of the Oppressed" (Freire, 1972). In the third chapter of his book he emphasizes the importance of any form of written information as it is a tool to shape students' worldview.

Accordingly, a research strategy was constructed. Knowing the importance of wording, content analysis was chosen as a research method as it allows to analyze patterns in the chosen study materials. Given the inherent duality and complexity of the analyzed data (repetition alone does not reveal the context), mixed research methodology was chosen. The research data was analyzed using parallel ongoing procedures strategy (as defined by (Creswell, 2003)). From the perspective of quantitative content analysis summation of recurrences, comparison of data sets, percentage distribution of data and drawing diagrams were used. From the perspective of qualitative content analysis data identification and categorization as well as identification of patterns were used.

For this study, national assessments of mathematical achievements were chosen to be analyzed. There are three main categories of assessments of mathematical achievements: national maturity exam (12th graders), assessment of

lower secondary education (10th graders) and national assessment of students' achievements (8th, 6th, 4th and 2nd graders).

Evaluation matrix was used as a research instrument for categorisation of problems found in assessments. It was aimed at calculating categorical distribution of topics depending on the gender as well as category. In this case, the evaluation matrix from the previous research was adapted to be used for this analysis (Grigaliūnienė, 2020) (Table 1). If determined to be eligible for categorisation, the problem was then categorised based on its topic. Like in previous research, five types of problems were decided to be uncategorizable: problems without a context, problems about animals, problems based on data, problems based on a family or group activity (mixed gender) and problems, where a gender cannot be determined because of plurality (Grigaliūnienė, 2020). In some cases, one problem might have had few topics.

Both qualitative and quantitative research data were integrated in the interpretation of the results.

Table 1 ***Evaluation Matrix***

Category	**Indicators**
Freetime, socialisation	after school activities, hobbies socialisation, communication reading organising/participating in parties, contests etc.
Housework	looking after flowers profession-unrelated knitting, housekeeping, cooking eating
Movement	transportation: by car, by train, by bus, by bike walking, travelling by feet flying sailing, boating
Sagacity	data: collecting, representing etc. geometry: folding figures, cutting figures out etc. solving mathematical, logical problems participating in competitions (intelligence) classwork and homework money: earning, investing, disputing etc.
Shopping	
Skillfulness	professions: builder, baker, cashier, teacher etc. repairs, installations etc. yard work: plowing, fruit picking etc.
Sports	psychical education class activities sports clubs fishing active leisure, hiking

Research Results

National maturity exam (12th graders), assessment of lower secondary education (10th graders) and national assessment of students' achievements (8th, 6th, 4th and 2nd graders) of the main session were analyzed in detail. In a few cases when there were two versions of national assessments of students' achievements for the same year only one was randomly chosen to be analyzed. Every type of assessment is analyzed in detail below.

National assessment of students' achievements for 2nd graders (denote by [NMPP2]). Four assessments for each year (2015-2019) were analyzed. Overall 40 contextual problems were analyzed, more than half of which had male protagonists. On average eight contextual problems per assessment were found. Most popular category was found to be sagacity (almost half of the analyzed problems), second being freetime. None of the assessments had problems in the housework category. Majority of the problems had protagonists acting the way it is expected of their gender. For example, females' freetime consists of painting (2015, 10), sharing stickers with friends (2017, 36), playing with friends (2017, 18), planting (2016, 35) etc. There are few cases of economical problems including having money (2018, 17.2; 2015, 11; 2015, 36; 2018, 17.1; 2018, 17.2), saving money (2018, 26), getting money as a gift (2018, 26). In one economic problem genders are compared and a boy is said to have more money than a girl (2018, 17.2), also female character is said to be saving money independently (2018, 26). In addition, females are shown to be participating in physical activities by their own choice (not in physical education class)(2015, 21; 2018, 23.3; 2019, 8), which denies the stereotype of females not being interested in sports.

National assessment of students' achievements for 4th graders (denote by [NMPP4]). Eight assessments for each year (2012-2019) were analyzed. Altogether 79 contextual problems were analyzed, on average almost ten contextual problems per assessment. Two of the most frequent categories were found to be sagacity, not far from it being freetime. Almost sixty percent of all the problems have male protagonists. In these assessments, quite a few professions were mentioned all of which were traditional to the gender representation; female characters portrayed as a baker (2012, 22), teachers (2012, 29; 2015, 33; 2016, 28; 2018, 15; 2018, 19), a cashier (2013, 10), a tailor (2015, 34), male characters as an electrician (2014, 31), a writer (2015, 6), an employee of a bowling center (2016, 28), a builder (2018, 28), a composer (2019, 6) and a farmer (2019, 12). Two of these professions involved nationally or internationally famous personas who were both male. The sagacity category offers great contrast as for every female problem there are almost four male problems. Female depiction is not demeaning; solving a task (2013, 34; 2017, 20), being at school (2015, 22.1), collecting data (2018, 18.2) and getting money as a gift (2017, 30). Male

characters, on the other hand, are involved in a variety of activities many of which involve data collection or graphing (2012, 11; 2012; 12; 2013, 29; 2014, 30; 2015, 22; 2018, 19; 2019, 32) also having or getting the money (2012, 28; 2013, 9; 2013, 13; 2018, 9; 2018, 27). Worth mentioning is the only case of a female flying on a plane (2012, 19), however, her flying is a subcontext to a male protagonist arriving to get her back home. Housework category has altogether four problems, three of which are centered around female characters and one about Jonas eating chocolate (2014, 18).

National assessment of students' achievements for 6th graders (denote by [NMPP6]). Three assessments for each year (2017-2019) were analyzed. Most frequent category was found to be freetime category, not far from it being sagacity. Altogether 39 contextual problems were found averaging 13 per assessment. There are more problems with female protagonists and this is the only case between all types of assessments. Majority of problems are well-balanced regarding gender representation as both females and males are shown to participate in various activities not constrained by their gender. For example, Agota's brother is painting the eggs (2017, 25), young mathematician Smiltė invents a sign for arithmetic calculation (2018, 14). However, Smiltė is choosing an afterschool activity and she stereotypically does not like sports (2018, 15). All in all, none of the problems either demean or praise any gender and the overall depiction of gender is satisfactory.

National assessment of students' achievements for 8th graders (denote by [NMPP8]). Seven assessments for each year (2012-2018) were analyzed. Most frequent category was found to be sagacity, second being freetime. Altogether 66 contextual problems were found averaging around 9.4 per assessment. Sixty percent of all the problems had male protagonists, however distribution in the most frequent category was equal. Most of the problems in the skillfulness category were profession-related, such as farmer (2012, 22), businessman (2015, 4), farmer (2016, 22; 2016, 22.1; 2016, 22.4; 2017, 16), writer (2017, 1.3) all having male protagonists and one with a female protagonist working as a school theatre manager (2017, 1.3). Gender representation in the sagacity category is quite satisfactory as female characters are portrayed as mathematically-skillful (e.g. 2012, 39; 2016, 11 etc.) and able to save (2018, 6.2) or to earn (2016, 13) money. However, as for the latter subcategory, depiction of male characters seems to overpower portrayal of females e.g. investing 60000 euros (2015, 4), using EU aid (2016, 22.3) and also saving money (2018, 6). Housework category consists of three problems centered around females and one with male protagonist eating breakfast (2014, 19). Shopping problems are tied to the contexts found in other categories particularly housework and skillfulness.

Assessment of lower secondary education (10th graders) (denote by [PUPP]). Twelve assessments for each year (2008-2019) were analyzed. Most

frequent category was found to be sagacity, second being skillfulness. Altogether 51 contextual problems were found averaging around 4.3 per assessment. More than sixty percent of all the problems had male protagonists. Interestingly, there were no freetime problems with male protagonists. Also there were only two sports-related problems both with male protagonists. Skillfulness category, with majority of the problems being profession-related, is dominated with male protagonists, e.g. electrician (2009, 8), business-owner (2015, 7; 2019, 11.1; 2019, 11.2; beekeeper (2015, 13.2), diver (2012, 10) etc. whereas females are depicted only two times both working as editors (2016, 15; 2016, 15.2).

The national maturity exam (12th graders) (denote by [VBE]). Nineteen assessments for each year (2002-2020) were analyzed. Three of the assessments had no categorizable contextual problems (2006, 2012, 2014). Very few contextual problems were found within the assessments as it averages only ~2.4 contextual problems per assessment. Nine of the assessments had contextual problems with exceptionally male protagonists (2002, 2003, 2004, 2005, 2007, 2009, 2011, 2013, 2015). First time contextual problems had a female protagonist was in 2008. More than half of all the problems had male protagonists. Most frequent categories were found to be freetime and socialisation, skillfulness and sports. Majority of problems have no demeaning or praising context for any gender besides historical context praising achievements of Pythagoras (2020, 22). Few are considerably stereotypical such as Greta who has to park her car in two spots because she likes to open her door widely (2018, 24), also grandma milking cows and making sourcream (2016, 20), male characters practising sports more often than females. However, whenever females are shown to be doing sports, they are either preparing for or participating in a competition (2010, 21; 2016, 23).

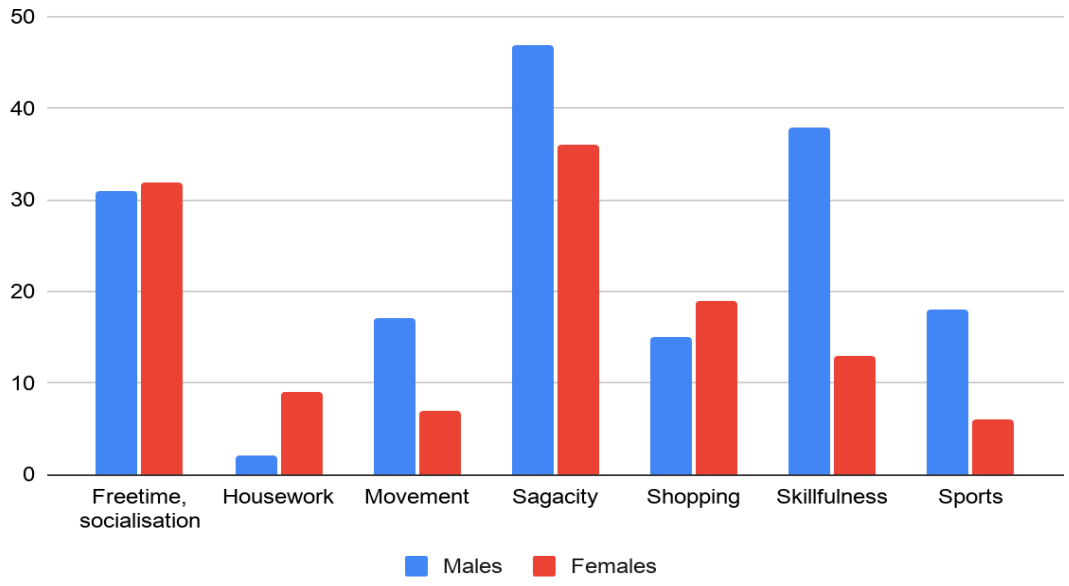

Figure 1 ***Categorical Distribution***

Categorical distribution of analyzed contextual problems regarding gender is given in the chart below (Figure 1) and quantitative summary is given in the table below (Table 2). It shows mostly balanced gender distribution in freetime and shopping categories, more or less also in sagacity. In skillfulness, movement and sports category males are dominant; in housework category females are clearly dominant.

Table 2 ***Quantitative Summary***

	NMPP2		**NMPP4**		**NMPP6**		**NMPP8**		**PUPP**		**VBE**		**Summary**	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Freetime, socialisation	5	5	10	8	5	9	7	5	0	5	7	2	34	34
Housework	0	0	1	3	0	1	1	3	0	0	1	4	3	11
Movement	3	0	4	3	0	2	5	1	2	2	4	1	18	9
Sagacity	10	7	18	5	3	8	9	9	12	6	5	2	57	37
Shopping	3	3	2	5	3	2	3	5	4	4	1	1	16	20
Skillfulness	1	1	7	8	4	1	9	2	12	2	7	2	40	16
Sports	0	2	3	1	1	0	5	2	2	0	7	2	18	7
Summary	22	18	45	33	16	23	39	27	32	19	32	14	186	134

Discussion and Conclusions

When compared to other educational or entertainment sources of written information, national assessments of mathematical achievements seems to represent gender in a more balanced way. As for comparison with our previous research, the same conclusion could be made - when compared with teaching materials for 5th graders, national assessments tend to be more suitable.

However, some tendencies reappear. As for the most feminine category - housework - females are dominant and the only action male protagonists are shown to be making is eating. Same is true for the skillfulness category as profession-wise gender representation was found to be stereotype based showing females to be having stereotypically feminine careers and males more all-rounded profession-wise.

In our previous research we found the shopping category to be closely related to other stereotypical contexts, however, in this study this wasn't a big issue because the vast majority of the purchases were gender-neutral such as snacks, books etc. Most importantly, gender depiction is significantly more balanced in

the sagacity category as both genders are shown to be disputing money, solving problems etc.

It is also important to mention that despite the fact gender representation is more balanced in general, some assessments were better than the others (e.g. national assessment for students' achievements for 2nd graders) and some had unsatisfying tendencies (e.g. assessment of lower secondary education).

While the question of how problems should be constructed is entirely different and requires careful analysis to present guidelines, some insights for improvement are obvious enough to be stated as valid recommendations. Most importantly, gender representation should not be reduced to strereotypical situations. It is important to emphasize, that balanced gender representation does not mean majority of male protagonists showing typically feminine interests or visa versa. Having majority of female protagonists interested in racing, fencing etc. is unrealistic, but having a few characters with not-so-typical interests for their gender is encouraged. Regarding comparison between males and females, partnership and equality should be depicted rather than distinction.

Overall, gender depiction in national assessments is balanced-enough but the perfection is yet to be achieved. Since there is no reason to avoid more balanced gender representation in study and assessment materials, we would recommend in-charge people to be considerable and to take actions towards a more suitable gender depiction.

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CHANGE OF PARADIGM IN LATVIA EDUCATIONAL ESTABLISHMENT MANAGEMENT IN HISTORICAL PERSPECTIVE (FROM 1919 TO 1940)

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Abstract. *Independence and freedom of Latvia State since the proclamation of the Republic of Latvia in 1918 was interrupted by World War II. During that time the education system of Latvia has also changed, including fundamental principles of educational institution management. The goal of the article is to analyse changes in educational institution management in historical perspective, comparing legal regulations in two periods of Latvia: in the democratic (1919) and authoritarian (1934) regime of the First Free State of the Latvia Republic. In the article the theoretical research methods (method of comparison and critical thinking) and empirical research methods (data collection method and document analysis) have been applied. Comparing the periods of the democratic (from 1919 to 1934) and authoritarian regime (from 1934 to 1940) of the First Free State of the Latvia Republic in the context of educational institution management, it should be mentioned that the legislation of the authoritarian regime envisaged much broader responsibility, duties and rights for the head of the school. Moreover, the head of the school could also have deputies depending on the size of the school. The structure of educational institution management in the authoritarian regime in comparison with the democratic regime was more particular, with a more detailed description of responsibilities, with an increased parents' involvement in the school life organization.*
Keywords: *educational institution, education system, history of schools, management.*

Introduction

In compliance with the public demand, labour market requirements, national ideology, current socio-economic and political conjuncture, the education system experiences certain transformations. In the course of time the education system of Latvia has also changed, including the fundamental principles of educational institution management. The goal of the article is to analyse changes in educational institution management in historical perspective, comparing the legislative regulations (the "Law on Educational Institutions of Latvia", 1919 and "Law on Folk Education", 1934) in two periods of Latvia: during the democratic (1919) and authoritarian regime (1934) of the First Free State of the Latvia

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Republic. In the article the theoretical research methods (method of comparison and critical thinking) and empirical research methods (data collection and document analysis) have been applied (Martinsone, Pipere & Kamerāde, 2016). Based on the theoretical research and the achievement of the set goals, the article can serve as a basis for further research in the context of school management history.

In order to obtain a more profound conception about the change of the education system in the context of school management, an insight into the development of the Latvia education system during 1918 to 1990, based on various historical sources, has been provided. Freedom and independence of Latvia was interrupted by World War II and occupation of the Soviet Union, so along with the change of political power and promulgated ideology, education systems in Latvia also changed.

Insight into Features of Latvia Education System from 1918 to 1934

After the proclamation of the Latvia Republic on November 18, 1918, the head of the caretaker government Kārlis Ulmanis in his speech mentioned the structure of democracy in Latvia State, arranging domestic policy and maintaining, establishing international relations on the way to international recognition of the country (Ciganovs, 2001). One of the problems to be solved was formation of the education system of Latvia. At the beginning of the 20 th century, the foundations for the functioning of education by all institutions of an independent state were laid down, primary education was determined free of charge (Andersone, 2020).

On December 8, 1919 the "Law on Educational Institutions of Latvia" was adopted. The law provided compulsory education for citizens aged from 6 to 16: from 7 to 8-year olds home and preschool education, from 9 to 14-year olds six-year primary school, from 15 to 16-year olds – supplementary school. However, it was not implemented into practice for a long time due to material hardships and lack of teachers. Implementation of it was commenced starting with School Year 1923/24. At the same time on December 10, 1919 the "Law on Minority School Systems in Latvia" was adopted. Minorities were financed from the state and local government budgets. The state financed education up to secondary education (until 1932 anyone was able to choose freely which school to attend). There were German, Russian, Hebrew, Polish and Belorussian schools. The People's Union nicknamed Latvia as a model of education accessibility for national minorities. In 1930 a unified qualification of all schools, including national minorities, by unifying them, was launched. Starting from September 1, 1932, children were sent to school according to their nationality (Anspaks, 2003). The law on educational institutions of Latvia had a number of insufficiencies, there was nothing said about

teachers' training, salaries, pensions and other topical issues. Only in 1921the law adopted, by the Constitutional Assembly, on compulsory school, teachers' salaries, equating them to the officials' salaries, entered into force. In its turn, on March 13, 1925 the law on teachers' pensions was adopted. The number of schools increased rapidly, but there was lack of teachers, there were only 25% of certified teachers in the initial phase. In the early 1920 297 teachers worked in 211 schools, therefore solely about 50% of children of compulsory school age could have been enrolled in schools. Courses were organized (1919), the University of Latvia also trained teachers. In 1920 in the Teachers' Seminary the following theses were developed and submitted to the Ministry of Education:

- teachers (young men and women together) are trained in teachers' seminaries;
- volume of the study content in comprehensive subjects is similar to the volume of the study content in secondary schools;
- apart from the comprehensive subjects in the seminary, a special attention should be paid to psychology, pedagogy, methodologies, the Latvian language and literature, history and geography of Latvia, natural sciences, music, singing and handwork;
- a six-year primary school is opened up at the seminary;
- training in the seminary is free of charge;
- accommodation in the seminary is free of charge, the state helps with provisions;
- a scholarship fund is allocated to each class;
- in the seminary the labour principle is observed. Educational aids are provided by the state;
- former students of the seminary obtain the rights of a six-grade primary school teacher;
- graduates of the seminary are entitled to get enrolled in a higher educational establishment (Ķestere, 2009).

Teachers' seminaries were also opened up in Jelgava (1920), Bērzaine (1920, closed down in 1922), Riga (1922, closed down in 1938), Daugavpils (1920), Rēzekne (1921). Later on, they were transformed into five-year teacher training institutes, starting from 1935 into six-year institutes. From 1935 till 1940 there was the National Central Pedagogical Institute in Jelgava with a two-year programme. Teachers for secondary school were trained in the Pedagogy Department of the University of Latvia. Initially it was a two-year and later on a four-year teacher training programme, which was very broad and voluminous. To become a certified secondary school teacher, one had to work for two years as an assistant teacher. Favourable conditions for the development of pedagogical ideas and their implementation are created by the cultural promotion and education

policy, implemented in the Free State of Latvia. The state aid for education, science and art is subjected to the task – place Latvia and Latvians in the family of the modern cultured countries and nations, promote a balanced development of the nation's material and non-material culture. Expenditure on public education in Latvia Free State reached 15% of the total governmental revenue, which was more than in the most other European countries. Care was also taken of pupils' health, the second breakfast was given for free at schools (Žukovs, Kopeloviča 1997).

After the coup d'état on May 15, 1934, the pedagogical experiments with various plans, methods and projects, adopted in the "Law on Public Education" the same year on July 12, were condemned. In the law it was stated that any child starting form age eight had to be at school, the primary school course lasted for six school years. Its purpose was to provide children with the knowledge necessary for life. Whereas, the purpose of secondary schools or gymnasiums of comprehensive education was to provide students with general education and prepare them for further education in higher educational establishments. Gymnasiums were either single gender schools or mixed schools (Andersone, 2020). It should be noted that reinforced centralization, regulation and control of the school life was determined by the law, censorship of educational literature was introduced. However, along the negativity, buoyant construction of school buildings and strengthening of their marital base continued during Kārlis Ulmanis' time. In the syllabus an increased attention was paid to Latvian folklore and history of Latvia, an assignment was set to promote Latvian upbringing, take care of love embodiment for work and homeland. In 1935 K.Ulmanis came up with the "Friendly Appeal", in which he invited anyone to donate books, pictures etc. to their first school. Very soon libraries of primary schools received more than 1.7 million books (Staris, 1994).

Fundamental Principles of Educational Institute Management During Democratic Regime of First Free State of Latvia

On December 8, 1919 the law on educational institutions of Latvia was adopted in the meeting of the Latvian People's Council. It was envisaged that educational institutions were founded and funded by the national and municipal establishments with the permission of the Ministry of Education, also the educational institutions were supervised by the Ministry of Education, determining, inter alia the compulsory subjects (the Latvian language and literature, history and geography of Latvia), their volume, number of lessons per week and maximum number of pupils in a class. In the state-run educational institutions, the candidates for teachers and school managers were recommended by the school council and elected by the local school board.

The responsibilities of the educational establishment manager (school administrator) included: (1) school management within the limits prescribed by law; (2) maintenance of cooperation with state and local municipal institutions, as well as with individual persons; (3) convening and chairing the pedagogical council; (4) organization of the school council's work. The school council consisted of teachers and a doctor, if there was one in the education institution. It should be mentioned that the competence of the school pedagogical council was quite broad: (1) supervision of upbringing and teaching material; (2) determination of school curriculum and work regulations; (3) distribution of upbringing and teaching work among teachers; (4) discussion of lesson plans developed by teachers; (5) knowledge of school teaching aids and library fund; (6) preparation of reports on the learning progress; (7) admission of pupils and their division into appropriate classes; (8) assessment of student achievement and decision on transfer to another class; (9) handing out grade reports; (10) development of instructions for teachers and pupils; (11) organization of school performances.

One of the decision-making bodies of the educational institution was the school council, which consisted of the school manager, teachers (the candidates were nominated by the school pedagogical council), representative of the pupils' parents (one from each class), a representative of the school founder and a doctor if there was one at school. The school council meetings had to take place at least once per school term. The school council was chaired by a democratically elected (by a majority) chairperson of the council. Any decision both in the school council and pedagogical council was taken by a simple majority.

The competence of the school council included: (1) recommend candidates for teacher and school managers for approval; (2) promote upbringing work and educational processes at school; (3) inform parents on the pedagogical process; (4) promote communication between parents and pupils in the framework of upbringing; (5) take care of hygiene requirements at school; (6) discuss the school budget and apply responsibly the financial resources entrusted to the school council; (7) superintend the household of the school and movable property, real estate; (8) organize common meals; (10) take care of pupils in need, supplying them with clothes and shoes; (12) compile reports and collate statistics; (13) review issues submitted by the head of the school, pedagogical council and school board; (14) division of school space for teachers, pupils and technical staff.

Strategic issues and overall supervision of the educational institution was performed by the school board whose competence areas were: (1) supervision and control of schools; (2) consideration of all complaints; (3) termination of teachers' legal employment and consideration of their leave issues; (4) organization of courses for teachers; (5) claiming state benefits and control over their application; (6) arrangement of the school network; (7) provision of learning support for

children with learning difficulties; (8) coordination and approval of the school budget; (9) approval of the school building plans; (10) coordination and approval of the school curriculum. The school board consisted of the head of the municipality, two representatives from the school council, school inspectors as representatives of the Ministry of Education, one municipal doctor, two representatives of teachers, one teacher representative form the minority teachers (Latvijas Tautas Padome, 1919).

Describing the decision made on the educational intuitions of Latvia in the Latvia People's Council on December 8, 1919, it should be mentioned that the law, based on the fundamental principles of democracy, outlined the basic principles of the operation and management of the school as an educational institution, providing a balanced decision-making power, executive approach and involvement of the head of the school, teachers, pupils' parents and founder of the educational institution in the school work provision, taking into account the interests of all parties.

Fundamental Principles of Educational Institute Management During Authoritarian Regime of First Free State of Latvia

On 15 May 1934, K. Ulmanis organized a coup. The period of his authoritarian power began in Latvia since that time, on 11 April 1934, he took over the position of State President and Prime Minister and declared himself as the Leader of the people (President of Latvia, 2021). The parliamentary state collapsed and the democratic system was changed and the democratic system was replaced by the characteristics of an authoritarian regime. Therefore, major changes also took place in the education system and school management – on July 12, 1934 the Law on Folk Education was adopted, which came into force on July 18, 1934. The Law of Folk Education stated that educational institutions, including educational institutions of minorities, can also be private educational institutions, which may be opened up with the approval of the Ministry of Education by legal or natural persons. At the same time, Article 3 of the law clearly emphasized the purpose of the activities of educational institutions: "the physical, intellectual, aesthetic and moral education of the youth shall be cultivated in educational institutions and the youth shall be educated in personal and social uprightness, in love of work and homeland, in the spirit of class understanding" (Likums par tautas izglītību, 1934).

The Law on the Folk Education stated that the municipal functions were to provide children aged from 3-13 with compulsory education, finding more suitable premises and land area for the educational institution, also providing the school with the necessary equipment and teaching aids, registration of school-age

children and proper school attendance. Educational institutions were managed by the school principal and their deputies.

The school manager's responsibilities included: (1) manage and supervise teaching and upbringing processes; (2) superintend the economic issues of the school; (3) comply with binding legal acts, laws; (4) comply with the decisions of the municipality, pedagogical conference and school council; (5) propose candidates for the position of teacher for a pedagogical conference; (6) hire and dismiss technical staff of the school in coordination with the municipality; (7) attend teachers' lessons; (8) draw up the school's annual report and budget; (9) arrange the leave for school employees; (10) propose agenda items for meetings of a pedagogical conference or school council; (11) chair the work of the pedagogical conference.

In its turn, the most essential issues of the school were considered by the pedagogical conference of the school, whose work was organized by the head of the school, the pedagogical conference consisted of: the head of the school, deputy of the head of the school and all teachers of the school who had more than 6 lessons per week. The competence of the pedagogical conference included: (1) discuss the issues of upbringing and learning, as well as individual employees' responsibilities in upbringing and learning issues; (2) enrol pupils, decide on the transfer of pupils to the next class, pupils' exclusion from school, as well as issuing grade reports or certificates to pupils; (3) award scholarships or prizes to students; (4) in compliance with the instructions and orders by the Ministry of Education decide on other issues of the school. The pedagogical conferences of the school happened at least once a month, except for summer holidays when the meetings were convened when necessary. Decisions of the Conference were taken by open vote by a simple majority- the head of the school had a decisive vote in equal votes. Decisions of the pedagogical meeting could have been appealed within one week from the moment of announcing the decision in the school board or in the Ministry of Education.

The school council focused on: (1) the upbringing and learning process issues proposed by the head of the school; (2) care of the pupils' health condition and organization of pupils' common meals; (3) taking care of the school's economic matters, which the school administrator had entrusted to the council; (4) in compliance with other instructions and orders by the Ministry of Education decide on other issues of school life. School council meetings were held as needed, at least three times a school year or on request by the school administrator. Decisions of the Council were taken by open vote by a simple majority - the decisive vote in equal votes was given to the Chairman of the Council. Decisions of the school council meeting could have been appealed in the school board or the Ministry of Education within two weeks from the announcement of the decision. The school council consisted of, depending on the size of the school by the total

number of students, the head of the school, 2-3 teachers, 2-3 representatives of parents (representation of school teachers and parents was equal), a doctor of the school and a representative from the municipality.

In order to promote cooperation, there were parents' meetings at schools, in which one parent or guardian of each pupil took part, whereas the doctor of the school, teachers, also the representative of the school administrator participated in the work of the parents' meeting with advisory rights. Parents' meetings were convened by the head of the school. The regular parents' meetings happened at the beginning of the school year, whereas extraordinary meetings could have been convened at the discretion of the head of the school. Parents' meetings are full-fledged if 1/5 of the full members took part. The focus of the parents' meeting was: (1) hearing and discussion of the head of the school's report on the school condition, course of studies and upbringing issues; (2) hearing and discussion of the school doctor's report on the pupils' health condition and guidelines for the pupils' health improvement; (3) hearing and discussion of the report of the school council and audit committee.

Work of educational institutions was controlled by school boards which were in every parish and School Boards of Riga, Liepaja, Daugavpils and Jelgava Cities. School boards were subordinated to the Ministry of Education in whose competence it was to: (1) develop networks of schools for compulsory education, division of classes, state the number of teachers and register children for compulsory education; (2) discuss the desirable curricula, lesson plans, submitting their opinion to the Ministry of Education; (3) within the limits of their competence, discuss and decide issues proposed by local governments and the Ministry of Education; (4) supervise construction of new schools and repairs in existing schools by providing their opinions: (5) distribute the benefits allocated by the state to local governments: (6) provide the Ministry of Education with their opinion regarding the appointment of the new head of the school or their transfer or dismissal; (7) appoint, approve, transfer and dismiss deputies of the head teacher, teachers and educators, also make decisions regarding the appointment, transfer and dismissal of reserve teachers and substitute teachers; (8) control educational and upbringing institutions funded by the local government; (9) deal with complaints; (10) grant the leave to school employees; (11) compile lists of vacancies for the heads of the school, teachers and other school staff; (12) write the job description to head teachers, teachers and other school staff; (13) impose disciplinary sanctions on school staff in cases of violations.

School boards consist of 4 members: school inspector, 2 representatives of local governments appointed by the Minister of the Interior and one representative of teachers appointed by the Ministry of Education. The composition of the school board was appointed for one year, school board meetings were held as needed and the decisions of the school board meeting could have been appealed in the

Ministry of the Interior within two weeks from the announcement of the decision, if it was related to economic issues and in the Ministry of education if it was related to pedagogical issues (in compliance with the guidelines developed by the Ministry of the Interior and Education).

In addition to school boards, educational institutions were supervised by employees of the Ministry of Education, persons authorized by the Minister of Education and, in particular, district and general inspectors. It was the responsibility of the district inspector to ensure that educational institutions complied with the relevant laws in the field of education and upbringing, including: (1) convene and conduct teachers' discussions, in which issues of upbringing and teaching process were discussed; (2) initiate proposals about opening new schools and improving facilities in existing schools; (3) visit educational institutions to ensure the school activity, paying a special attention to the learning process, upbringing, morality and school infrastructure. Inspectors (general inspectors, inspectors of separate subjects, supervision inspectors of special types schools) submitted their opinions to the school board or Ministry of education.

Conclusions

1. During the First Free State of the Latvia Republic the management model of educational institutions (from 1919 till 1934), based on the fundamental principles of democracy, outlined the basic principles of the operation and management of the school as an educational institution, providing a balanced decision-making power, executive approach and involvement of the head of the school, teachers, pupils' parents and founder of the educational institution in the school work provision, taking into account the interests of all parties.
2. During the First Free State of the Latvia Republic the management model of educational institutions (from 1919 till 1934) consisted of: (I) the head of the educational institution or school administrator, whose responsibility was to promote cooperation of the school with the governmental and municipal institutions, convenance, management of the pedagogical council and organization of the school council's work; (II) pedagogical councils which were responsible for the organizational issues of the upbringing and learning process; (III) school councils which focused on cooperation promotion between parents and teachers, taking care of socially vulnerable pupils and a range of different economic and financial problem-solving; (IV) school boards which carried out joint supervision of the educational institution and adopted strategic issues.
3. During the First Free State of the Latvia Republic the management model of educational institutions (from 1934 till 1940) consisted of: (I) the head of the educational institution who was responsible for the organization and supervision of the learning, upbringing process, dealing with economic issues, management

of the school staff, management of the annual report of the school budget, budgeting and pedagogical conference work management; (II) pedagogical conferences which focused on the organizational issues of the upbringing and learning process; (III) school councils which focused on the care of the pupils' health condition and addressing economic issues entrusted to the council; (IV) parents' meetings which enhanced cooperation between the educational establishment and family; (V) school boards which developed the school network, provided an opinion to the responsible ministry on the school upbringing and teaching process, supervised the economic and financial issues of the school, distributed the earmarked subsidy granted by the state and local government, provided monitoring of free teacher vacancies, also decided on the head teacher's appointment or dismissal.

4. Comparing the periods of the democratic (from 1919 to 1934) and authoritarian regime (from 1934 to 1940) of the First Free State of the Latvia Republic in the context of educational institution management, it should be mentioned that the legislation of the authoritarian regime envisaged much broader responsibility, duties and rights for the head of the school. Moreover, the head teacher could also have deputies depending on the size of the school. The structure of educational institution management in the authoritarian regime in comparison with the democratic regime was more particular, with a more detailed description of responsibilities, with an increased parents' involvement in the school life organization.

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MULTIDIMENSIONAL CHARACTERISTICS OF TEACHER'S PROFESSIONAL COMPETENCE-CHALLENGE AND PERSPECTIVES DURING EDUCATION TRANSFORMATION PROCESS

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Abstract. *The issue of teacher's professional competence is multidimensional and multifaceted, it depends on several aspects, including educational policy, system implemented in every country and the particular educational establishment, which the educator works for. Being aware of the current pedagogical reality, challenges of the education system, pupils' needs and manifold learning and teaching strategies, educators need knowledge, skills and experience of different levels formed for each particular individual in combination of education and experience with their physical, psychological and mental abilities. The goal of the article is to identify the structure of teacher's professional competence being conscious of the theoretical and normative framework on the international and national level. In the article the theoretical research methods (method of comparison and critical thinking) and empirical research methods (data collection and document analysis) have been applied. In the society, educational institutions, also being aware of the transformation process in the education content and branch, there is a demand for teachers with a high level of professional competence. Education policy makers have set a very broad and extensive professional competence standard, which includes in itself both aspects related to the professional activity and individual characteristics, features and values. At the same time, there are various theoretical approaches which describe the framework of teacher's professional competence and its multidimensional characteristic. The authors of the article have identified general knowledge, skills and attitude, as well as pedagogical knowledge, skills and attitude in the framework of the teacher's professional competence structure.*
Keywords: *education, professional competence, school, teacher.*

Introduction

Being aware of the current pedagogical reality, challenges of the education system, pupils' needs and manifold teaching and learning strategies, educators need knowledge, skills and experience of different levels formed for every particular individual in combination of education and experience with their physical, psychological and mental abilities. Therefore, the framework of

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teacher's professional competence becomes topical. The goal of the article is to identify the structure of teacher's professional competence being conscious of the theoretical and normative framework on the international and national level. In the article the theoretical research methods (method of comparison and critical thinking) and empirical research methods (data collection and document analysis) have been applied (Martinsone, Pipere, & Kamerāde, 2016).

Initially the concept of competence was broadly applied mostly in the colloquial speech in relation to the individual's readiness for professional activity. The professional competence as a concept was introduced in the 1960s when D. McClelland (McClelland, 1973) described human knowledge, skills and attitudes which appear in a specific behaviour, personalities, values and disposition of motives performing some kind of work or a role. Up to the 90s of the 20th century they mainly talked about the necessary competence or qualifications for a professional activity performance as synonyms. However, in the late 90s the separation between qualification and competence was started, thus starting to develop an explanation that directly characterizes professional competence. As a result, the individual's corresponding special knowledge, skills and abilities have been separated, which are obtained through learning and applying experience from the individual's general knowledge and skills (King, King, & Rothwell, 2001, Henschel, 2001, Dubois & Rothwell, 2004).

Description of Teacher's Professional Competence

The issue of teacher's professional competence is multidimensional and multifaceted, it depends on several aspects, including education policy, the system implemented in every country and the particular educational establishment which the educator works for. In a broader context the educator's professional competence is described by: learning opportunities, application of learning opportunities; confidence; motivation; self-regulation; pedagogical experience; legislation; cooperation skills; support; personality traits; character; cognitive abilities; pupils' learning outcomes; ability for find innovative pedagogical solutions; positive self-esteem in the workplace (Kunter, Kleickmann, Klusmann, & Richter, 2013), as well as: professional knowledge – knowledge on educational content (Loughran, Berry, & Mulhall, 2012); masterful application of pedagogical approaches and pupils, parents' feedback (Guerriero & Révai, 2017); understanding of globalization and multicultural competence (Orazbayeva, 2016); digital competence (Caena & Redecker, 2019); conflict and problem-solving (Toom, 2017); creativity- it teaches thinking (De Bono, 2009); responsibility to oneself, pupils, parents, colleagues, school, city and the state (Lauermann, 2017). The educator's professional competence is also closely related to the educator's personality, whereas the concept of personality is a very multifaceted and

monumental formation, which derives from the heredity, environment, upbringing, situation and experience obtained during the lifetime (Karpova, 2005). The most typical personality traits derive from the individually psychological dimension and general individual peculiarities (Strika, 2009), skills and attitude (Parsons, 2011), as well as talent or systematically developed individual's innate abilities (Nijs, Gallardo-Gallardo, Dries, & Sels, 2014). As the co-authors of the new Latvia Education Content Based on Competence emphasise in the monograph "Mācīšanās lietpratībai" (*"Learning for Proficiency")* (2018), then: "the educator's competence consists of knowledge, skills and beliefs that have resulted in the action. The educator has to be able to: (I) set relevant learning goals for the pupil and give useful feedback on their achievement, teach pupils to formulate the goal themselves, follow the progress towards it, provide and receive the feedback - promote a self-directed learning; (II) select and apply skilfully learning techniques, methods which achieve the pupil's probing and involvement, use productive assignments, create a link with the real life; (III) teach to apply purposefully the information and communication technology tools (Namsone, Volkinšteine, & Lāce, 2018, p.155).

As the structure of the work environment changes, intellectual work develops more and more and being aware of the demand for the quality of education, it is no longer possible to single out only one specific understanding and explanation of the concept of competence, for the educator, while carrying out their work responsibilities, has to apply such abilities and skills (even multiple sets of competences) which are relevant and more appropriate for other situations in human life. In general, if the competence approach is applied to fulfil the educator's responsibilities, it is also possible to apply such a competence approach which combines components of the general (the desirable behaviour which is expected form all employees), functional (necessary depending on the functionality of the position) and specific (complying with the specifics of the educational institution) competences. Also, it is possible to form the competence hierarchy (Ennis, 2008), distinguishing between different levels of competence: (I) personal qualities of a person; (II) competence which is related to knowledge and skills acquisition in the academic and professional (work) environment; (III) competence of specific knowledge and skills in a specific field of activity of an educational institution (in measurement and technologies);(IV) within the framework of professions and particular position (professional - specific knowledge, technical knowledge and skills, management competence). Moreover, it should be mentioned that every individual has a chance to have a combination of their individual abilities, experience and opinions, which may include different, incl. general competence of person's individual experience and also structural elements obtained during their life activity. In their individual experience the personality develops their emotional, physical and social abilities,

but during their life activity knowledge and skills are developed, which are obtained during both the self-experience and communication with other people. This is how the world experience is formed. According to what was said above, the competence existing in the competence model can be divided into different main groups which can be formed in a multilateral way (Fig.1).

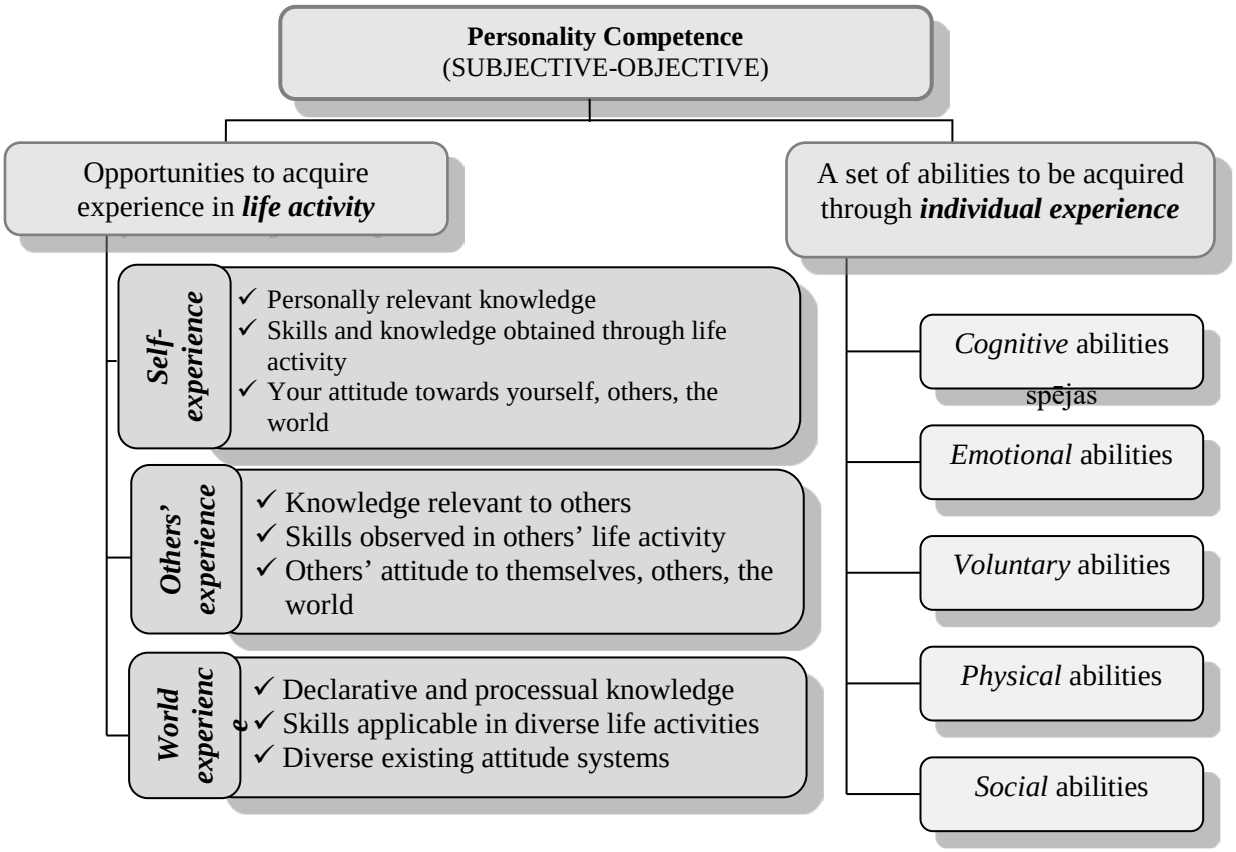

Figure1 ***Elements Forming Individual Competence of a Personality*** *(Kulberga, 2013, p.52)*

It should be noted that every educator is able to form their own individual model of competence for their professional activity provision and development, on the basis of which training can be planned for both personal development and improvement of professional skills. Attributing competence to a particular subject, it is related to the activity for the achievement of personally important goals and to the quality of the respective activity. In such a context one can talk about every human's individual potential or unique abilities obtained and justified in experience, which can be considered as personality competence.

Description of Teacher's Professional Competence – Latvia Experience

In the informative report of the Ministry of Education and Science of the Republic of Latvia (January 9, 2018) "Proposals for the Provision of Conceptually

New Competency-based Teacher Education in Latvia" it is mentioned that outstanding educators are characterized by such important values for the society as openness, cooperation, leadership, honesty, the state will and respect (Latvijas Republikas Ministru kabineta tiesību aktu projekti, 2018). On May 25, 2018 in the meeting of the Tripartite Cooperation Sub-Council for Vocational Education and Employment the professional standard "Teacher," developed by the National Centre for Education, was approved, which envisages the following responsibilities and tasks of the educator: (I) planning of the study process; (II) implementation of the study process; (III) assessment of the pupil's learning achievement and growth; (IV) development of their professional competence; (V) participation in the development of the educational institution and education field. In the context alongside the educator's responsibilities and tasks the professional standard envisages that the educator must have a certain competence which is orientated towards the implementation of the educator's basic responsibility – the educator directs purposefully the development of the pupil's competence according to the pupil's individual needs for their development, learning, personality and social growth (Valsts Izglītības satura centrs, 2018).

In the professional standard general educator's competences, required for professional activity performance , are mentioned: (1) apply information and communication technologies; (2) act in compliance with the law; (3) communicate in the state language and at least in one of the European Union's official languages; (4) take care of their physical, intellectual, emotional health; (5) comply with the requirements of the labour law, labour protection and environmental protection; (6) assess their work ability and health condition at the workplace and during the performance of work duties; (7) in case of an accident, act appropriately and provide first aid to the injured.

When analysing the educator's professional standard, several essential aspects should be mentioned:

1. professional standard has been described, structured in a great detail and it complies with the pedagogical environment and reflects the educator's multifaceted and complicated daily life;
2. defined duties of the educator allow to reduce the possible interpretations of the teacher's daily duties and field of responsibility;
3. standard of the educator's profession most directly promotes the quality of education, provides an individualized approach to the pupil and defines the competence of the educator's profession;
4. based on the professional standard, higher educational institutions can organize more purposefully the teachers' training, adapting the content of the study courses in compliance with the requirements;

5. based on the teacher's professional standard, a unified educators' work assessment system on the national scale can be developed, thus unifying diagnostics of the educators' professional competence;
6. based on the teacher's professional standard, the procedure for accreditation of general and vocational education institutions may be improved.

1.Learning opportunites and application of learning opportunities	1.Confidence, motivation, self-regulation	1.Knowledge of professional education content and pedagogical experience	1.Personality traits, character and cognitive abilities
1.Talent or systematically developed innate abilities	1.Responsibility for themselves, pupils, parents, colleagues, school, city and the state	1.Pupils' learning achievements and outcomes	1.Skill to find creative and innovative pedagogical solutions
1.Skill to set topical study goals for the pupil, promoting self-directed learning	1.Development dynamics of pupils' individual learning and diagnostics of learning needs	1.Application of interdisciplinarity, individualization and differentiation	1.Holistic assessment of the learning process, applying efficiently available resources
1.Formation of pupils' competence, selecting the most suitable learning and teaching strategies	1.Systematic and purposeful application of the feedback	1.Purposeful application of information and communication technologies in the learning process	1.Proactive cooperation with pupils, parents and educators
1.Constant and purposeful development of pedagogical professionalism	1.Strategic planning, implementation and assessment of pedagogical work	1.Understanding of globalization and multicultural competence	1.Social-emotional competence
1.Digital competence	1.Conflict and problem solving	1.Participation in the eductional institution's development	1.Knowledge and understanding of education field legislation and other topicalities

Figure 2 ***Framework of Teacher's Professional Competence Structure***

Based on the educator's professional standard analysed above, as well as being aware of the diverse characteristics of the educator's professional competence, which has been described in the publication, the authors of the article

bring forward for discussion the following framework of the teacher's professional competence structure (Fig. 2).

Analysis of the regulatory framework of the Republic of Latvia and the new concept of educational content, based on theoretical research and aware of the educational trends of the 21 st century, authors of article put forward for further research and discussion the framework of the teacher's professional competence structure (Fig. 2). Proposed structure highlights the multidimensional nature of teacher's professional competence and the interrelationship between the components of the framework is formed by professional characteristics, personality specialities and the professional competence of the teacher's, which can contribute positively to the teaching and learning process.

Conclusions

1. In the society, educational institutions, as well as being aware of the transformation processes in the education content and field, there is a demand for teachers with a high level of professional competence. Education policy makers, parents, the pupil and society have set a very broad and extensive teacher’s professional competence standard, which includes in itself both aspects related to the professional activity and individual characteristics, qualities and values.
2. There are diverse theoretical approaches which describe the framework of the teacher’s professional competence and its multidimensional features. Therefore, the content adaptation of the trainee teachers’ training programmes and educators’ professional competence development programmes to the new requirements, in compliance with the prevailing demand for the teacher’s professional competence quality, becomes really topical.
3. As general knowledge, skills and attitude within the framework of the teacher's professional competence structure, the following components can be distinguished: (I) learning opportunities and application of learning opportunities; (II) confidence, motivation, self-regulation; (III) personality traits, character and cognitive abilities; (IV) talent or systematically developed individual’s innate abilities; (V) responsibility to yourself, pupils, parents, colleagues, school, city and the state; (VI) skill to find creative and innovative solutions; (VII) understanding of globalization and multicultural competence; (VIII) social-emotional competence; (IX) digital competence; (X) conflict and problem solving; (XI) participation in the educational institution’s development; (XII) knowledge and understanding of education field legislation.

4. As pedagogical knowledge, skills and attitude within the framework of the teacher's professional competence structure, the following components can be distinguished: (I) knowledge of the professional education content and pedagogical experience; (II) pupils' learning success and outcomes; (III) ability to set topical learning goals for the pupil, promoting self-directed learning; (IV) diagnostics of pupils' individual learning development dynamics and learning needs; (V) application of balanced approaches to interdisciplinarity, individualization, differentiation, evaluation and methodological methods; (VI) holistic approach of the learning process, applying efficiently the available resources; (VII) formation and development of pupils' competence, selecting the most appropriate learning and teaching strategies; (VIII) systematic and purposeful application of the feedback; (IX) purposeful application of information and communication technologies in the learning process; (X) proactive cooperation with pupils, parents and educators; (XI) strategic planning, implementation and assessment of pedagogical work; (XII) constant development of pedagogical professionalism.

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ARTISTIC ACTIVITY AS A COLLABORATION TOOL IN INCLUSIVE SCHOOL CULTURE FORMATION

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Abstract. *The article analyses and scientifically evaluates the aspect of collaboration through manifestation of artistic activity as an opportunity to form an inclusive school culture. It is maintained that school culture grounded on the philosophy of inclusive education and enriched with advanced educational processes oriented to artistic/musical activity not only marks the school's uniqueness but also unites and enables the education process participants to collaborate and work together naturally to achieve a shared goal. The main idea of the empirical research presented in the article is to reveal students' attitude towards artistic activities as a means of collaboration, which helps to form the inclusive school culture. The study involved students studying at school and attending a musical activity collective (choir). The research has revealed that in creating the inclusive school culture, artistic activities promote community participants to collaborate, share best practices; they improve the microclimate, ensure the manifestation of the success situation in the educational process, concert activities, and the like. The musical activity grounded on the philosophy of inclusive education becomes an opportunity developing the inclusive school culture that undoubtedly helps to create the society grounded on collaboration and tolerance towards differences, which seeks to envisage every learner's needs and opportunities.*
Keywords: *artistic/musical education, collaboration, inclusive school, school culture.*

Introduction

The change in the global world in recent years promotes to take a new look at the role and future of our state. Today's society is characterized by constant change, global operation, information overload, abundance of technologies, constant knowledge creation and its pragmatic use. Changing processes of the education system inspire striving not only to consistently manage change but also to perceive reality and situations, effectively plan and manage the activities of the school as an organization through collaboration (Kvederaitė, 2009). It becomes evident that the educational community must prioritise the ability of collaborative creation and sharing collective knowledge and values in developing the idea of *school culture*. Such idea unites and enables the

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educational process participants to work together naturally for a common goal, linking the success of all education not only to concrete outcomes but also to the successful activity, the ability to correspond to the spirit of the times and its material manifestation (Survutaitė, 2016; Duoblienė, 2018). The school as a community and a place where challenges can be overcome creates opportunities for strengthening collaboration and cohesion of all of its participants. It is a progressive organization that regularly promotes and initiates community events, strengthens its individual members by respecting their peculiarities, specific needs (of gender, cultures, social strata and generations), at the same time encouraging everyone to contribute to the achievement of common goals individually. From this perspective, school culture acquires universal significance in any activity processes of the school as an organization. Thus, it is no coincidence that the issue of school culture arises in various contexts because it is namely culture that determines its members' activeness, meaningful activities, success, and satisfaction – a strong sense of identity. According to the authors (Ainscow, 2007; Spratt, Florian, 2015; Abawi, Carter, Andrews, Conway, 2017; Gruenert, Whitaker, 2017; Watson, Hodges, 2017; Nisser, 2017; Qvortrup & Qvortrup, 2018; Lakkala, Juškevičienė, Česnavičienė, Poteliūnienė, Ustilaitė, Uusiautti, 2019), particular attention must be paid to every participant in the educational process; i.e., education needs to be personalized, recognizing that people's experiences, needs and strivings differ and that learning takes place in different ways and at different paces. Hence, the vision of the advanced society is associated with the knowledge and development of each of its members' experiences, needs, and abilities. School culture can be the context that is favourable to unfolding of the personality, promotes its creativity, and is measured by a rational, common sense. Such conception of culture is associated with innovations, collaboration, learning from experience according to every person's abilities, interests, and shared goals. Along with the change in the attitude towards children, the activities of students with the dimension of diversity undoubtedly become part of school culture, emphasizing the socially and culturally new model of education – *inclusive education*, aimed at all learners' active involvement in the learning process.

The analysis of scientific studies reveals the importance of community collaboration in the school development as well as the growing interest in the ideas of inclusive education; however, there is a lack of research highlighting the links between the latter modern educational phenomenon and school culture. The **novelty** of the study is also reflected in the fact that no works have been detected so far to have been consistently researched forms forming an inclusive school culture artistical/ musical educational processes, encouraging cooperational resolution. In this respect, it is relevant to analyse the settings of inclusive artistic/musical learning, favourable to today's educational reality,

which are characteristic of the (self-)formation of school culture in the context of collaboration. The article presumes that a particular role in shaping the inclusive school culture falls on music education because according to researchers (Bennis, Goleman, O'Toole, 2008; Samama, 2013; Westerlund, Karlsen, Partti**,** 2019), this field of education is equated to multicultural cognition grounded on the development of the learner's intellectual abilities, the awakening of the emotional beginning, and the formation of a relationship with oneself and the surrounding world. There is a growing understanding of the importance of music education for students' cognitive, emotional and social development. Considering these arguments, it makes sense to analyse, investigate and scientifically evaluate the role of the artistic activity as a means of forming the inclusive school culture in the context of collaboration.

The object of the research: the artistic activity in the context of collaboration in the inclusive school culture.

The aim of the research: to reveal students' attitude towards the artistic activity as a means of collaboration in the formation of the inclusive school culture.

Research Methodology

The sample of the research. The study involved 14 gymnasium students. The age of the selected informants varies from 15 to 19 years. The research sample was formed employing the snowball sampling technique (Rupšienė, 2007). The choice of the said method of sampling was determined by the striving to include a maximum variety of learners' teaching/learning experiences in the gymnasium during the research. The gymnasium's collective chosen for investigation is mature by its stage experience, has participated in international competitions and festivals and reached a high level of professionalism that is proved by numerous competitions won by this collective. The collective's leader has accumulated the necessary stage experience and can share reliable information about the phenomenon under study.

Data analysis. The data analysis was performed using the method of qualitative content analysis (Žydžiūnaitė, Sabaliauskas, 2017). The study was conducted by selecting the traditional method of qualitative content analysis based on inductive logic, where categories were derived from data during the analysis, while individual, separate cases illustrating respondents' perceptions and experiences were combined into a single whole. The whole process of the qualitative content analysis took place in three stages: preparation, organization, and data presentation. Specific procedures of the inductive qualitative content analysis were followed (Elo, Kyngäs, 2008): 1) selection of the semantic units of

the analysis, 2) understanding of data and the whole, 3) open coding, 4) creating categories, 5) abstraction, and 6) preparation of conceptual categories.

Table 1 ***Change in Choristers' Behaviour/Communication while Attending the Collective***

Category	Subcategory	Illustrating statement
SELF - AWARENESS	Perception of one's individuality	*"At first I used to feel timid, you would sit down while nothing was happening and at some moment, there was such break when you start being yourself, feeling very good and you can joke freely and… all those friendships are formed, then everything changes radically, all behaviour." A8.*
	Experience by observing others	*"... we became very, very close; maybe joint events, joint trips brought us closer, maybe in the beginning, those relationships were slightly colder, you could feel that boundary where the ensemble was and where the choir was; and now, in the last year, that communication changed very very much, it became much warmer."A9*
	Personal initiatives in encouraging other choristers	*"The most important thing is that she took courage from us and came to the celebration of the first of September without a wig and looked very beautiful and just showed what inner strength she herself had, what self-confidence she had, and it seems to me that the choir and the collective just encouraged her to look at herself, she took from us, from the choir that strength, and now she doesn't wear the wig. At all."A8*
	The collective – bullying prevention	*"On the first day of September, I wrote to the choir group that if strangers dared say something in front of her eyes, she had to know that 50 people were guarding her." A9*

Research results. An important role in creating the inclusive school culture is played by the students attending artistic activity classes (in this case, the school choir). Here, every student's abilities, needs and opportunities are noticed; while fostering high expectations for each student's achievements, collaboration and teamwork as well as personal continuous professional development take place, taking responsibility for lifelong learning; friends are found; emotional connections are established; and many pleasant moments are experienced. Enhanced by believing and trusting, communication/collaboration enable to move towards the goal faster – achieve good artistic results and versatile personality development. To find out how communication and behaviour of choristers attending the collective change, what unites them and enables them to collaborate and work together naturally to achieve the common goal, and what success situations reflecting inclusive education trends choristers experience, a qualitative *focus group* study involving gymnasium students was conducted. During the study, students' experiences in the gymnasium collective

were analysed. Analysing the choristers' answers to the research question, asking the informants to share their experiences of how their communication and collaboration was changing while attending the collective, a dimension describing the experiences lived by choristers was singled out; i.e., change in the choristers' behaviour/communication/collaboration while attending the collective (Table 1).

Every person is forced to communicate and at work, to collaborate – even the greatest individualists have to participate in a team "game" in one way or another way, seeking common goals. According to D. Coyle, the foundation of successful teamwork is the culture of work and collaboration (Coyle, 2018). Analysing choristers' self-identification in the context of change in behaviour/communication while attending the collective, four subcategories confirming the category *Self-awareness* were identified. The first subcategory of establishing one's identity – *Perception of one's individuality* – is outlined as follows: in the first rehearsal, one perceives oneself as a person distinguishing himself/herself by individuality but lacking confidence in one's abilities *("At first I felt quite timid to sing solo in front of my colleagues or otherwise; I think I am such a newcomer here, so why should I show here anything, I won't jump out here when all are looking, but over time, I felt very welcomed, I felt as if I really were a member of the team and that I could unfold myself fully and be myself; therefore, I will always be grateful that I was admitted and was allowed to be the way I am (A4)").* Other informants' speeches highlighted that students identified choir rehearsals with a usual lesson until feeling unfettered, they could be truly themselves. Comparing their and other colleagues' experiences in first choir rehearsals, informants notice that all live new experiences. All students come to the choir with different abilities; therefore, many factors will determine how the collective will unite into one whole and follow the established rules. *("I think that everyone felt uncomfortable in that very beginning; just you come to a new place, new people, you don't know how you will be received, you don't know if you will fit in that collective, maybe you won't even like it at all, maybe you just won't want to go there. But after a while, you realize whether you want to be here or not. A lot depends on people as well as on the leader and the atmosphere itself, whether your behaviour will change or not (A5)".)*

Research participants shared their thoughts on the change in their behaviour and communication with new choristers (subcategory *Experience by observing others*), who later turned into a pleasant surprise for them. Informants note that engaging in choral activities promotes young people to unfold themselves faster and discover their new talents *("When I was still in the old ensemble, there were old members, and when new ones came, I remember A4 and A6 very well, when they were very modest, communicated little, maybe they were shy to sing, but now, when you see what people unfolded when they got*

involved in the collective, it's a lot of fun to see that during that time we've spent together, people showed their talent so greatly, what they are able to do (A5)"). Rehearsals, concerts of the ensemble and choir, joint trips of the two groups not only give a sense of pleasure, enrich the singers and listeners themselves, raise their mood, but also melt the boundary between more talented students and those with less musical abilities. Informants note that musical activities bring together and promote communication/collaboration with each other *("As to communication between the choir and the ensemble, I noticed that in the last years of my participation in this activity, the choir and the ensemble became very very close to each other, we started to collaborate, seek common goals (A9)").* Friendliness, communication and collaboration, equality, trust, partnership relationships between the leader and the choristers, hearing and listening carefully, a sense of security, the opportunity to realize oneself and be noticed for everyone respond to the idea of inclusion *("Over time, people unfolded themselves a lot and were no longer so shy, and I notice that over time, people communicate more bravely, then they feel better in the collective, then they sing more freely, that also contributes to it; express their opinion already, at first mostly sit timidly, look around. And then, already over time, all unfold themselves a lot (A6)").*

Culture is not what you are saying but what you are doing. Therefore, another distinguished subcategory – *Personal initiatives in encouraging other choristers* – reveals that attending the collective, choristers come not only to improve their abilities and establish friendly relationships but they also notice those who are unsuccessful in something, try to advise and encourage them, this way reminding them that you are not alone, you are a part of the collective, and we care a lot. When the person feels safe and needed, he/she will be an active member of the community, and you will no longer need to waste energy to overcome some fears. *("I'm that kind of person who really sincerely tries one's hardest; if I see that the person is timid, I try to communicate or say something so that he/she feels a little more like in the collective, so that he/she doesn't feel so alone (A6)". "This relationship is reflected in our performances, makes our performances so sincere and our performance touches the listener as well (A2)").*

Singing not only performs a strong social function – singers also experience social approval, belonging, and acceptance in group participation (Parker, 2017); therefore, no doubt a strong relationship established between collective members can certainly work wonders. Informants gladly shared a memory that proves once again that the unity of the collective can give a disappointed person a lot of courage *("There is a girl in our choir, who wears a wig for a very large part of her life, because she has a genetic disorder when the hair on her head does not grow and, well, she was afraid sometimes when, say,*

someone played up and wanted to pull a plait, she would be very much afraid so that someone didn't pull her wig. When there was a choir camp at the end of the summer, she told us on the very last day that she was actually wearing the wig all the time. I asked her to show how she looked without it. And she took off that wig and we all, no one started laughing or something, but we all said like WOW, you have to go without the wig, some day you really have to go without the wig (A8)". "She looked so good! And most importantly, one could feel that she started to be self-confident, which is very nice to watch (A6)".

The way we behave, communicate, things we believe in, our attitudes or values broadcasted to people around us undoubtedly determine our role in the school community. The term denoting negative phenomena taking place in our society – bullying – recently has been increasingly used in everyday life too. Bullying undoubtedly affects the sense of security of school community members. As we recognize this phenomenon increasingly often, there is hope to reduce its scope. The art collective can become one of the measures preventing bullying. The participants of the research regret about the current situation in educational institutions in general, but bravely defend their collective members as shown by the subcategory *The collective – bullying prevention: ("Others really stared at her but not the choristers. I think such bullying happens and will always be. "On the first day of September, I wrote to the choir group that if strangers dared say something in front of her eyes, she had to know that 50 people were guarding her (A9)").*

Analysing choristers' answers to the research question asking informants to share them of success situations experienced while collaborating in artistic collective activities, two categories were distinguished: *Communication/ collaboration* (with three distinguished subcategories) and *Success situation while collaborating* (with two distinguished subcategories). The dimension describing choristers' success situations in terms of collaboration is presented in Table 2.

Table 2 ***Choristers' Success Situations in the Aspect of Collaboration***

Category	Subcategory	Illustrating statement
COMMUNI-CATION / COLLABO-RATION	Support from the leader, parents, subject teachers, administration	*"…You still focus on the gymnasium's public life. You stand on the stage, people see you, parents see what you are doing, what you are like, what you have become."A8*
	Collaborative language learning	*"The German teacher encourages us to take part in German song competitions, she finds songs for us, our leader arranges them and this is a lot of fun that the teacher himself wants to get involved and takes initiative encouraging us to participate and maybe deepen the knowledge of the German language."A5*

	Open lessons, dissemination	*"There was an open lesson, teachers had come from another city and we then had such a lesson there, the lesson of music and German." A8*
SUCCESS SITUATION WHILE COLLABO-RATING	Evaluation of acquired experience	*"How much success I experienced and how much of it I felt then that really I was so happy that I have such people in my collective, who support me. It doesn't take even some three days when someone from the collective writes to me "How are you doing?", this is the biggest success for me. It is really inconceivable for me how people who are linked by music can feel each other so much, support each other, so this was the most successful moment for me here". A6*
	Joy in coping with difficulties	*"I think that the result is so gratifying because so much work is put into it. This is why work is more important, the whole process itself. And the outcome is motivation for the next process."A6*

Analysing the education documents on quality education issues, it is emphasised that the society needs to create more inclusive educational institutions, while the role of parental involvement in this development is essential. One of the cornerstones of school activities is a collaboration-based relationships encompassing diverse partnership, involving every member of the community (European Commission, 2017). The family and the school are two most important institutions for the child's education; thus, school-family collaboration undoubtedly becomes an important condition for successful education. It is highly important that collaboration is grounded on mutual trust so that parents feel needed for the school. Parental involvement in school life is not easy and simple. At this point, a big role can be played by musical activities. Music making highlights collaboration not only between parents, family members but also between the participants of educational processes – teachers, the leader, and administration. According to informants, it is very important that their participation in the choir activities is supported by the whole community of the gymnasium (subcategory *Support from the leader, parents, subject teachers, administration*) *"Everyone's support is very important. Support, indeed, if people tell you that they like what you are doing, this is a kind of incentive (A8)"*, but what informants distinguish most is the role of parents in their lives *("It is very important to have that feedback from the environment. Besides, parents, also, let's say, my mom sometimes, when something is recorded, she has to watch that record on the phone five times in the evening. And it's quite important that people really like what we are doing. It is not only that we like it, but also that people like the result (A8)*"). Based on St. Gruenert, T. Whitaker, teacher-student communication and collaboration should be accompanied by

mutual respect, tolerance, understanding because working together in a favourable microclimate allows for improvement by learning from each other (Gruenert, Whitaker, 2017). Research participants' experiences tell that it is important for choristers to feel valued, respected; they also indicate that teachers and administration not only attend their concerts but also incidentally get into a conversation in the school corridor, classroom *("The authorities also smile, come, speak, like our collective and activities a lot, support a lot. When there is something in the lessons about art, about music, then, yes, already A8, the musician here (ha ha ha). Very often also just praise, support (A8)").*

Performing, concert activities promote both students and teachers to work together, consult each other, share best practices, and this in itself is a step towards the formation of the inclusive school culture (Nisser, 2017). The sub-category distinguished while following this approach is *Collaborative Language Learning*: *"It is fun when, for example, even teachers get involved in such collaboration. A good example of this is our German teacher (A4)*". Informants note that learning a foreign language is useful even if it you are not learning it during the lessons *("Interestingly, almost half of us singing are not learning German (ha ha ha). But, anyway, they take interest and there is certain knowledge of the language, such lessons are valuable; when singing in different languages that you know, anyway, certain words, certain phrases stick in your memory, and then you just develop your mind (A8)"*). Research participants also notice that such collaboration not only gives them positive emotions when learning the new language but also provides them with the opportunity to participate in competitions *("Both teachers consult on how it would be better and just that support from both sides is perfect (A5)"*). Another informant notes that competitions pose certain challenges that teach to be prepared for various unexpected challenges in life *("When I came to the ensemble, in one year, I was given a task to learn a short solo part of a German song with the ensemble, then, we went to a national competition. After that competition, next year, I myself offered a song that I wanted to learn and the teacher wrote an arrangement straightaway for all the song for the ensemble. Because we have very strong assistance – the German teacher herself and our leader – the fact that we didn't know the German language at all and the competition went really well, such an overall result really brought joy (A9)").*

School culture is also created by its relationships and collaboration with other educational institutions (OECD, 2016). Collaborating with educational institutions, teachers share experiences, novelties, respect other opinions, participate in various joint activities: events, conferences, disseminate project results, and deliver open lessons (Hammersley, 2001; Ainscow, Booth, 2017). Informants note that such types of activities force them to gear up, concentrate, realize themselves (subcategory *Open lessons, dissemination*: *"They watched*

the artistic activity, how it is performed. And we performed and they evaluated it very well; they said that there children could realize themselves, they could sing; so I think that such communication with the representatives of education is also a certain incentive to improve oneself (A5)").

The team works well when plans are discussed at the beginning of the school year, a general repertoire of musical pieces is set up, the leader collaborates with choristers, when activities are constantly reflected, choristers' progress is assessed, everyone is noticed, the focus is not solely on the result but also on the process, tasks are shared, when all these facts are combined by an extraordinary experience of the success situation. Informants' experiences that have shown up (see Table 2, category *Success situation while collaborating*) revealed the fact that the most important goal was not the result but the process (subcategory *Evaluation of acquired experience "I think that the result is so gratifying because so much work is put into it. This is why work is more important, the whole process itself. And the outcome is motivation for the next process (A6)").* Research participants give a positive feedback on the experience gained while attending the collective. Here they not only develop vocal abilities but also form as personalities, find real friends, and call the collective a family. For this to happen, everyone undoubtedly needs to feel a strong link, a selfless friendship, and trust that is built based on values *("With this collective we have the opportunity to experience what you may not experience every day. For example, the Lithuanian National Opera and Ballet Theater. WOW. Just, well, you never think you'll spend as many as several days here. It's just even hard to describe what it feels like (A4)").* Success situations experienced together along with a sense of community that has matured in the collective for a long time remain as a wonderful memory *("True success has a slightly different meaning for me. On the last day at the camp, when we had to say goodbye to everyone, when I thought we wouldn't see each other, then I felt how happy I was to have such people in my collective... (A6)").*

According to D. Coyle, three core skills are required for a group of people to feel that they work towards a shared goal. These are creation of a safe environment, perception of shared vulnerability, and a sense of purposeful action (Coyle, 2018). By singing together, the choir members learned to work as one team and pursue the common goal that promoted everyone to make commitments and participate in rehearsals. Research participants note that they were not at all intimidated by long rehearsals and joint work as they were all brought together by a shared goal (see Table 2, subcategory *Joy in coping with difficulties*). In their opinion, success as unification and communion is the most difficult musical piece of the competition, which was selected by drawing lots. This proves that choristers feel safe being together, are well prepared for the competition in their joint activities *("About the Song Festival. When you're*

working a lot, when you're learning those songs a good year, actually one year, when you're putting a lot of work into it, in fact we really sincerely tried our best for those musical pieces; some were those which we liked more, some, those which we didn't like at all, and, one of the success factors was that we drew lots and got our favourite musical piece (laughs). That was our success (A8)"). Communication and collaboration strengthen interrelationships because people's inner values are similar, only emotions or people's personal problems do not allow many of them to see them. Enhanced by believing and trusting, communication/collaboration enable to move towards the goal faster – achieve good artistic results and versatile personality development. Thus, talking about preparation for competitions, performances, etc., informants put emphasis not only on the importance of the process but also distinguish one very important aspect – character formation *("The process is more important. Because it forms your character. Yes, the result is important. It motivates, encourages to gear up and so on, but during the process, you yourself are improving, learning to learn, you are in a good, cosy environment and for your own sake, let's say, your well-being becomes better. For that reason I think the process is more important (A8)").* Joint work makes you feel appreciated *("When you put a lot of effort into it and you see the result that you're really appreciated, you really feel in euphoria, you really feel uplifted, and you feel that the work wasn't in vain (A8)").*

In summary, it can be stated that research participants single out the ability to communicate as the most important of all human traits. Collaborative communication is defined as the interaction between people, during which they exchange information and create a respective emotional connection. Communication helps to better meet various social needs such as belonging to a certain group (choir, orchestra, team, religion, club, etc.), support (students support each other, the teacher supports his students; parents, children; leaders, subordinates), attachment (the need to care for others and feel the care of others), and etc. All research participants unanimously state that the most important part in musical activities is joint work, in other words, collaboration, which enables to reveal strong partnership relationships and the opportunity for every member to realize his/her contribution. Students' experiences identified in the conducted research clearly demonstrated that the foundation of school activities – collaborative relationships, namely, student-teacher partnership, teacher partnership, student-parent-teacher partnership through musical activities – responded to the idea of the inclusive school culture.

Conclusions

The conducted analysis of students' experiences reveals that artistic/musical activities are more identified not as a part of the educational process but as striving to unfold oneself, create and express oneself in the course of learning through collaboration.

The analysis of the research revealed the most important segments named by learners, which influenced successful manifestation of collaboration in the musical collective. Informants indicated that artistic/musical/collective activities undoubtedly helped to perceive their individuality, perception of identity, communication experience, tolerance for different students, personal initiatives, and even bullying prevention. In the opinion of most informants, interrelationships between the collective's members, which are revealed by emphasizing such internal factors as mutual respect and the sense of community, are very important in the art collective. Students are convinced that self-confidence is essential to achieve common results.

The analysis of the research also significantly revealed the role of collaboration of all participants of the educational process (parents, teachers, administration), which directly determines the manifestation of the success situation of learners' artistic activities. Informants' experiences indicate particular importance of parental support promoting learners' high self-esteem, while integration of artistic type activities in collaboration with subject teachers inspires students to gear up, concentrate, bravely realize themselves and develop a wide range of competencies; e.g., learn the foreign language, and the like. Collegial communication with teachers and school administration is especially useful for participation in various school events, open lessons, and implementation of projects. It is evident that successful integration of the art collective into various types of school events is in itself a step towards the formation of the inclusive school culture.

The performed analysis of students' experiences reveals that artistic/musical activities are significant in creating the school for everyone because they allow to notice every learner's abilities, needs and opportunities, students find friends, form emotional relationships, experience success situations, and live many pleasant moments. By collaborating closely in artistic activities, the members of the collective evidently enhance their tolerance for a different member of the community. The artistic activity not only creates favourable interpersonal relationships, enriches singers and listeners themselves but also becomes a great tool for the formation of the inclusive school culture.

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ATVĒRTĀ IZGLĪTĪBA KĀ TĀLMĀCĪBAS FILOZOFISKI METODOLOĢISKĀ BĀZE

Open Education as a Philosophically Methodological Basis for Distance Education

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Abstract. *Over the centuries, humanity's notions and worldview of what education should be have changed constantly in the order it serves both the development goals of society as a whole and the interests and needs of each individual. In the global educational environment, including Latvia, several educational paradigms have emerged and nowadays coexist which often complement each other. Among them, the Open Education paradigm plays an important role, where the main emphasis is on access to education. The aim of the research: to substantiate Open Education as a philosophical-methodological basis for distance education. The results of the research show that the origins of Open Education can be found in the philosophical thought of the Enlightenment era philosophers, as well as representatives of education, culture, and religion. The roots of the Open Education ideas can be traced to the history of distance learning, these ideas developed in close connection with the development of distance education/distance learning theories and their implementation in practice. From the 18th century to the present day, the ideas of Open Education developed and supplemented with new views on the aims, basic dimensions and principles, and functions of education, gaining more larger interpretation of this concept. At the end of the twentieth century, Open Education became the basis for a new educational paradigm in the Postmodernism era not only regarding distance education. Open Education became one of the most important doctrines of Postmodernism in the development of education, according to which the concepts of open education, open educational environment, and open school developed. There are three dimensions of Open Education: space, time, and process. Open Education and distance education have common three basic principles: openness, respect for distance in providing education, and flexibility.*
Keywords: *Distance education, distance learning, open education, paradigm, philosophical-methodological basis.*

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Ievads
Introduction

Gadsimtiem ejot, nepārtraukti ir mainījušies cilvēces priekšstati un pasaules uzskati par to, kādai būtu jābūt izglītībai, lai tā kalpotu gan visas sabiedrības attīstības mērķiem, gan katra indivīda interesēm un vajadzībām. Gan Latvijas, gan globāla mēroga izglītības vidē ir radušās un mūsdienās vienlaicīgi aizvien līdzās pastāv vairākas izglītības paradigmas, kas bieži vien papildina viena otru. To vidū nozīmīgu vietu ieņem atvērtās izglītības paradigma, kur galvenais uzsvars tiek likts uz izglītības pieejamību.

Atvērtās izglītības pirmsākumi meklējami *Apgaismības* laikmeta filozofu, izglītības un kultūras, reliģijas pārstāvju filozofiskajā domā, viņu darbos. Apgaismības laikmetam cilvēces attīstībā bija raksturīgas šādas idejas un pamatvērtības: izglītības demokratizācija, izglītības pieejamība, sabiedrības locekļu kā indivīdu (trupmāk - indivīdu) vienlīdzība un līdzdalība, gara brīvība, cilvēka saprāts, zinātnes atklājumi, veco pasaules uzskatu nomaiņa ar jauniem, daudz progresīvākiem uzskatiem (Popov, 2019).

Atvērtās izglītības paradigmas aizsākumi un attīstība atrodama *tālmācības attīstības vēsturē* (Kasch, Van Rosmalen, & Kalz, 2021; Katane, Katans, & Vāvere, 2012; Weibner, 2020).

Kopš 18.gadsimta līdz pat mūsdienām *atvērtās izglītības* idejas attīstījās, papildinājās un apauga ar jauniem viedokļiem, skatījumiem uz izglītības mērķiem un funkcijām, iegūstot arvien jaunu skaidrojumu šim plašas nozīmes jēdzienam. 20.gs. beigās *atvērtā izglītība* kļuva par pamatu jaunai izglītības paradigmai *Postmodernisma* laikmetā, kas ir attiecināma ne tikai uz tālmācību. ***Atvērtā izglītība kļuva par vienu no svarīgākajām postmodernisma doktrīnām***, atbilstoši kurai attīstījās *atvērtās izglītības, atvērtās izglītības vides, atvērtās skolas* koncepcijas (Abrioux, 2009; Phillips, 2006; Rumble & Koul, 2007; Schophuizen, Kreijns, Stoyanov, & Kalz, 2018; Vo & Sharp, 2019).

Mūsdienās atvērtās izglītības paradigma un no tās izrietošās koncepcijas nav zaudējušas savu aktualitāti. Tieši otrādi atvērtās izglītības kā tālmācības filozofiski metodoloģiskās bāzes nozīme ir palielinājusies *Covid-19* pandēmijas apstākļos, kad ar attālināto mācību palīdzību jānodrošina izglītības, t.sk. atvērtās izglītības resursu (*Open Educational Resources (OER)),* pieejamība (Adedoyin & Soykan, 2020; Van Allen & Katz, 2020).

Par to, ka atvērtās izglītības paradigma 21.gadsimtā ir daudzu pētnieku uzmanības centrā, liecina vairākas zinātniskās un metodiskās publikācijas (Blessinger & Bliss, 2018; Dos Santos, 2019; Gluzman, Timirgaleeva, Pereverzev, & Grishin, 2020; Popov, 2019; Roeder, Severengiz, Stark, & Seliger, 2017; Tretyakov & Larionova, 2016; Van Allen & Katz, 2020; Weibner, 2020).

Pētījuma mērķis: pamatot atvērto izglītību kā tālmācības filozofiski metodoloģisko bāzi.

Pētījuma metodes: 1) teorētisko pētījumu metodes: zinātniskās literatūras studēšana, analīze un izvērtēšana; 2) empīrisko pētījumu metodes: personīgās pieredzes refleksija.

Pētījumu rezultāti
Results of Research

20.gadsimta 70.gados aktualizējās *Postmodernisma* filozofiskie uzskati, pamatprincipi un pamatvērtības, par ko zinātnieku vidū vēl aizvien pastāv viedokļu dažādība (Elaati, 2016; Thompson, 2003). *Postmodernisma* laikmets iestājās pēc *Modernisma* laikmeta, tāpēc var uzslāņoties un līdzās pastāvēt vairākas paradigmas, t.sk. vairākas izglītības paradigmas. Postmodernismam raksturīga liela daudzveidība, piemēram, *Apgaismības* laika pamatnostādnes, universālās vērtības pastāv līdzās *Postmodernisma* laikam raksturīgajām mainīguma, pretrunīguma, nevienmērīgās attīstības idejām, klasisko standartu aizvietošanai ar situatīvo, variatīvo un komplekso (Heywood, 2012).

20.gs. beigas un 21.gs. sākums ir laika posms, kad mainās priekšstati par laiku un telpu kā mūsu esības pamatdimensijām un filozofiskajām kategorijām. Jaunāko informācijas tehnoloģiju ienākšana cilvēku ikdienā: darbā, izglītībā, informācijas apmaiņā (komunikācijā), brīvā laika pavadīšanā ļauj ātri pārvarēt lielus ģeogrāfiskos attālumus un padara relatīvu laika un telpas izpratni. Mūsdienās atvērtās izglītības paradigmas ietvaros aizvien biežāk zinātnieku runā par tā saucamo *laika un telpas saspiešanu*, pateicoties jaunākajām tehnoloģijām. Atvērtās izglītības paradigmas ietekmē un globalizācijas kontekstā radās vēl arī citi jauni jēdzieni, piemēram, *pārrobežu izglītība, tiešsaistes mācības, hibrīdmācības* jeb *kombinētās mācības*, kas nosaka tālmācības vides specifiku mūsdienās (Popov, 2019; Rauhvargers, 2008; Vo & Sharp, 2019).

Tādējādi atvērtā izglītība ir filozofiskais pamats mūsdienu tehnoloģijās balstītai izglītībai, īpaši tālmācībai, kas paredz izglītības individualizāciju, personalizāciju, kā arī lielu elastību un variativitāti. Tālmācība ir kā alternatīva tradicionālajai klātienes izglītībai, turklāt tālmācības vide piedāvā ne tikai formālo izglītību, bet arī neformālo izglītību, kas ir kā papildinājums un alternatīva formālajai izglītībai. Pieredze liecina, ka tālmācības vide nodrošina izglītības atvērtību un pieejamību visa mūža garumā indivīdiem, kam ir aktuālas izglītības un pašattīstības vajadzības, tādējādi palīdzot mācības apvienot ar karjeru (jēdziena plašajā nozīmē).

Atvērtā izglītība informācijas sabiedrības skatījumā. Tāpat kā daudziem jēdzieniem mūsdienu izglītības zinātnēs, arī atvērtai izglītībai ir vairākas nozīmes. Ko nozīmē *atvērtība* pretstatā slēgtajam jeb diskrētajam? Kāds ir

jēdziena *atvērtā izglītība* skaidrojums? Kas ir šis *atvērtais* izglītībā? Atbildes uz šiem jautājumiem tiek meklētas spraigu filozofisko, zinātnisko diskusiju ceļā, kā arī izglītības iestāžu, kas piedāvā atvērtās izglītības iespējas, praktiskajā darbībā un pedagoģiskās pieredzes refleksijā.

Atvērtās izglītības mūsdienu filozofiskie pamati ir saistāmi ar: 1) vairākām pamatvērtībām, piemēram, izvēles brīvība, zināšanas visiem, un 2) notiekošajiem procesiem, kas pēc savas būtības ir pārveidojoši, piemēram, uz zināšanām balstītās sabiedrības attīstību, katra tās indivīda pašattīstību, pašvadīto mācīšanos, izglītības rezultātā individuālo transformāciju, kur nozīmīgu vietu ieņem transformatīvā mācīšanās. Jēdziens *atvērtā izglītība* ir saistīts ar atslēgjēdziena *atvērtība* skaidrojumu. Atvērtībai ir vairāki skaidrojumi. 20.gadsimta 80.gados bija raksturīga sociāla parādība jeb fenomens, ko mēdz saukt par *atvērtības kustību*, kur tika uzsvērti jautājumi par: piekļuvi zināšanām, zināšanu kopīgošanu, zināšanās balstītu ekonomiku, t.sk. kopražošanu, izglītības programmu pieejamību visiem interesentiem, brīvpiekļuvi izglītības resursiem, jo īpaši mācību līdzekļiem, un to koplietošanu, izmantošanu, atkārtotu izmantošanu un pārveidošanu. Izglītības pārvaldības caurskatāmība un izsekojamība, sociālo partneru līdzdalība izglītības pārvaldībā un kvalitātes izvērtēšanā, balstoties uz sadarbības ētiku, ir vēl viens *atvērtās izglītības* aspekts. Tie ir jēdziena *atvērtā izglītība* tikai daži aspekti. Atvērtās izglītības daudzdimensionālā nozīme cieši saistīta ar tādiem jēdzieniem kā *atvērtā skola, atvērtā klase, atvērtā universitāte* u.c. (Abrioux, 2009; Peters & Britez, 2009; Tretyakov & Larionova, 2016).

Viens no atvērtās izglītības pamatmērķiem ir jebkura veida šķēršļu noņemšana, kas traucē sabiedrībai un katram tās indivīdam iekļauties izglītības procesā. Tā ir visa veida stereotipu laušana, nevajadzīgu normu atcelšana, paredzot izglītības variativitāti jeb daudzveidīgumu, bagātīgo piedāvājumu pēc iespējas daudzveidīgākam un plašākam izglītības mērķgrupu klāstam, nodrošinot izglītības elastīgumu un tuvināšanu katram indivīdam (Blessinger & Bliss, 2018; Elaati, 2016; Kahle, 2008).

Mūsdienās *atvērtā izglītība* sevī ietver jaunas pieejas, pamatprincipus, plašu pedagoģisko un zinātnisko funkciju klāstu. Šobrīd izglītība mainās ļoti strauji un nepārtraukti, salīdzinot ar iepriekš notikušajām pārmaiņām kopš grāmatu iespiešanas izgudrošanas, kas bija pirms piecsimt gadiem, un obligātās izglītības ieviešanas daudzās pasaules valstīs pirms trīssimt gadiem. Mūsdienās visa pasaule ir kā klase, un mācīšanās notiek visu dzīvi. G.Draidens un Dž.Vosa (Dryden & Vos, 1999) 20.gs. beigās rakstīja par procesiem, kas sākušies pasaules izglītības telpā, ko nosauca par *izglītības apvērsumu,* kad godā tiek celta izglītības *neierobežotība*. Pēc zinātnieku domām, mēs visi kopā esam liecinieki pašam nozīmīgākajam apvērsumam cilvēces vēsturē. Tā iespaids ir personisks, nacionāls, globāls, kura nozīmi grūti pilnībā izvērtēt. Tā pamatā ir

septiņi katalizatori, kas savstarpējā mijiedarbībā jau maina un arī turpinās mainīt veidu, kā dzīvojam, strādājam, spēlējam, mācāmies, domājam un radām jebkurā vecumā. Šis jaunais informācijas tīkla (interneta) laikmets steidzami liek mainīt izpratni gan par pašu sabiedrību, gan arī par izglītību, mācībām un izglītības sistēmu kopumā.

Informācijas tehnoloģiju attīstība un ienākšana visās cilvēka dzīves sfērās lika mainīt domāšanu par izglītības veidiem, piedāvājuma dažādību, ko nodrošina plašās informācijas tehnoloģiju izmantošanas iespējas.

21.gadsimtā daudzās pasaules valstīs ir vērojama noturīga un pēctecīga virzīšanās uz tādu izglītības vidi, kas nodrošina apstākļus katra sabiedrības locekļa kā indivīda pašrealizācijas veicināšanai. Par priekšnoteikumu tam kalpo informācijas un komunikācijas tehnoloģiju (IKT) strauja attīstība un ienākšana cilvēku ikdienā, kas ir *informācijas sabiedrības* raksturīga pazīme. *Informācijas sabiedrība* ir sabiedrība, kurā par mācību un darba "instrumentiem"/līdzekļiem kalpo IKT, savukārt informācija un zināšanas ir galvenie resursi un attīstību virzošie spēki. IKT izglītībā dod iespējas nodrošināt cilvēku pašizglītībai atbalstošu un veicinošu vidi, jo informācija un zināšanas ir nepārtrauktā mainībā esoši, savstarpēji saistīti fenomeni, tāpēc mācīšanās ir process, kas notiek mijiedarbībā ar nepārtraukti mainīgo apkārtējo vidi: IKT vidi, sociālo vidi, izglītības vidi. Informācijas sabiedrībā katram indivīdam jāspēj iegūt informāciju, to adaptēt, konstruējot zināšanas atbilstoši savām interesēm un vajadzībām, kas ir izteikti brīvprātīgs un tīri subjektīvs process. 21. gadsimtā *informācijas sabiedrības* un *atvērtās izglītības* paradigmas savstarpēji papildina viena otru, kā rezultātā tiek bagātināta *atvērtās izglītības* filozofiski metodoloģiskā bāze, kur nozīmīgu vietu ieņem konstruktīvisms (Carwile, 2007; Cerny, 2015).

Sistēmpieeja izglītības vides analīzē un izvērtēšanā dod iespēju kopveselumā sistēmiski saredzēt cilvēku kā savas dzīvesdarbības vides sastāvdaļu, tātad arī izglītības vides sastāvdaļu, jo izglītības process nenotiek ārpus sociālajiem procesiem un vides kontekstiem. Šī pieeja ļauj atvērto izglītību raksturot kā organizācijas vai pašorganizācijas formu un veidu, kur *izglītības vide ir cilvēku sevī iekļaujoša vide,* kas ir *pieejama ikvienam,* kam ir izglītības, t.sk. pašizglītības, un pašattīstības vajadzības. *Atvērtā izglītība ir dažādu nosacījumu un apstākļu kopa,* kas nodrošina tādu vidi, kas veicina un nodrošina kultūrvēsturiskā mantojuma nodošanu, zināšanu un pieredzes apmaiņu, kā arī jaunas pieredzes uzkrāšanu, jaunu zināšanu radīšanu. *Atvērtā izglītība ir principiāli atšķirīga pieeja* izglītības procesa plānošanā un organizēšanā, kur maksimāli tiek respektētas katra indivīda intereses un vajadzības (Ibragimov, 2005; Peters & Britez, 2009; Tretyakov & Larionova, 2016).

Krievu zinātnieks I. Ibragimovs (Ibragimov, 2005) ir veicis divu dažādu izglītības paradigmu analīzi un salīdzināšanu, izdalot vairākas atšķirības. Lūk, dažas no tām (1.tab.).

1. tabula. ***Izglītības paradigmu salīdzināšana*** *(Ibragimov, 2005)*
Table 1 ***Comparison of Educational Paradigms*** *(Ibragimov, 2005)*

N	Tradicionālās klasiskās klātienes izglītības paradigma	Atvērtās izglītības paradigma
1.	Izglītības galvenais mērķis: jaunās paaudzes sagatavošana dzīvei, t.sk. darba dzīvei	Atvērtās izglītības galvenais mērķis: nodrošināt katra sabiedrības indivīda pašnoteikšnās un pašattīstības apstākļus
2.	Cilvēks - vienkārša sistēma	Cilvēks - sarežģīta pašorganizējoša un pašattīstoša sistēma
3.	Zināšanas - no pagātnes (faktos un atmiņās balstītā skola)	Zināšanas - vērstas uz nākotni (domāšanas skola)
4.	Izglītības process ir stingri saplānots laikā un telpā	Atvērtā izglītība ir elastīga un izteikti individualizēta, kas dod indivīdam, kas mācās, tiesības uz brīvu izvēli, kad (kurā brīdī), kur (kurā vietā) un kādā veidā mācīties

Attīstoties atvērtās izglītības idejām, šīs paradigmas un tajā balstīto koncepciju ietvaros tiek meklētas dažādas atvērtības pakāpes un veidi, kā arī dažādi mērķi un rezultāti. Kopīgais, kas mēdz ietvert visus šos atvērtās izglītības aspektus, ir spēja attīstīt personisko brīvību, pašnoteikšanos un pašregulāciju visa mūža garumā (katrā dzīves posmā) un plašumā (visās dzīves aktivitātēs). To darot, tiek stiprināta demokrātija un atbalstītas cilvēktiesības. Otrs atvērtās izglītības aspekts ir: pateicoties jaunākajām IKT, kā arī sabiedrības digitālajām kompetencēm, ikkatrs sabiedrības indivīds spēj piedalīties izglītības procesā, izmantojot tālmācības priekšrocības un piedāvātās iespējas. Tādējādi atvērtās izglītības pamatojumā tiek izdalītas ***telpiskā, laika*** un ***procesa dimensijas*** (Blessinger & Bliss, 2018). Šīs trīs pamatdimensijas kalpo par labu sākumpunktu, lai izskaidrotu atvērtās izglītības būtību. Minētās trīs atvērtās izglītības dimensijas tiek pamatotas arī kā tālmācības priekšrocības (Katane, Kristovska, & Katans, 2015).

Laika dimensijas skatījumā atvērtā izglītība ļauj cilvēkiem piekļūt izglītībai un piedalīties tajā neatkarīgi no diennakts laika, mēneša vai gada un neatkarīgi no citu cilvēku apsvērumiem, viedokļiem. Citiem vārdiem sakot, atvērtajai izglītībai ne vienmēr jābūt kā sinhronās saziņas formai, kā tas ir tradicionālajā klātienes izglītības modelī. Līdztekus tam, ka tālmācībā sinhrono mācību procesu piedāvā attālinātās tiešsaistes mācības, asinhronās mācības ieņem nozīmīgāko vietu atvērtajā izglītībā, kur svarīga ir patstāvīgā, motivētā, jēgpilnā mācīšanās, izmantojot e-vidē pieejamos e-mācību materiālus. Jaunākās IKT ļauj

cilvēkiem pārvarēt laika barjeras un ierobežojumus, kas neapšaubāmi ir tālmācības priekšrocība.

Tas pats sakāms par *telpas dimensiju*: pateicoties IKT, mūsdienās var mācīties jebkurā fiziskās/ģeogrāfiskās atrašanās vietā, t.sk. indivīdu, kas mācās, mājās. Taču te ir svarīgi vairāki priekšnoteikumi: 1) skolēnu/studentu/pieaugušo, kas mācās (turpmāk - personu, kas mācās), kā arī pedagogu nodrošinājums ar nepieciešamo tehnisko aprīkojumu (ierīcēm, piemēram: dators, viedtālrunis, printeris, skeneris, kopētājs, videokamera, mikrofons u.c.); 2) labs interneta pieslēgums, lai nodrošinātu piekļuvi programmatūrām, lietojumprogrammām, globāla un arī lokāla mēroga e-resursiem, kas ļauj izmantot visas tālmācības priekšrocības, t.sk. iespēju mācīties attālināti tiešsaistē vai noskatīties tiešsaistes mācību ierakstu.

Attiecībā uz *procesa dimensiju* ir svarīgi piedāvāt iespēju brīvi izvēlēties gan mācību saturu, gan mācību procesa veidu, kas sevī paredz saziņas ar pedagogiem un mācību metožu daudzveidību. Izglītības procesa skatījumā atvērtā izglītībā nozīmīgu vietu ieņem: 1) labi strukturēts mācību saturs; 2) atvērtās izglītības speciālistu, t.sk. tālmācības metodiķu-ekspertu (piemēram, tālmācības skolu pedagogu, augstskolu mācībspēku), veidotie un piedāvātie atvērtās izglītības resursi: dažāda veida e-mācību līdzekļi un materiāli, videofilmas, video-prezentācijas u.c.; 3) personu, kas mācās, brīvās izvēles iespējas pašiem noteikt un plānot, kad un kādā veidā viņi piekļūs atklātās izglītības videi, t.sk. tajā pieejamajiem resursiem, un piedalīsies izglītības procesā, respektējot katra noslodzi, nodarbinātību un/vai veselības stāvokli; 4) akcents uz atvērtās izglītības piedāvātāju jeb provaideru daudzveidību, kas var būt dažādas izglītības iestādes un mācību centri, t.sk. valsts, nevalstiskās, privātās organizācijas, kas veido, uztur, strukturē un nepārtraukti atjauno atvērtās izglītības resursu bāzi; 5) atvērtā izglītība nodrošina gan sinhrono, gan asinhrono komunikāciju un mācības, pateicoties daudzveidīgajām tiešsaistes mācību platformām un izglītības iestāžu (skolu, augstskolu) izvēlētajām vai pašu veidotajām e-vides platformām (Blessinger & Bliss, 2018; Roeder et al., 2017; Stern, 2020). Te svarīgi ir piebilst, ka izglītības pieejamības un atvērtības nodrošinājumā svarīga vieta ierādāma arī pedagogu un skolēnu/studentu, kas mācās tālmācībā, mediju kompetencēm, t.sk. digitālajai kompetencei, kā arī tālmācības metodiskajai kompetencei, jo tālmācībai ir sava specifika, kas visizteiktāk izpaužas izglītības procesa pārvaldībā, t.sk. mācību procesa organizēšanā.

Atvērtās izglītības galveno principu uzskaitījumu var turpināt arī ar šādiem principiem jeb prasībām (Kahle, 2008; Katane, Katans, & Vāvere, 2012; Roeder et al., 2017): 1) nodrošināt izglītības pieejamību visiem visa mūža garumā; 2) nodrošināt izglītības piedāvājuma daudzveidību; 3) nodrošināt atvērtās izglītības resursu piejamību, bet vienlaicīgi arī nodrošināt to autortiesības;

4) nodrošināt mācību procesā iesaistīto indivīdu aktīvu dalību, iekļaušanos izglītības procesā; 5) nodrošināt pieredzes apmaiņu un jaunas pieredzes gūšanas iespējas.

Pieredze liecina, ka tas viss ir arī tālmācības pazīmes un priekšrocības. Atvērtās izglītības procesa skatījumā tālmācībā īpaši svarīgas ir šādas pazīmes: izglītības pieejamība jebkurā vietā un laikā; iespēja apvienot mācības ar darbu, bērnu audzināšanu ģimenē, saturīgu un interesantu brīvā laika pavadīšanu (dažāda veida hobijiem); duālās karjeras iespējas; personas, kas mācās, brīvprātīgums un motivācija jēgpilnās, pašvadītajās mācībās; daudzās pedagoga un personas, kas mācās, lomas un funkcijas, kā arī dalītā atbildība. Tālmācībā īpašs akcents tiek likts uz konsultēšanu un instruktāžu, pašvadītās mācīšanās veicināšanu un atbalstu, apgūstamā mācību satura pielāgošanu tālmācības specifikai, veidojot kodolīgus, konspektīvus, visiem labi saprotamus un pieejamus e-mācību līdzekļus, paredzot arī jautājumus pašpārbaudei.

Atvērtā skola mūžizglītības kontekstā. Atvērtās izglītības paradigmas ietekmē ir izveidojusies un nepārtraukti tālāk attīstās *atvērtās skolas* koncepcija, kurā svarīgu vietu ieņem skolas izglītības pieejamība jebkurā vecumā.

Atvērtās skolas vide iedrošina, motivē, veicina, atbalsta un stiprina pārliecību un ticību sev, savam pašrealizācijas potenciālam un iespējām, ko piedāvā nepārtraukti mainīgā vide. Viens no atvērtās skolas uzdevumiem palīdzēt cilvēkiem iekļauties sabiedrībā, veicinot viņu visāda veida līdzdalību, kā arī nodarbinātību darba tirgū, tādējādi sekmējot karjeras attīstību. Atvērtās skolas pamatprincipi ir: ***atvērtība***, ***elastīgums*** un ***attāluma pārvarēšana***, mācībās izmantojot jaunākajās IKT. Pateicoties šiem trim pamatprincipiem, daudzi autori liek vienādības zīmi starp jēdzieniem *atvērtā skola* un *tālmācības skola*, uzskatot tos par sinonīmiem (Abrioux, 2009; Haughey & Stewart, 2009).

Teorētiskie pētījumi liecina, ka vairāku autoru publikācijās (Katane, Kristovska, & Katans, 2013; Ozoliņa, Slaidiņš, Slaidiņš, & Žuga, 2003) iepriekš minētie atvērtās skolas pamatprincipi tiek uzskaitīti un raksturoti kā tālmācības pamatprincipi, kas apstiprina:

- domu par jēdzienu: 1) *atvērtā izglītība* un *tālmācība*; 2) *atvērtā skola* un *tālmācības skola* savstarpējo saistību;
- to, ka atvērtības princips, attāluma jeb attālināto mācību princips un elastīguma princips ir atvērtās izglītības un tālmācības kopīgie pamatprincipi.

Iepriekš nosauktos atvērtās izglītības pamatprincipus vēl var papildināt ar dažiem citiem pamatprincipiem, kas izriet gan no iepriekš teiktā, gan no raksta autoru tālmācības pieredzes: 1) izglītības atvērtība visiem cilvēkiem neatkarīgi no vecuma, dzimuma, sociālā statusa, labklājības līmeņa u.c.; 2) izglītības elastīgums un mobilitāte; 3) izglītības individualizācija un personalizācija; 4) izglītības vide kā sevī iekļaujoša vide.

G. Rambls un B.N. Kouls (Rumble & Koul, 2007) savā publikācijā norāda, ka atvērtās skolas ietvaros pastāv 2 pieejas:

- atvērtā skola ir kā papildinājums esošajai tradicionālajai skolai;
- atvērtā skola ir kā alternatīva tradicionālajām klātienes skolām gan mācību procesa organizēšanā, gan mācību satura piedāvājuma ziņā.

Abi autori ir precizējuši atvērtās skolas mērķgrupas (Rumble & Koul, 2007):

- jaunieši, kas bērnībā ir izlaiduši skolas gaitas, var iestāties kursos, kas viņiem nodrošinās primārā vai sekundārā līmeņa izglītībai līdzvērtīgu izglītību, tikai īsākā laikā, turklāt viņiem nav jāizjūt psiholoģiski emocionālais diskomforts, atrodoties vienā izglītības sociālajā grupā un vienā telpā ar bērniem vai pusaudžiem, kas ir daudz jaunāki par viņiem;
- jaunās mātes var apgūt primārā vai sekundārā līmeņa skolas izglītību, mācoties mājās un pēc brīvas izvēles apmeklējot klātienes mācības/konsultācijas tikai tad, kad tas ir nepieciešams un ja viņu nodarbošanās to atļauj;
- strādājoši pieaugušie var mācīties, kad to atļauj viņu personiskās un darba saistības un pienākumi;
- jauni pieaugušie var apgūt jaunas profesionālās prasmes un kompetences kopā ar akadēmiskajiem/vispārējiem mācību priekšmetiem, kamēr viņi ir pašnodarbināti vai strādā kā nekvalificēti strādnieki.

Šo sarakstu var papildināt vēl ar dažām indivīdu/personu, kas mācās, grupām, kam ir nepieciešama atvērtās skolas sevī iekļaujošā izglītības vide (Mays, 2020):

- skolas vecuma bērni, kas priekšlaicīgi pārtraukuši mācības tradicionālajā klātienes skolā un nav ieguvuši primārā līmeņa izglītību;
- jaunieši, kas priekšlaicīgi pārtraukuši mācības tradicionālajā klātienes skolā un nav ieguvuši primārā līmeņa izglītību;
- jaunieši vecumā no 18–23 gadiem, kas nav ieguvuši formālo skolas izglītību, bet ir iekļāvušies darba tirgū, labi apgūstot profesionālās pilnveides vai tālākizglītības programmas, iegūstot darbam nepieciešamās zināšanas, prasmes, kompetences;
- pieaugušie no 24 gadu vecuma un vecāki, kas bez primārā un/vai sekundārā līmeņa skolas izglītības spējuši veiksmīgi uzsākt un veidot savu darba karjeru, taču kuri vēlas iegūt arī šo formālo skolas izglītību, lai turpinātu mācības augstskolā;
- skolas vecuma bērni un jaunieši, kā arī pieaugušie, kas ir personas ar speciālajām vajadzībām, no kuriem daudziem ir invaliditāte.

Latvijas izglītības sistēmā daudzas skolas var saukt par atvērtām skolām, jo cenšas nodrošinot savu ilgtspēju, pašsarežģoties, proti, būtiski paplašinot izglītības mērķgrupu spektru, uzņemoties veikt papildfunkcijas, tādējādi palielinot savas darbības veidu un jomu skaitu, piemēram, piedāvājot formālo un neformālo izglītību ne tikai skolas vecuma bērniem, bet arī pirmsskolas vecuma bērniem, skolēnu vecākiem un citiem ģimenes locekļiem, visai lokāla mēroga sabiedrībai (īpaši lauku administratīvajās teritorijās), tādējādi juridiski (*de iure*) skola piedāvā skolas izglītību, bet faktiski (*de facto*) skola pilda mūžizlgītības centra funkcijas, būdama *atvērta izglītības vide* visai lokāla mēroga sabiedrībai: visiem interesentiem, t.sk. pieaugušajiem (Katane, 2005; Katane, 2013a; Katane, 2013b; Katane & Laizane, 2012; Tūna, 2016). Pieredze liecina, ka iepriekš dotais atvērtās skolas raksturojums pilnībā attiecināms arī uz mūsdienu tālmācības skolām, tikai atšķirība ir tā, ka IKT izmantošana ļauj tālmācības skolai respektēt ne tikai lokāla mēroga sabiedrības, kur formāli atrodas skolas administrācija, bet arī visā valstī un aiz tās robežām dzīvojošo intereses un vajadzības. Pārrobežu izglītība attiecināma ne tikai uz augstākās izglītības, bet arī tālmācības skolu izglītības telpu.

Tā kā tālmācība ir viens no neklātienes izglītības formas paveidiem, ko nosaka *Izglītības likums* (Izglītības likums, 1998), tad tālmācības mērķauditorijas vidū ir daudz pieaugušo, kas savos skolas gados dažādu iemeslu dēļ nav ieguvuši obligāto pamatizglītību vai vispārējo vidējo izglītību. Izglītības zinātnēs šādu izglītību ir pieņemts saukt par pieaugušo ***otrās iespējas izglītību*** (Nordlund, Stehlik, & Strandh, 2012). Pasaules mērogā pieņemtā koncepcija par otrās iespējas izglītību paredz, ka šāda izglītība ir domāta ne tikai pieaugušajiem, bet arī skolas vecuma bērniem un jauniešiem, kas kaut kādu iemeslu dēļ nevar vai negrib iekļauties tradicionālās klātienes skolas vidē. Pie šādiem iemesliem pieder arī veselības stāvoklis un sociālā atstumtība (World education engage ..., 2021).

Atvērtās skolas modeļos tiek izmantotas elastīgas pieejas, kas balstītas uz atvērtību un tālmācību, lai nodrošinātu strukturētas mācīšanas un mācīšanās iespējas. Atvērtās skolas koncepcija ir parādījusies kā reāla alternatīva pamatizglītībai un vidējai izglītībai, kas iegūstamas tradicionālajās klātienes skolās. Atvērtā skola piedāvā izglītības papildiespējas cilvēkiem visa mūža garumā. Šīs iespējas var nodrošināt no tradicionālās klātienes skolas atdalītas, neatkarīgas tālmācības iestādes. Atklātās skolas modelis risina problēmas, kas saistītas ar skolu jauniešiem un pieaugušajiem, neradot traucējošu ietekmi uz klātienes vispārizglītojošo skolu sistēmu: skolu ierasto darbību, t.sk. klātienes mācību procesu. Abas sistēmas: gan klātienes skolu sistēma, gan tālmācības skolu sistēma, kas veic atvērtās skolas funkcijas, var darboties simbiotiski, papildinot viena otras funkcijas un gūstot labumu viena no otras darbības. Nav neviena atvērtās skolas ideāla modeļa, katram no tiem ir savi ierobežojumi, taču

atsevišķas valstis, valsts reģioni var pielāgot kādu no atvērtās skolas modeļiem atbilstoši savām prioritātēm (Open/Innovative Schooling, 2021).

Pieredze liecina, ka Latvijas tālmācības vidusskolās mācās ļoti dažādi skolēni, ko var nosacīti sagrupēt vairākās tālmācības mērķgrupās: piemēram, pieaugušie, kas vēlas apgūt pamatizglītības vai vidējās izglītības programmas, mācības apvienojot ar mazu bērnu audzināšanu ģimenē, darbu, savu mīļāko nodarbošanos, karjeru sportā vai dažādās mākslas un dizaina jomās (piemēram, karjera elitārajā jeb augstu sasniegumu sportā, dejotāja karjera, zīmolapģērbu modeles karjera u.c.). Tālmācības vidusskolās mācās bērni, jaunieši un pieaugušie, kas vieni paši vai ar savām ģimenēm dzīvo un/vai strādā ārzemēs, taču izglītību vēlas iegūt latviešu valodā. Tālmācības vidusskolu piedāvātās izglītības programmas apgūst arī cilvēki, kas par likuma/u pārkāpšanu ir tiesāti, piemērojot viņiem tādu soda mēru, kas saistīts ar brīvības atņemšanu uz noteiktu laiku, un kas mācīšanās laikā atrodas slēgta tipa iestādēs. Tālmācības vidusskolās mācās un tās absolvē arī NBS kareivji. Bieži vien tālmācības vidusskolu par savu izglītības vidi izvēlas skolas vecuma bērni vai jaunieši: 1) kas socializācijas problēmu dēļ nespēj vai arī nevēlas iekļauties tradicionālo klātienes skolu vidē; 2) kam interešu izglītība un/vai viņu nodarbošanās brīvajā laikā (hobijs) aizņem daudz laika un šīs aktivitātes saistās ar daudziem pārbraucieniem (lielu mobilitāti); 3) kas ir personas ar speciālajām vajadzībām (veselības problēmām, dažādiem funkcionālajiem traucējumiem) u.c.

Tādējādi ***tālmācības skolu var saukt par atvērtu, sevī iekļaujošu skolu, kas piedāvā mūžizglītības iespējas.***

Secinājumi
Conclusions

- Atvērtās izglītības ideju pirmsākumi meklējami *Apgaismības* laikmetā. Laika gaitā, bagātinoties ar jaunām idejām, jauniem skatījumiem, jaunām pieejām, izvirzot savus pamatprincipus, *atvērtā izglītība* kļuva par *Postmodernisma* laikmeta doktrīnu. Atvērtā izglītība ir jauna izglītības paradigma, kas palīdz lauzt stereotipus, atcelt novecojušās normas, paplašināt redzējumu uz izglītības lomu un pamatmērķiem sabiedrībā un katra tās indivīda dzīvē. Atvērtās izglītības paradigmas aizsākumi un attīstība atrodama tālmācības attīstības vēsturē. Ar laiku jēdziena *atvērtā izglītība* nozīme paplašinājās, tāpēc šis jēdziens tiek attiecināts ne tikai uz tālmācību. Viens no atvērtās izglītības pamatmērķiem ir jebkura veida šķēršļu noņemšana, kas traucē sabiedrībai kopumā un katram tās indivīdam iekļauties izglītības procesā, paredzot izglītības variativitāti, bagātīgo piedāvājumu pēc iespējas daudzveidīgākam un plašākam personu lokam,

nodrošinot izglītības tuvināšanu un pieejamību katram sabiedrības indivīdam.

- Atvērtās izglītības trīs dimensijas ir: *laiks, telpa* un *process*. Atvērtā izglītība ir cieši saistīta ar *informācijas sabiedrības* paradigmu, kuras pamatā ir pamatatziņa, ka mūsdienu sabiedrībā cilvēku darba rīks ir informācijas un komunikācijas tehnoloģijas (IKT). Pateicoties IKT, izglītībā ir iespējams pārvarēt lielus attālumus, ekonomēt laiku, mācības ir iespējamas jebkurā diennakts laikā un vietā, kur ir interneta pieslēgums. Atvērtās izglītības un tālmācības kontekstā daudzi zinātnieki runā par *laika un attāluma saspiešanas* fenomenu. Atvērtās skolas skatījumā pieaug arī paša *izglītības procesa* nozīme, proti, kādā veidā tas notiek. Aktuāla ir mācību procesa norises dažādība un daudzveidība: no patstāvīgām studijām e-vidē līdz tiešsaistes mācībām, izmantojot jaunākās tiešsaistes platformas.
- Atvērtā izglītība ir kā alternatīva un pretstats tradicionālajai izglītībai. Atvērtās izglītības ietvaros tiek respektēta izglītības dažādība un daudzveidība, indivīda formālās un neformālās izglītības pašvadība, brīvprātība un izglītības satura, mācīšanās veida un laika brīvā izvēle. Arī tālmācība ir kā alternatīva tradicionālajai klātienes izglītībai. Tālmācības vide var nodrošināt izglītības atvērtību un pieejamību katram indivīdam visa mūža garumā, palīdzot mācības apvienot ar karjeru (jēdziena plašajā nozīmē), nodrošinot izglītības daudzveidību un pieejamību.
- Atvērtās skolas koncepcijas attīstībā īpašu vietu ieņem sevī iekļaujošas izglītības vides nodrošinājuma funkcija, izglītībā neiesaistīto personu atgriešana izglītības vidē, viņu socializācija un resocializācija, kā arī nodarbinātības un karjeras izaugsmes veicināšana. *Atvērtās skolas* un *tālmācības skolas* kopīgie pamatprincipi ir *mācības attālumā, atvērtība, elastīgums*. Tālmācības skolas var saukt par atvērtām, sevī iekļaujošām izglītības vidēm, kas ir pieejamas visa cilvēka mūža garumā.
- Atvērtās skolas koncepcija aktualizē pedagogu un personu, kas mācās, vietu un lomu izglītības procesā, viņu dalīto atbildību par izglītības procesu, kur notiek akcentu pārbīde no pedagoga mācību procesa centrā uz skolēnu/studentu mācību procesa centrā. Svarīgas ir pedagoga daudzās lomas un funkcijas. Īpašs akcents tiek likts uz konsultēšanu un instruktāžu, pašvadītās mācīšanās veicināšanu un atbalstu, apgūstamā mācību satura adaptāciju un pielāgošanu tālmācības specifikai, veidojot kodolīgus, konspektīvus, visiem saprotamus un pieejamus e-mācību līdzekļus.
- *Tālmācības skolu* mērķi un uzdevumi, daudzveidīgā darbība, tālmācības vides specifika, mērķauditorijas plašais loks pilnībā atbilst *atvērtās skolas* raksturojumam, tāpēc mūsdienās šie abi jēdzieni *atvērtā izglītība* un *tālmācība* ir savstarpēji cieši saistīti.

Summary

The origins of Open Education can be found in the philosophical thought of the Enlightenment philosophers. Over time, enriched with new ideas, new perspectives, new approaches, setting out their basic principles, Open Education became a doctrine of the Postmodernism era. Open Education is a new paradigm of education, which helps to break stereotypes, remove obsolete norms, broaden the vision of the role and basic goals of education in society, and the life of each of its individuals. The beginnings and development of the Open Education paradigm can be found in the history of the development of distance learning. Over time, the concept of *open education* has expanded in scope, so it is not limited to distance learning. One of the main goals of Open Education is to remove any kind of barriers that prevent society as a whole and each individual from participating in the educational process, providing educational diversity and its offering for the widest possible range of learners, bringing education closer and accessible to each member of society.

There are three dimensions of Open Education: time, space, and process. Open Education is closely linked to the Information Society paradigm, which is based on the idea that, in nowadays society, the main people's tools are information and communication technologies (ICT). Thanks to ICT, it is possible to cover long distances in education, save time, it is possible to learn at any time of the day and in any place where there is an Internet connection. In the context of open and distance learning, many scientists/researchers talk about the phenomenon of time and distance compression. From the point of view of the Open School, the importance of the educational process itself is growing, for example, how it takes place. The diversity of the learning process is relevant: from independent studying in the e-environment to online learning using the latest online platforms.

Open Education is an alternative and the opposite of traditional education. Within the framework of Open Education the diversity of education, the individual's self-directed formal and non-formal education, accessibility of content, free choosing of type and time of learning are respected. Distance learning is also an alternative to traditional full-time education. The distance learning environment provides openness, diversity, and accessibility to lifelong learning for learners, helping to combine learning with career (in the broadest sense of the term).

The development of an inclusive school environment, the return of learners to the educational environment, socialization and resocialization, as well as the promotion of employment and career development have a special place in the development of the Open School conception in the view point of Open Education. The common basic principles of an open school and a distance education school are learning in distance, openness, and flexibility. Distance education schools can be called open, inclusive learning/education environments that are accessible to learners in the context of lifelong and life-wide education.

The conception of the Open School actualizes the place and role of teachers and learners in the educational process, their shared (common) responsibility for the educational process, where the emphasis is shifted from the teacher-centered approach to the learner-centered approach in the learning process. The many roles and functions of the educator are important. Special emphasis is placed on counseling and instruction, promotion and support of self-directed learning, adaptation of the specifics of the learning content creating concise, comprehensible, and accessible e-learning tools, distance learning materials, e-books.

The goals and tasks of distance education schools, diverse activities, the specifics of the distance learning environment, the wide range of learners fully correspond to the

characteristics of an open school, therefore nowadays these two concepts of *open education* and *distance education/learning* are closely related.

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THE APPLICATION OF ATHLETICS TOOLS IN DUE TO DEVELOP SPEED OF SECONDARY SCHOOL CHILDREN

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Abstract*. The research is dedicated to searching of new tools for higher effectiveness of the application of athletic tools to develop speed of secondary school children. The goal of research is to prove theoretically and test experimentally the program for speed development of secondary school children (11-12 years) with priority use of athletic tools.*
To realize the goal such methods were applied: scientific theoretical, pedagogical observation, experiment, mathematical statistics methods. Boys are from 6 grades (11-12 years old) have participated. Pupils belong to main medical group. The results. There was elaborated and experimentally proved the program's effectiveness. We have got statistically significant difference ($p<0.05$), better results from experimental group of performing control exercises: "30m run (sec)", "30m run from place (sec)", "run at the place during 5sec (number of movements)". One exercise has got better result from control group - "run at the place during 5sec (number of movements)". We have performed evaluation of students' speed development before and after the experiment. Amount of pupils with high level of competence has grown in exercises "30m run (sec)" for 13.3%, "60m run (sec)" for 20%, "shuttle run 4×9m (sec)" for 6.7%, "long jump from place (cm) for 13.3%.
Keywords: *athletics, competence level (achievement level), program of speed development, secondary school children.*

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Introduction

The development of important skills is building during studying in the secondary school, the level of physical health is forming there (the development of bone and muscle tissue, organs, vestibular apparatus, motor reactions etc.)

(Dubogaj, Pangelov, Frolova, & Gorbenko, 2001; Fedonjuk et al., 2007; Rymar, & Khanikiants, 2020). The interconnection of development of speed of integral movements and speed-power qualities is the special characteristics for 11-12 years old teenagers (Krucevich, 2008). So, the important factor for achievement of those opportunities, that are genetically laid down, in the speediness presentation is the improvement of its components in the most favorable periods of children's age development.

The analysis of theory and school work practice in Ukraine shows that it is important to be ruled by principles of natural sciences – anatomy, physiology, pedagogics, psychology etc. during the process of planning of physical education system in the borders of school course. The special attention should be directed on secondary school children, who have significant changes in motor and vegetative functions and the development of speediness has a special meaning because of its level influences the improvement of other motor qualities (Drobin, 1990; Sorokolit, Shyan, Lukjanchenko, & Turchyk, 2017; Khanikiants, Konestyapin, & Goliney, 2019). The process of increase of effectiveness for improvement mechanisms of the educational processes is important also because young people generally do not have appropriate skills and appropriate level of development of motor qualities in order to form and keep its own health after they finish studying in secondary school and continue studying in universities (Zavydivska, Zavydivska, Khanikiants, & Rymar, 2017).

The athletics exercises have slightly different influence on the children's body. Performing of athletic exercises has positive impact not only on all motor skills but also improve joint mobility, promote education of agility, memory, attention and volitional skills and fast speed run has higher requirements to cardiovascular and breath systems (Konestyapin & Viter, 2008; Halajdzhi, Jagotin, Lagovs'ka, & Capenko, 2018).

Athletics is a huge part of "Studying program from physical culture" for general education establishments in Ukraine. Thus, the option module "Athletics", on the basis of calculation of material-technical base of the establishment, regional sport traditions and staffing, as a rule, forms invariable (obligatory) component for pupils from 5-9 classes.

However, even though athletics is different by various natural tool and forms of classes performing, the experience of teachers from Ukrainian school confirms that traditional system, applying of athletics exercises (monotonous

exercises, long athletic walking, run and crosses), sharply decrease the effectiveness of its implementation and pupils' interest towards classes.

The information above reveals that issue of determination of physical education classes content in school course needs further elaborations about organizational and methodic basis of using athletic tools on physical education classes in due to develop speediness and to form motivation and interest towards athletic classes among secondary school children.

The goal of the research is to justify theoretically and prove experimentally the program of development of speediness among secondary school children (11-12 years) with priority use of athletics tools.

Methodology

The complex of methods that are widely used among specialists in the branch of physical education was applied in the work. In due to theoretically justify author program ***general scientific theoretical methods*** were used in due to those, the results were analyzed from previous investigations of specialists from theory and methodic of physical education of teenagers. However, it was determined that: the variations of speediness are not enough connected between each other, the elementary forms of speediness are little amenable to be improved, but there is possibility of a significant progress in the result of special training in development of complex forms of speediness presentation, as far as the complex speed qualities are dependent from a lot of factors, that can be improved (Fedonjuk et al., 2007; Halajdzhi et al., 2018); tools to develop speediness have to be relatively easy according to coordination, diverse and adequative according to exact speediness presentation, and its performing should be with a maximum and near maximum speed (Shyan, 2004; Krucevich, 2008; Sorokolit et al., 2017); the effective methods to develop speediness are: repeated methods, gaming and competitive methods (Linec', 1997; Shyan, 2004; Krucevich, 2008); main methodic mistakes during the process of speediness development are: lack of diversification of training impacts, sharp increase in volume and intensification of speed exercises, insufficient level of learning of the exercises techniques; overloading of particular branches of musculoskeletal system; the performing of speediness exercises with the background of physical, psychological or coordination fatigue (Linec', 1997; Shyan, 2004).

Pedagogical observation and ***pedagogical experiment*** were performed on the basis of general educational establishments (Novoyavorivsk, Ukraine) on the physical education classes with boys (11-12 years old). The program has lasted during seven weeks (April – May 2019) and has covered 21 lessons. All pupils are the part of a main medical group according to health condition, so the physical preparation is performed with these pupils according to the full content

of studying program and taking into account individual specifics of development. Pupils were divided in the beginning of the experiment into 2 groups – the control (n=32) and the experimental (n=31) groups.

The control group (CG) was doing classes according to generally approved methodic of optional module "Athletic" (Fizichna kul'tura v shkoli: navchal'na programa, 2018). The experimental group (EG) was doing classes according to author program of the development of speediness of secondary school children (11-12 years) with priority use of athletic tools. The implementation of author program did not contradict and did not disturb general requirements according to the goal, tasks and structure of studying process that are constructed for the discipline "Physical development" for pupils from 5-9 classes of general education schools.

Statistical analysis. The data we have got are processed with the help of Microsoft Office XP programs and using the pack for statistical processing "Statistica 6". We have calculated mean value ($\overline{X}$), standard deviation (±σ), and Student t-criteria.

Results and Discussion

The elaborated program fits humanistic and health strengthening direction, teaching a need in physical development of children, providing essential level of physical preparation, in particular it is the development of speediness.

The program includes exercises that are maximally effective, adapted and recommended by specialists in the direction of physical education and athletics in due to develop speediness in the process of physical preparation (Alabin, Zub, & Mishhenko, 1993; Kushmeljuk & Kushmeljuk, 2007; Semenov, Osadchenko, Maєvs'kij, & Il'chenko, 2014; Mandiuk, Yaroshyk, & Litkevich, 2014). The program consists of 21 lessons during seven weeks.

The elaborated program promotes:

- Optimization of studying process using elements of innovative studying methods;
- Providing of differentiated approach according to organization of studying process, taking into account health condition, level of physical development, motor preparation and pupil's gender, their motives and interests towards doing physical exercises;
- Speediness development, increase of level of physical preparation in general, strengthening of musculoskeletal system and improvement of physical and mental effectiveness. The experimental group includes 3 parts. The first one includes exercises, mainly with speediness orientation, the second one includes speediness exercises and speed-

power direction, the third one – exercises of general physical preparation;

- Increasement of achievement level (competence) of pupils.

The specifics of author program are:

- There was determined the optimal ratio of tools with various orientations, the load range; there were chosen adequate and effective methods in due to achieve the goals using classes tools. In general, there were given 30% of tools for general physical preparation, 20% for maintaining technique of performing athletic exercises, 50% for developing of speediness and speed-power components.
- There were used a wide assortment of athletic exercises, in particular sprinter run in short distances from 10 to 60 m (in maximal tempos from different starting positions in support with hands from the wall in maximal tempo, with acceleration, "on the spot", with variable speed in borders 70-100% out from individual possible maximal value, in eased or complicated conditions etc.). Despite the wide use of sprinter run, the program included exercises for development of speed power, speed endurance and explosive force. The reaching of tasks of general physical preparation and maintaining of technique of performing athletic exercises was partially performed using of speediness development tools and speed-power components.
- The module "Athletics" was planned in such way so restorative micro cycles can be changed by micro-cycles of speed and speed-power orientation. It helped to avoid the uniformity in using of forms and training tools and prevent occurrence of progressive fatigue;
- There are widely used exercises for coordination development, improvement of joint mobility, muscle elasticity, stretching of muscles, joints and tendons in preparation and closing parts of the lesson;
- A lot of chosen exercises in the program were used as the elements of various motor games or in form of relay in order to reach optimal success of studying activity. This promotes increase of emotional background of the lesson, motivation towards physical education classes, kid's desire to improve their physical qualities and motor skills. Active games and relays, that are used in the elaborated program, answer lessons' tasks and are performed in the main part of the lesson;
- We have created the correct psychological motivation in the process of the lesson. We have applied, for example, various competitive situations, we have chosen competitors relatively with the same weight category and level of development of motor qualities in order

to perform game elements; we have provided information about the results of performed tasks regularly etc. Such approaches provide the full realization of functional potential of pupils.

There were mainly used repetitive, interval, game and competitive methods in the elaborated program.

After the experiment the statistically reliable ($p<0,05$) improvement was noticed among pupils from the experimental group in the result of performing of such exercises as “30m run”, “30m run from the spot” and “run at the spot during 5sec”. The positive dynamics was noticed in the results of other control exercises, though we cannot testify that it is statistically reliable (Table 1). The results we have got during control lessons support specialists’ thoughts that children with age from 7-8 years old to 11-12 years old are best developed by motor reactions and by frequency of movements (Linec', 1997; Shyan, 2004; Krucevich, 2008).

Table 1 ***Average Values ($\overline{X} \pm \sigma$) of Results of Control Exercises Performed by Pupils Before and After the Experiment***

Control exercises	**Groups**					
	CG*	**CG****	p	**EG***	**EG****	p
	(n=32)			**(n=31)**		
30m run (sec)	6.42±0.55	6.33±0.55	>0.05	6.39±0.53	6.19±0.59	<0.05
60m run (sec)	11.1±0.68	11.06±0,71	>0.05	11.14±0.73	11.03±077	>0.05
30m run from the spot (sec)	5.88±0.25	5.8±0.22	>0.05	5.86±0.25	5.68±.26	<0.05
run at the spot during 5 seconds (movements quantity)	20.46±1.79	21.1±1.62	<0.05	20.47±1.78	22.53±1.78	<0.05
shuttle run 4x9 m (sec)	12.07±0.54	11.9±0.56	>0.05	12.09±0.59	11.87±0.61	>0.05
long jump from the place (cm)	150.66±15.91	151.53±17.90	>0.05	150.2±17.92	151.8±18.36	>0.05

Note: CG* - the control group before the experiment; CG** - the control group after the experiment; EG* - the experimental group before the experiment; EG** - the experimental group after the experiment.

Even though, the studying program for general education schools (Fizichna kul'tura v shkoli: navchal'na programa, 2018) recommends to use exercise “60m run (sec)” as a control one, we see that quantitate indicators of results of performing this exercises did not change significantly neither among pupils from the EG, nor among pupils from the CG. This confirms specialists’ thoughts

(Shyan, 2004; Khanikiants, Rymar, & Konestyapin, 2020), that it is important to choose shorter distances and with a previous run up as a control exercise according to development of speediness for pupils this age. These exercises, for example, are as follows: “20m run from a spot (sec)” or even “10m run from a spot (sec)”.

As far as four out from six of control exercises, that we have used, are recommended by Studying program from Physical education for 5-9 classes of general educational establishments “Physical culture in school” (Fizichna kul'tura v shkoli: navchal'na programa, 2018), we have had an opportunity to determine change in pupils’ levels of competence.

We can see in the table 2 that quantity of pupils with high level of competence has grown after implementation of author program in such exercises: “30m run” – in the EG for 19.4%, in the CG – for 9.4%; “60m run” – in the EG for 12.9%, in the CG – just for 6.3%; “Shuttle run 4x9m” – the improvement was as in the EG so in the CG equally; “long jump from the place” – in the AG for 16.1%, in the CG the level of competence did not change.

Table 2 ***The Ratio of Changes of High Level of Competence by Pupils from the Experimental and Control Groups (after the experiment)***

Control exercises	The EG pupils(%)	The CG pupils(%)
“30m run (sec)”	19.4 %	9.4 %
“60m run (sec)”	12.9 %	6.3 %
“shuttle run 4x9m (sec)”	6.5 %	6.3 %
“long jump from the place (cm)”	16.1 %	No changes

Out from table 3 we can see that after the implementation of author program there become less pupils that demonstrate low level of competence according to results of performing such exercises: “30m run” – in the EG for 19.4%, in the CG – for 3.1%’ “60m run” – in the EG for 12.9%, in the CG – for 9.4%; “shuttle run 4x9m” - in the EG for 19.4%, in the CG – for 6.3%; “long jump from the place” – no changes occurred.

Table 3 ***The Ratio of Changes of Low Level of Competence by Pupils from the Experimental and Control Groups (after the experiment)***

Exercises	The EG pupils (%)	The CG pupils (%)
“30m run (sec)”	19.4 %	3.1 %
“60m run (sec)”	12.9 %	9.4 %
“shuttle run 4x9m (sec)”	19.4 %	6.3 %
“long jump from the place (cm)”	No changes	No changes

So, the results of implementation of author program of speediness development of secondary school children (11-12 years) with the priority use of

athletic tools prove its effectiveness and suggested methods, forms and tool of speediness development in the program is expedient to implement in the process of physical education of secondary school children.

Conclusions

In the process of investigation there was theoretically and experimentally justified effectiveness of the program of speediness development by secondary school children (11-12 years old) with priority use of athletic tools.

After implementation of author program, the statistically reliable ($p<0.05$) improvement occurred among pupils from the experimental group according to results of performing of such exercises as “30m run (sec)”, “30m run from the spot (sec)” and “run at the spot during 5 seconds (movements quantity)”. From the contrary, the statistically significant ($p<0.05$) improvement among pupils from the control group occurred only according to result of performed exercise “run at the spot during 5 seconds (movements quantity)”.

The quantity of pupils with high level of competence has grown after implementation of author program in the experimental group according to results of such exercises as “30m run (sec)” – for 19.4%; “long jump from the place (cm) – for 16.1%; “60m run (sec)” – for 12.9%; “shuttle run 4x9m (sec)” – for 6.5%.

The quantity of pupils from the experimental group, who demonstrated low level of competence, has decreased according to results of performing of such exercises as “30m run (sec)” – for 19.4%; “60m run (sec)” – for 12.9%; “shuttle run 4x9m (sec)” – for 19.4%. The level of competence did not change in the exercise “long jump from the place (cm)”.

The perspective of further researches might be directed to elaborate program for speediness development for secondary school girls, for pupils from special medical groups or individual programs to correct level of development of speediness and speed-power components of pupils.

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THE DEVELOPMENT OF COMMUNICATION SKILLS OF STUDENTS OF SECONDARY SCHOOL AS A COMPONENT OF THEIR LEADERSHIP POTENTIAL

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Abstract. *The professional effectiveness depends on many factors, and good verbal communication skills, as a basis for productive relationships, mutual understanding and realization of goals and objectives of professional effectiveness as a way of self-improvement, self-realization and overcoming personal crises, are of great importance. The communication skills are basic ones in forming a leader. The concept of "communication skills" in the article is defined as the ability to communicate effectively, the ability to understand what the interlocutor means and be understood by them, the ability to negotiate, achieve their goals through communication. This type of skills performs many important functions in the personal development: provides psychological comfort, allows you to organize joint activities, meets the natural human need for communication, helps to assert itself, socially realize themselves. The success of a person in life depends on the ability to communicate. The personal success depends on the communication skills. Communication skills are important both for the social realization of the individual and for psychological life satisfaction. The article substantiates the problem of developing students' communication skills. The pedagogical conditions for the development of students' communication skills, including: creation of a favorable educational environment, application of a personality-oriented approach to learning, modeling of real professional communication conditions, are identified and substantiated. Information-communicative, regulatory-communicative and affective-communicative skills are singled out. To determine the level of development of these skills, we used the method of determining communicative levels of communicative and organizational tendencies: very low, low, medium, high. The study involved 196 students and 30 teachers of the educational complex of lyceum №157 in Kyiv.*
Keywords: *communication skills, communication, leader skills, leader, student of secondary school.*

Introduction

The development of leadership potential of students is an urgent problem of modern education, because it is the school where active formation of values, civic position, and establishing life priorities of young people take place.

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Today's society needs young people who will make decisions independently, be responsible for them, put forward and implement social initiatives developing leadership potential.

For the education of leaders of the new generation, the problem of developing leadership skills becomes more timely than ever.

Since communication is the basis for building relationships among people, formation of communication skills becomes especially important. The leader needs them to build teamwork to achieve the goal. Such skills are the main tool of the leader, which Modern education concept relies much prominence on preparing a student for being the finest professional in a specific platform. Effective communication is an essential part of a professional life no matter in what field you are. Students with effective communication skills will be more probably to contribute to class discussions, will ultimately achieve more from their experience in class, and will be more productive members in group projects. Allows them to interact effectively with people and influence followers (Singh, 2020). Communication skills are recognized as key skills of the 21st century, so the role of schools in creating the necessary conditions for their formation is growing. Communication is key in the classroom: successful teaching is generally considered to require only 50% knowledge to 50% communication skills (Sword, 2020).While in school, children should actively develop communication skills in all lessons, as well as during extracurricular activities at school and at home. Such skills are formed under the influence of the family, friends and the media.

However, some essential aspects of communication skills are often overlooked, for instance, the ability to listen and hear, understand, avoid misunderstandings, overcome uncertainty in communication, meet new people, ask for a favor or help. This is particularly important for Generation Z. According to the New York Times children between the ages of 8 and 10 years spend 8 hours a day on screens. This figure goes up to 11 hours for older students, so it’s really no surprise our students’ communication skills are lacking. Sometimes kids have few adult role models to show them how to be good listeners and have productive, healthy conversations. Many students have speech or other communication disorders that may impede their ability to speak and listen well (Brody, 2015).

A student possessing these skills will be more effective in the future.

Developed communication skills help to negotiate effectively, speak in front of an audience, establish contact with the interlocutor, and express themselves. Communication skills determine the ability to communicate effectively and the ability to understand the interlocutor, to present themselves and negotiate. They provide the individual with psychological comfort, help to

organize collaboration, as well as self-affirmation and self-realization in society. Communication skills are required in every profession.

Communication is a two-way path which signifies that there is a communicator and also the one whom something is being communicated. The communication takes place only when information is shared amid two individuals. Effective communication can help to build and encourage a safe learning atmosphere where students can learn, prosper, and thrive. The significance of building good communication at a young age is critical in a child's growth and future learning. Communication skills that students learn at school are completely vital and transferable across all aspects of life (Singh, 2020).

Analysis of the scientific literature has enabled us to identify key concepts. In particular, skills are seen as automated actions that are formed by repetition and are characterized by a high degree of acquisition, and do not require guidance and control (Radul, 2004).

Communicative skills are automated conscious actions that help to quickly reflect communicative situations in the mind of an individual, and determine the success of perception, understanding of the world and the corresponding impact on it in the communication process (Burman, 2000, Khomiak, 2010).

Communicative skills are the levels of mastering communicative actions in terms of assessment of the communicative situation; perception, production and transmission of information, establishment of contact, planning, organization and ensuring the efficiency of communication, which, in turn, leads to the effective implementation of educational goals and personal interests.

According to A. Leontev, a communicative skill is the ability to differentiate the use of different skills or their combination to achieve different communicative goals. The scientist identifies the following communication skills: the ability to manage behavior (volitional qualities); observation, flexibility (quality of attention); the ability to understand facial expressions, to understand and adequately model the personality of the interlocutor, their mental state according to external evidence (ability of social perception); the ability to optimally build their speech in terms of psychology (the ability of speech and non-speech contact); ability to comprehend, systematize and transfer information (gnostic skills) (Leontev, 2002).

There are different classifications of communication skills. Let us consider one of them:

Information and communication skills allow a person to establish communication freely, support the interlocutor, use verbal and nonverbal communication methods. Regulatory and communicative skills ensure the coherence of actions and words to the needs of the interlocutor, as well as feelings of trust and support, evaluation and feedback. Affective-communicative

skills involve the ability to convey personal feelings and interests to the interlocutor, understand his emotional behavior, be sensitive and to show empathy and care.

Communication skills allow people to succeed in work and career, control difficult situations, deal with conflicts, and negotiate successfully (Komunikatyvni navychky, 2019).

Purpose and Tasks of Research

The main purpose of the article is to study the problem of development of communication skills as a component of their leadership potential, and to identify the state of their formation in secondary students. Achieving the main goal involves the following task:

1. Define the essence of the concept of communication skills and their classification.
2. Identify and justify the pedagogical conditions for the development of communication skills of students in the educational process of the school.
3. Experimentally identify the level of formation of organizational and communication skills.

Methodology and Research Results

The Ajay Singh offers ways to improve effective communication skills in students: motivate students to initiate and engage in conversation; create a safe ambiance; active listening; more teamwork; allow students to share opinions; positive feedback (Singh, 2020). Teachers and parents must assume the role demanded by the child and gently guide them in the improvement of their communication abilities. We see the potential in the modeling of language, role-playing and involving the parent in the classroom to elicit and develop the communication and language skills of students. Teachers are in the perfect position to create an environment that supports communication skills in learners.

Lee Watanabe-Crockett presents 5 ways of improving your learners' communication skills: encourage the child to initiate and engage in conversation; model active listening and reflection; conference with parents or caregivers; role-play in the classroom; allow students to share opinions and vote in the classroom (Watanabe-Crockett, 2019).

Favorable conditions must be created for the development of students' communication skills in the school educational process at school. We analyzed the scientific literature, conducted a brainstorming session among school teachers to identify pedagogical conditions for the development of

communication skills. The experiment involved 30 experts - different subject teachers. A list of 10 conditions which according to teachers will promote the development of communication skills was created. However, to achieve this goal, we decided to dwell on three conditions. The experts were asked to rank the selected conditions according to the degree of importance and opportunity of their implementation in the educational process.

The first pedagogical condition is creation of a favorable educational environment. In the modern educational paradigm the concept of humanization of the environment is promising.

This can be achieved by creating favorable conditions for the subjects of the pedagogical process, which gives a child meaning in life, carries an inexhaustible source of motivation, inspiration, creativity; ensures unity of teacher and students on the basis of spiritual affinity of mutual understanding, interaction and cooperation.

The atmosphere of a favorable environment of the educational institution should be based on trust, empathy, and positivity, which determine the perspective of success for both the whole educational institution and for all subjects of the pedagogical process.

The environment must change, transform in accordance with the socio-pedagogical conditions, actualize the creative potential of a student, must take into account their system of values, needs, reasons and inner motivations.

Scientists are convinced of the influence of the environment as an important pedagogical tool that allows to solve complex problems, develop new educational content, introduce modern forms, methods and technologies of personal development.

A favorable educational environment is the environment in which the interaction of all participants of the pedagogical process results in their spiritual, intellectual, moral, aesthetic, and physical mutual enrichment. This environment promotes the development of creative potential, self-realization of the individual, forms readiness for personal self-improvement, ensures realization of co-creation within the humanistic paradigm (Kovalchuk, 2011).

Usually, this type of environment is integrated and includes other microenvironments: cognitive, psychological, scientific and methodological, social, cultural and aesthetic, physical, sanitary and hygienic, and electronic. Such an environment facilitates students' adaptation to school life and helps develop the necessary qualities.

The role of the teacher is to create and maintain a favorable learning atmosphere that has a positive effect on the student's motivation, enhances the development of their creativity and cognition. However, each participant of the educational process should make their contribution.

The Indicators of a favorable educational environment are: joint activities; common goals; satisfaction from being part of the team; constant feedback; taking into account the characteristics and needs of each participant; awareness of goals and procedures; good psychological microclimate and emotional satisfaction; democratic management style; good material base.

Being in a favorable educational environment a person develops individuality. The current situation in the country requires understanding of the management of educational institutions and the introduction of new approaches to creating the enabling environment.

The second pedagogical condition for the development of students' communication skills is the application of a personality-oriented approach to learning (Romanovskyi, 2009).

Traditional teaching styles and methods are outdated and do not allow young people to develop their abilities. The solution to this problem is that educators need to select and apply teaching methods that will help students better acquire knowledge and develop creative thinking and behavior. Learning is effective when the student changes their attitude or behavior for the better (Kovalchuk, 2011).

The organization of the educational process should: take into account the needs of the learner; conditions for physical and emotional development; opportunities for cooperation and collaboration between the student and the teacher; opportunities for each student to achieve the level of success, education and development; individualization of training; opportunities for self-knowledge, self-development, self-learning; the applicant's involvement in defining the purpose of training, planning of educational activities, and reflection.

The effectiveness of the learner's education depends on the motivation to acquire knowledge. Positive motivation depends on the teacher in formation of the need for learning. Personality-oriented learning produces psychological freedom of the learner, as well as a system of values. The student can evaluate their strengths and abilities, as well as develop their own creative potential.

Dialogic pedagogy should be based on the principles of equality of personal positions, openness and trust, and considering the views of each participant.

The teacher, in turn, must teach the student to be critical of themselves and their actions, to motivate and stimulate, to make the student a co-author of the educational process, to create favorable conditions for effective acquisition of knowledge. Technologies of personality-oriented education, contribute to the creation of conditions for development of a personality. These include training technologies (professional-behavioral training, reflexivity training), dialogic

teaching methods (group discussions, situation analysis); game technologies (dialogue, role and business games) (Savichev, 2010).

Their use should be based on a number of principles. This is in particular: the principle of personal approach, in which the teacher and the student are like-minded. Since human communication begins with establishing contact, primary communicative adaptation and focusing on the interlocutor are extremely important. Under such conditions, internal tension and complexes disappear, and mutual understanding appears. Also, occurs the principle of situationality which provides selection and organization of material on the basis of situations and problems of communication in the development of communication skills, because motivation of communication arises only in situations that are important for interlocutors. Another principle is modeling, according to which the content of learning should be represented not by topics but by problems. Finally, the principle of two-way educational communication, which consists in a clear division of functions between the teacher and the students.

The teacher manages communication in order to form, drill and consolidate the skills and abilities of speech; students focus primarily on communication, because by means of speech they can go beyond learning situations; the principle of a differentiated approach to the formation of groups. The initial level of communication skills should be considered in the formation of study groups; the principle of active learning, which manifests in external and internal activity of the student. For this purpose it is necessary to increase the amount of individual, group and collective forms of education and to reduce traditional frontal work, in which the teacher is an active participant; the principle of group interaction, which involves disclosure of the individuality of each student through communication - for this purpose the group should be dominated by such psychological climate that will effectively identify and reveal the capabilities of each student.

The third pedagogical condition for the development of communication skills is the modeling of real communication conditions.

This involves a real reproduction of communicative situations in which students will learn to communicate effectively using their own experience.

Modeling real professional situations will help students experience the responsibility for their words and deeds, will teach them to understand and interact with colleagues, and choose the right language tools for formulating and expressing opinions (Romanovskyi, 2009).

Modeling communication situations creates the conditions for the transformation of the student from the object to the active agent of the pedagogical process, and the search for ways to solve the problem contributes to the development of important professional qualities.

Modeling communication situations and involving students in them contributes to gaining successful experience in solving problems. This method helps to enhance motivation and values, allows you to make sure of their capabilities and abilities and as a result to improve them.

Different game methods are used to model such situations, for example plot-role and business games, the characteristic feature of which is the improvisational acting by the participants of the given problem situation of professional interaction, during which they play the roles of different characters. In this case, the subject of further discussion is not the situations themselves, but the game interaction of the participants: their forms and means of communication, ways to resolve problem situations and conflicts, their effectiveness, social and interpersonal roles, etc. The game activates children's desire to contact each other and the teacher, creates equal conditions in conversation, and destroys the traditional barrier of insecurity. In games, students master such elements of communication as the ability to start and maintain a conversation, interrupt the interlocutor, agree with his suggestion or reject it at the appropriate moment, listen to the interlocutor consciously, ask questions, etc.

The use of game methods in the process of developing communication skills is extremely productive.

Modeling communication situations allows you to anticipate the difficulties that students may face in life, and identify ways to overcome them.

Modeling of pedagogical situations should be carried out in a certain sequence, should correspond to logic of formation of the student’s need for communication and to a complex of mental operations which are necessary for the solutions of these situations. The simulated situations should reflect real problems.

Such communicative conditions can be created if we have certain techniques, prediction of relevant social and personal factors, and the behavior of participants. These skills include:

1. Management of the relationship process, which involves positive positioning of yourself with the interlocutor, positive feedback, focusing on yourself and important things, emotional control during transmission of information, creating communication links, emphasizing, controlling and keeping in mind the relationship between interlocutors.
2. Openness and communicativeness in relations with students.
3. Reassignment of communication to the spiritual or personal level.
4. Management of suggestive states (opinion of others, stereotypes), pedagogical optimism (avoid jumping to conclusions).

5. Identify "danger zones" for communication: when students get annoyed, become aggressive, the ability to be the student's shoes and understand his reaction: the ability to show tolerance, respect in relations with students; successfully interact with students who have other values due to individual or cultural and ethical characteristics.
6. Ability to relieve nervous tension (ability to relax, sit freely).
7. Mood management and ability to influence the mood of students positively.

To determine the level of the studied skill formation, we used the test «Diagnosis of communicative and organizational propensities» (Fetiskin, Kozlov & Manujlov, 2002). The questionnaire contains 40 questions. The total number of respondents who took part in the survey was 196 students from grades 9-11 aged 14-16. The maximum number of points separately for each parameter is 20. Points are calculated separately for communication and separately for organizational propensities using a key for data processing. One point is assigned for each answer «yes» or «no» for statements that coincide with those specified in the key separately for the respective propensities. Five levels of communicative and organizational propensities have been experimentally established. The sum of points 1-4 indicates the level as very low, 5-8 – low, 9-12 – average, 13-16 – high, 17-20 – the highest. According to the results of the survey, the following data were obtained (Fig. 1): very low – 14.8%, low – 9.2%, average – 33.10%, high – 42,9%, the highest level is not detected.

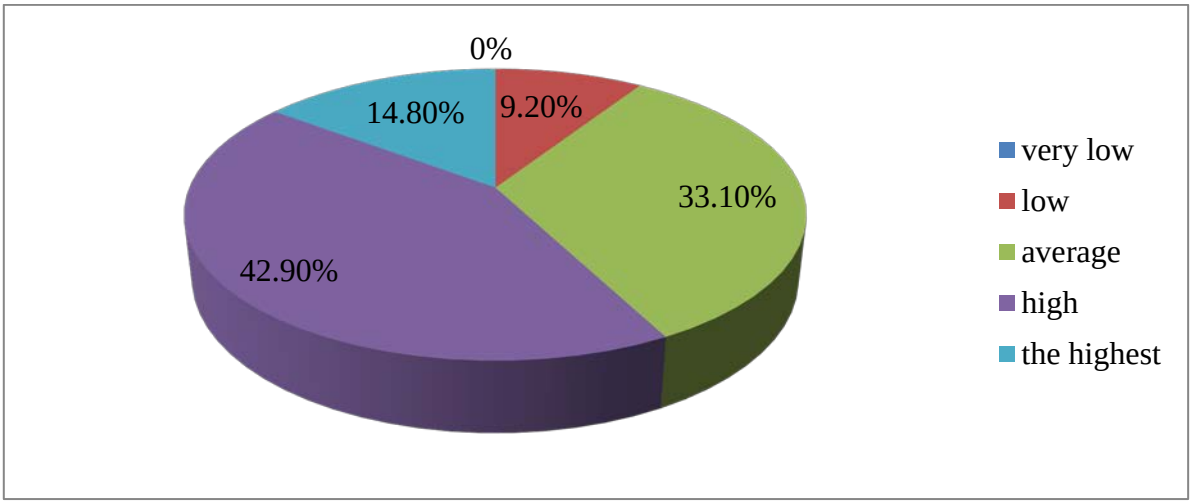

Figure 1 ***The Results of the Study of Identifying Communication Skills***

Score 1-8 – indicates a low level of communication and organizational propensities.

Score 9-16 – indicates communicative and organizational propensities at a level below average. Such students do not seek to communicate, preferring to spend time on their own. In a new company or team they feel awkward and experience difficulties in establishing contact with people. They do not stand their grounds, and it is hard for them to deal with insults. Rarely do they show initiative, and they avoid making independent decisions.

Score 17-24 – characterizes the average level of manifestation of communicative and organizational propensities. Such individuals seek contact with people, stand their grounds, but the potential of their propensities is not very stable. They need further educational work on the formation and development of these personality traits.

Score 25-32 – indicates a high level of communicative and organizational propensities. People feel relaxed in new circumstances, quickly find friends, seek to expand the circle of their acquaintances, help relatives and friends, show initiative in communication, and are able to make decisions in difficult and unusual situations.

Score 33-40 – the highest level of communicative and organizational propensities. This indicates that such people have a need for communication and organizational activities. They understand quickly what to do in difficult situations, feel comfortable in a new team, and take initiative. Such people make independent decisions. They defend their opinion and seek to make their decisions. They like to organize games, various events. and demonstrate persistence and inspiration in the activities they participate.

The results of a study to identify communication skills showed that (Fig. 2): very low – 2%, low – 14.0%, average – 49%, high – 31%, the highest – 4%.

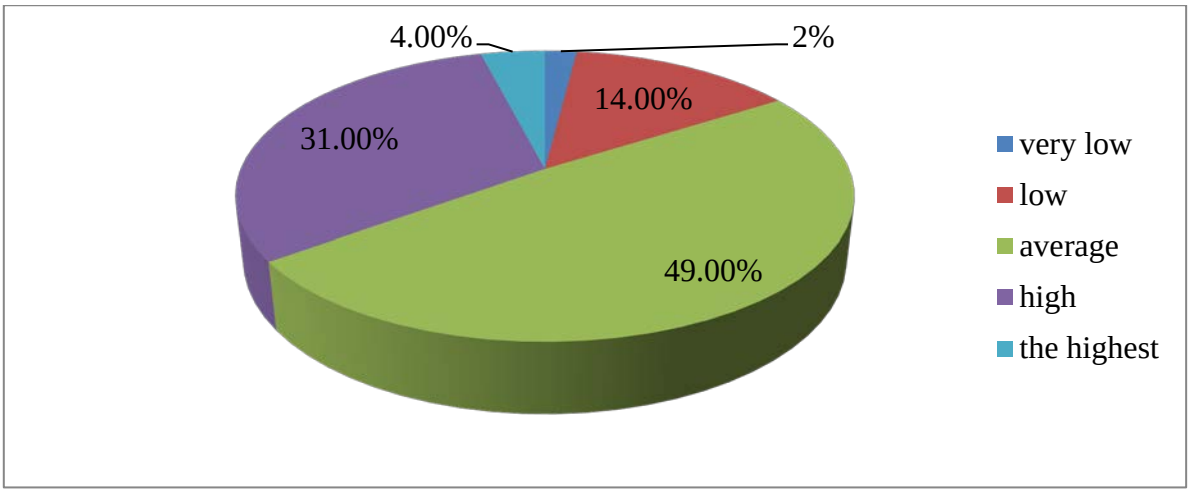

Figure 2 ***The Results of the Study of Identifying Organizational Skills***

Among the questions about communicative propensities, the largest number of respondents answered positively to the question «Is it easy for you to establish contacts with people who are older than you?» (yes) and «Do you want to limit the circle of your acquaintances?» (no) – 80.1% and 82.1%, respectively, which indicates a lack of ageism and openness of the majority of respondents.

Among the questions about organizational propensities, the largest number of respondents answered positively to the question «Is it always difficult for you to deal with a critical situation?» (no) and «Is it true that you rarely try to prove yourself?» (no) – 82.7% and 84.2% respectively.

At the same time, only 42.7% of respondents answered positively to the question «Do you feel relaxed when you get into an unfamiliar team?» and 44.9% «Do you like being among people all the time?», which shows one of the lowest results among communication propensities.

We see even lower rates for questions about organizational propensities, both questions are related to community service: «Do you participate in community service at school?» (yes) 33.2% and «Do you like doing community service?» (yes) 35.2%.

The results of the survey showed the highest percentages in terms of medium and high level of development of communicative and organizational propensities and lack of a very low level. This also confirms the presence of leadership potential in students.

Conclusion

Communicative skills are an integrated feature of the individual, characterized by mastery of certain methods and techniques by which partners enter into a situation of communication, establish and maintain contacts and purposeful relationships, and achieve the goal. Communication skills are a necessary component of a person's leadership potential.

Developed communication skills will help to take into account the emotional and psychological influences of the environment, the inner circle, listen and hear others, empathize, be open in communication, provide feedback in communication, respond adequately to the actions of other participants and the communication situation in general, to defend their rights during communication, etc.

Diagnosis of students' communication skills will help the teacher to assess the current level of development and consider the ways for further improvements.

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VALSTS AIZSARDZĪBAS MĀCĪBAS IEVIEŠANA LATVIJAS SKOLĀS KĀ MŪSDIENU IZGLĪTĪBAS AKTUALITĀTE

Implementation of the National Defense Training in Latvian Schools as the Topicality of Nowadays Education

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Abstract. *Continuous changes in the global geopolitical space are highlighting our national interests in security matters, when thinking about the sustainability of our society and country. Both civic readiness to act in crisis situations and civic participation in strengthening national security are important. Therefore, following the introduction of a comprehensive National defense conception in Latvia, the acquisition of the subject of National defence training in secondary education programs will be compulsory from the academic year 2024/2025. The aim of the research was to substantiate the implementation of National defense traning in Latvian schools as a topicality of modern education. The new curriculum is included in the following areas of study: Health, Safety and Physical Activity and Social and Civic Learning. Nowadays, in the framework of pilot project, the new curriculum in the field of national defense is already being experimentally tested in 69 educational institutions: secondary schools, gymnasiums, vocational schools, colleges. The results of the research allow to conclude that: 1) the concept of comprehensive national defense has four dimensions (military, informative, psychological and civic dimensions); 2) all these dimensions were respected in the development of the National Defense Training curriculum. The content of education in the field of national defense will serve as a means of patriotic upbringing, but the training process itself will have an upbringing function. The implementation of National defense training must also be based on an ecological approach in providing an appropriate educational environment, paying attention to the contexts of indoor and outdoor environments.*
Keywords: *Career Education, Civic Education, Curriculum, Military Education, National Defense Training, School, Patriotic Upbringing.*

Ievads
Introduction

Mūsu sabiedrība dzīvo nepārtraukti mainīgā vidē, t.sk. ģeopolitiskā vidē. Pasaulē ģeopolitiskā situācija mainās. Šīs pārmaiņas gan tieši, gan netieši skar arī

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Latviju. Latvijas sabiedrība, dzīvojot demokrātiskā valstī, labi atceras mūsu tautas skarbo vēsturi, kā arī seko un spēj kritiski izvērtēt starptautiskos notikumus mūsu valsts robežu tuvumā un arī attālākos reģionos, spēj izvērtēt politisko situāciju arī valsts iekšienē. Lai sabiedrība būtu gatava prognozējamiem un mazāk prognozējamiem pavērsieniem pasaules, t.sk. Baltijas valstu, ģeopolitiskajā telpā, katram mūsu sabiedrības indivīdam, t.sk. jaunietim, būtu jābūt sagatavotam dzīvei un darbībai krīzes situācijās.

Daudzās pasaules valstīs, kurās ir izstrādātas *Valsts aizsardzības koncepcijas*, ir uzsvērta un aktualizēta jauniešu līdzdalības valsts aizsardzībā nozīme, piemēram, Francijā (Gougeon, 2017), Igaunijā (Estonian Ministry of Defence, 2011), Krievijas Federācijā (The Kremlin, 2015) u.c.

Arī Latvijas Republikā ir izstrādāti vairāki dokumenti saistībā ar valsts aizsardzību, t.sk. *Nacionālās drošības koncepcija* (LR Saeima, 2019), *Latvijas kiberdrošības stratēģija 2019 - 2022* (LR Aizsardzības ministrija, 2019a), *Par valsts aizsardzības mācības ieviešanu un Jaunsardzes attīstību 2019.–2027.gadā* (LR Aizsardzības ministrija, 2019). Šajos dokumentos ir uzsvērts, ka: 1) skolās un jaunatnes politikas ietvaros īstenotajiem projektiem jābūt orientētiem uz jauniešu sabiedriskās aktivitātes veicināšanu, pagasta, novada un valstiska mēroga vēstures notikumu izpēti, iesaisti lēmumu pieņemšanā, tādejādi attīstot gan lokālpatriotismu, gan piesaisti valstij; 2) jāveicina skolu jaunatnes izglītošana, attīstot mediju kompetenci, tādējādi ilgtermiņā stiprinot gados jaunākās sabiedrības daļas psiholoģisko noturību pret apdraudējumiem un ļaunprātīgu rīcību, kas nonāk informatīvajā telpā; 3) jāveicina jauniešu līdzdalība valsts aizsardzībā, skolās ieviešot jaunu mācību priekšmetu *Valsts aizsardzības mācība*, kā arī jāturpina darbs ar *Jaunsardzi*, kas varētu būt jaunā maiņa zemessardzei un profesionāliem kareivjiem Latvijas Republikas Nacionālajos bruņotajos spēkos (NBS).

Lai to visu varētu īstenot, ar 2024.mācību gadu *Valsts aizsardzības mācības* (turpmāk – VAM) priekšmeta apguve vidējās izglītības programmās būs obligāta. VAM kursa mērķi: 1) jauniešu kā sabiedrības locekļu patriotisms savā domāšanā un ikdienas darbībā; 2) jauniešu vēlēšanās aizstāvēt valsti krīzes situācijā; 3) kompetentums (zināšanas, prasmes, spējas un atbildīgums kā attieksme – autoru komentārs) aizstāvēt valsti krīzes situācijā (Valsts aizsardzības mācība, 2020).

Pētījuma mērķis bija pamatot *Valsts aizsardzības mācības* ieviešanu Latvijas skolās kā mūsdienu izglītības aktualitāti. Tika izmantota teorētisko pētījumu metode: zinātniskās literatūras un normatīvo dokumentu studēšana, analīze un izvērtēšana.

Pētījuma rezultāti
Results of Research

2020.gada 24.septembrī Latvijas Republikas Saeima apstiprināja *Valsts aizsardzības koncepciju* (LR Saeima, 2020), kas paredz vispatverošu sabiedrības iesaisti valsts aizstāvēšanā krīzes situācijās.

Kā norāda I. Bērziņa un U. Zupa (Bērziņa & Zupa, 2020) iedzīvotājiem ir nepieciešama konkrēta skaidrība par savu lomu un uzdevumiem valsts aizsardzībā. Ņemot vērā aptaujas datus, lai panāktu sabiedrības iesaisti aizstāvēt valsti, pirmām kārtām, jānodrošina pietiekams informācijas līmenis un šīs informācijas pieejamība, lai gūtu konkrētas teorētiskās un praktiskās zināšanas par to, kādā veidā ikviens var iesaistīties valsts aizsardzībā un kādā veidā veicināt pilsoņu gribu piedalīties valsts aizsardzībā. Tas nozīmē, ka *Visaptverošas valsts aizsardzības* mērķis būs īstenojams, ja Latvijas sabiedrība būs visādā veidā gatava aizstāvēt savu valsti. Svarīgi, lai šī gatavība būtu vienādi izeikta dažādām sabiedrības sociālajām grupām un lai gatavību aizstāvēt savu valsti būtiski neietekmētu valoda, kādā mēs sarunājamies ikdienā, kas lielā mērā liecina par mūsu piederību vienai vai citai kultūrai, dzimums, vecums, sociālā piederība, labklājības līmenis u.c. nozīmīgi faktori.

Līdz 2000.gada sākumam uzskatīja, ka Eiropa ir mierīgs reģions, daudzas valstis atcēla obligāto militāro dienestu, mazināja militāro budžetu. Pēc Krievijas militārajām darbībām daudzas valstis sāka meklēt formas, kā rīkoties dažādo krīžu laikā, domājot par iedzīvotāju gatavību aizstāvēt savu valsti. Obligāto militāro dienestu Latvijā atcēla 2006. gadā, jo Eiropā bija nostāja, ka tas nav nepieciešams. Tagad daudz modernāks ceļš būtu nevis atjaunot obligāto dienestu, bet sniegt zināšanas daudz modernāk, iesaistot sabiedrību gan formālajā, gan neformālajā militārajā un pilsoniskajā izglītībā, pievēršot īpašu uzmanību patriotiskai audzināšanai (LR Saeima, 2020; LSM.lv Bērnu satura redakcija, 2021). Kā vienu no risinājumiem Latvija ir izvēlējusies *Valsts aizsardzības mācības* ieviešanu skolās.

Vairāki avoti (Bērziņa, Kuzmins, Falka, Gūtmane, & Damberga, 2020; LR Aizsardzības ministrija, 2019; Jaunsardzes un informācijas centrs, 2020) liecina, ka ir jau izstrādāts formālais izglītības saturs *Valsts aizsardzības mācībai*, kas kopš 2024./2025. mācību gada tiks īstenots visās Latvijas skolās. Šīs mācību programmas apguve būs obligāta vidējās izglītības 10. un 11.klasēs, kā arī vidējās profesionālās izglītības iestāžu 2. un 3. kursā. Līdz šim laikam izstrādātā mācību programma tiks eksperimentāli aprobēta pilotprojekta ietvaros. Mācību programmas *Valsts aizsardzības mācība* satura ievešana Latvijas vidējā izglītībā ir aktualitāte gan kurikulārās didaktikas, gan pilsoniskās izglītības, gan patriotiskās audzināšanas skatījumā. Jaunais mācību saturs ir iekļauts šādās mācību jomās: *Veselība, drošība un fiziskās aktivitātes,* kā arī *Sociālā un*

pilsoniskā mācība. Latvijas Republikas Aizsardzības ministrija prognozē, ka pirmajā gadā, kad šis mācību priekšmets kļūs obligāts, mācībās piedalīsies aptuveni 34 000 jauniešu. Tiek paredzētas individuālās pieejas iespējas, respektējot skolēnu un viņu ģimeņu pasaules uzskatus, t.sk. reliģisko piederību, un no tā visa izrietošajām vērtībām, pārliecībām, attieksmēm, rīcības un uzvedības normām. Mācības notiks gan skolā, gan praktisko nodarbību nometnēs, tāpēc *Valsts aizsardzības mācības* apguves procesā obligāta būs klātienes dalība. Tomēr tālmācības un neklātienes skolēniem būs piedāvāta iespēja apgūt tikai teorētiskā mācību satura blokus jeb moduļus, iegūstot nepieciešamās zināšanas, prasmes un kompetences (Kuzmina, 2020).

2018.gadā dalībai projektā pieteicās 13 Latvijas skolas, kas piedāvāja vispārējās vidējās izglītības iestāžu 10.klašu skolēniem un profesionālo vidusskolu 2.kursa audzēkņiem *Valsts aizsardzības mācību* apgūt kā izvēles priekšmetu. Izgaismojās organizatoriskais problēmjautājums, kā labāk organizēt mācības skolēniem, kas izvēlējās šo mācību priekšmetu, un paralēli mācības tiem skolēniem, kas šo mācību priekšmetu neizvēlējās. Valsts aizsardzības mācību priekšmeta ietvaros 2019.gada jūnijā notika pirmā nometne, kurā piedalījās 67 skolēni no pilotprojektā iesaistītajām 13 Latvijas skolām. Nometne notika Nacionālo bruņoto spēku poligonā "Lāčusils" Alūksnes novadā. Tās laikā jaunieši praktiski pielietoja valsts aizsardzības mācībā apgūtās teorētiskās zināšanas un uzlaboja arī lauka kaujas un šaušanas iemaņas (Sargs.lv, 2019). Šobrīd pilotprojekta ietvaros mācību priekšmeta *Valsts aizsardzības mācība* saturu eksperimentāli aprobē jau 69 izglītības iestādes visā Latvijā. Tās ir vidusskolas, ģimnāzijas un tehnikumi. Šāds izvēles studiju kurss tiek piedāvāts arī koledžās (LSM.lv Bērnu satura redakcija, 2021).

21.gadsimtā ir aktualizējies jēdziens visaptverošā jeb totālā valsts aizsardzība, kas ir saistīts ar kolektīvo aizsardzību, visu aptverošo izturību ar uzsvaru uz civilajiem drošības aspektiem valsts līmenī. Tas tika nolemts NATO Varšavas samitā 2016. gadā. Balstoties uz vairākās valstīs (Somijā, Izraēlā, Singapūrā, Šveicē) veikto pētījumu rezultātiem, ir definētas visaptverošas valsts aizsardzības jēdziena četras pamatdimensijas: pilsoniskā, militārā, informatīvā un psiholoģiskā dimensija (Berzina, 2020). Pēc autoru, domām, visas šīs dimensijas ir saskatāmas vidējās izglītības mācību priekšmeta *Valsts aizsardzības mācība* saturā.

Pilsoniskā dimensija izpaužas pilsoniskās izglītības saturā, kas iekļauts *Valsts aizsardzības mācības* saturā, kur uzmanības centrā ir pilsoniskā aktivitāte un līdzdalība valsts aizsardzībā. Pilsoniskā dimensija parādās gan *Valsts aizsardzības mācības* mērķī, gan pašā saturā. Galvenais šī mācību priekšmeta izvirzītais mērķis ir veicināt pilsonisko apziņu un patriotismu, kā arī sniegt iespēju apgūt militārās pamatiemaņas un prasmes, veidojot pilsoniski atbildīgus un

Latvijai lojālus pilsoņus, kas ir vitāli svarīgi visaptverošas valsts aizsardzības kontekstā (Jaunsardzes un informācijas centrs, 2020).

Citu valstu pētnieki savos pētījumos ir nonākuši pie atziņas, ka, lai veicinātu jauniešu iesaistīšanos valsts aizsardzībā, jāapzinās pilsoniskās izglītības nozīme un jāpiedāvā tās pārdomāts saturs (Kalagbor & Harry, 2018).

Pilsoniskās izglītības saturs ir nozīmīgs līdzeklis, kas palīdz sabiedrībā attīstīt un nostiprināt demokrātiskās vērtības, izkopt pilsoniskās tradīcijas sabiedrībā un veicināt ikviena indivīda piederības apziņu savai valstij, veicina attīstīt atbildīgu attieksmi pret sabiedrību un valsti kopumā (Cekste, 2014).

Latvijā veikto pētījumu rezultāti liecina, ka: 1) pilsoniskās līdzdalības rādītājs Latvijā ir 9, kas ir zems rezultāts salīdzinājumā ar Zviedriju (44), Somiju (36), Vāciju (30) un Īriju (22); 2) samazinās iedzīvotāju iesaistīšanās tradicionālajās pilsoniskās līdzdalības formās, nemainīgi zems ir to iedzīvotāju īpatsvars (17%), kas uzskata, ka spēj ietekmēt lēmumu pieņemšanas procesus Latvijā; 3) jauniešiem trūkst pilsoniskās līdzdalības prasmes. Aptuveni 25% jauniešu apgalvo, ka regulāri (vismaz 12 reizes gadā) piedalās kādās sociālās, sabiedriskās vai interešu aktivitātēs, t.sk. tikai 6% – sabiedriskās un sociālās aktivitātēs (dalība nevalstiskajās organizācijās, labdarības pasākumos, brīvprātīgajā darbā, vides sakopšanā u.tml.). Viszemākā ir jauniešu iesaiste politiskajās aktivitātēs (dalība partiju darbā, politiskās diskusijās u.tml.) – tikai 2% tādās iesaistās regulāri (LR Kultūras ministrija, 2019; Spārīte, 2014).

Pilsoniskās izglītības satura iekļaušana *Valsts aizsardzības mācības* saturā ir veids, kā izglītības sistēma var reaģēt uz pieprasījumu pēc jauniešu iesaistīšanās valsts drošībai nozīmīgās aktivitātēs, kas uzlabo katra jaunieša perspektīvas, piedāvā jaunas iespējas un palīdz dot ieguldījumu visas sabiedrības un valsts ilgtspējīgā attīstībā.

Pilsoniskā izglītība ir ne tikai zināšanas par valsts politiku un/vai starptautiska mēroga ģeopolitiku. Tās mērķis ir attīstīt demokrātiskās, sociālās, kā arī personiskās un starppersoniskās kompetences. Ziņojumā *Pilsoniskā izglītība Eiropas skolās* (Eiropas Komisija, 2017) ir sniegtas atbildes gan uz šiem, gan citiem jautājumiem, kā arī ir iekļauts salīdzinošs pārskats par pilsoniskās izglītības īstenošanu Eiropā. Ziņojums aptver 28 Eiropas Savienības dalībvalstis, kā arī Bosniju un Hercegovinu, Bijušo Dienvidslāvijas Maķedonijas Republiku, Islandi, Lihtenšteinu, Melnkalni, Norvēģiju, Serbiju, Šveici un Turciju.

Apvienotajā Karalistē pilsonības izglītības mērķi ir vērsti uz to, lai skolēniem nodrošinātu nepieciešamās zināšanas un prasmes aktīvai darbībai sabiedrības labā, lai apgūtu zināšanas par demokrātiju, vēlēšanu tiesu sistēmu, cilvēktiesībām un pienākumiem, mācot cieņu pret dažādām nacionālajām un reliģiskajām identitātēm, etniskajām grupām un veicinot kritisko domāšanu un attīstot sadarbības prasmes (Feyfant, 2010). Līdz ar to Apvienotajā Karalistē dominējošie Pilsoniskās izglītības principi un vērtības balstās uz spēju, sociālo prasmju,

pašizziņas un personības pilnveidošanu. Pilsoniskās izglītības satura iekļaušana *Valsts aizsardzības mācības* saturā ir veids, kā izglītības sistēma var reaģēt uz pieprasījumu pēc jauniešu iesaistīšanās valsts drošībai nozīmīgās aktivitātēs, kas uzlabo katra jaunieša perspektīvas, piedāvā jaunas iespējas un palīdz dot ieguldījumu visas sabiedrības un valsts ilgtspējīgā attīstībā.

Pētījumi liecina (Cortes, Gomez, & Valle, 2016), ka pilsoniskās izglītības saturā var iezīmēt vairākus tematiskos virzienus: 1) pilsonības mācība, kuras pamatā ir zināšnu nodošana skolēniem par valsts vēsturi, ģeogrāfiju un politiku; 2) pilsoniskā izglītība, kas rosina un motivē praktiski piedalīties skolas un sabiedriskajās aktivitātēs; 3) apvienotā pilsoniskā izglītība, kas satur divus iepriekšējos virzienus, ar mērķi skolēniem nodrošināt visas iespējas attīstīt savas kompetences, uz vērtību bāzes veidot attieksmes, aktīvi pildot sabiedrības indivīda, pilsoņa pienākumus gan tagad skolas gados, gan arī pieaugušo dzīvē nākotnes perspektīvā. Pētījumā (Navarro-Medina & Alba-Fernandez, 2015) secināts, ka šī trešā vadlīnija jeb virziens būtu vēlams, lai īstenotu pilsonisko izglītību šī jēdziena visplašākajā nozīmē.

Projekta "*Skola 2030*" ietvaros ir formulēta vīzija (Namsone, 2018; IZM, 2021) kādiem būtu jābūt izglītības rezultātiem. Ir apzināti kompetencēs balstītās izglītības ieguves rezultātā izglītotas personības ieguvumi tikumu, ieradumu un vērtību veidā, kas izgaismo jaunā izglītības satura nozīmi skolās.

- *Tikumi:* taisnīgums, solidaritāte, līdzcietība, godīgums, savaldība, laipnība, drosme, mērenība, tolerance, gudrība, atbildība, centība.
- *Ieradumi:* a) atbildīgs sabiedrības dalībnieks, kurš iedziļinās, līdzdarbojas un sadarbojas, lai kopā ar citiem veidotu tādu sabiedrību, kādā vēlamies dzīvot; b) personība ar pašapziņu, kurš ciena un rūpējas par sevi un citiem; c) radošs darītājs, kurš ievieš inovācijas, d) lietpratējs izaugsmē, kam mācīties nemitīgi un ar aizrautību kļuvis par ieradumu.
- *Vērtības:* dzīvība, cilvēka cieņa, brīvība, ģimene, laulība, darba tikums, daba, kultūra, latviešu valoda, Latvijas valsts.

Šos vēlamos izglītības rezultātus tiešā veidā var attiecināt arī uz *Valsts aizsardzības mācības* satura apguvi.

Vairākās publikācijās tiek aktualizēta skolotāju loma pilsoniskajā izglītībā. Maz ir pētījumu par pedagogu ieguldījumu pilsoniskās izlgītības īstenošanā skolās, mācīšanas praksi un pieredzi, kas veicina izglītojamos kļūt par kritiski domājošiem, radošiem, patriotiskiem pilsoņiem (Sim, Chua, & Krishnasamy, 2017). Pilsoniskās izglītības realizācijai ir nepieciešams būtisku zināšanu kopums (kaut arī veidojot no dažādām disciplīnām), prasmju kopums (ieskaitot spēju apkopot pierādījumus, atpazīt ietekmes veidus, izvirzīt argumentus, piedalīties debatēs un runāt publiski) un augsti kvalificēts speciālistu nodrošinājums, kas spēj

nodrošināt radošu mācību satura apguvi, balstoties uz starppriekšmetu saikni (Davies et al., 2014; Wood, Taylor, Atkins, & Johnston, 2018). Aktīvas un atvērtas diskusijas, pārrunas, problēmu apspriešana atkātā dialogā par strīdīgiem jautājumiem, veicina pašreizējo un turpmāko iesaistīšanos (Flanagan, Stoppa, Syvertsen & Stout, 2010; Hess & McAvoy, 2014; Kahne & Sporte, 2008). Skolotājiem ir nozīmīga loma, lai skolēni/studenti pilsoniskās izglītības procesā izteiktu savu viedokli, kā arī ļautos individuālām pārdomām un cikliskām vai rekursīvām mācībām (Biesta, 2011; Parker, Valencia, & Lo, 2017). Skolotāja loma ir aktuāla ne tikai pilsoniskās izglītības kontekstā, bet arī militārās izglītības un karjeras izglītības kontekstā, jo visu šo trīs izglītības jomu saturs ir integrēts vienotā mācību programmā *Valsts aizsardzības mācība*.

Valsts aizsardzības mācībā (Bērziņa u.c., 2020) ***militārā dimensija*** ir klātesoša tādos tematos kā: 1) *Militārā topogrāfija un orientēšanās*; 2) *Lauka kaujas iemaņas;* 3) *Ierindas prasmes*; 4) *Droša apiešanās ar ieročiem un šaušana ar pneimatiku* u.c.

Militārās izglītības satura iekļaušana *Valsts aizsardzības mācībā* nodrošinās arī ***karjeras izglītības funkciju***, kas nodrošinās jauniešu rekrutēšanu Latvijas Republikas Nacionālajos Bruņotajos spēkos (NBS) un Zemessardzē, kas ir viena no valsts aizsardzības aktualitātēm. Vairāku valstu pētnieki ir publicējuši savus pētījumus par jauniešu iesaisti valsts aizsardzībā un ar to saistītajām problēmām. Piemēram, ASV ir veikti pētījumi (Spoehr & Handy, 2018), kuru rezultāti liecina, ka ar laiku (nākotnes perspektīvā) varētu rasties nodarbinātības problēma bruņotajos spēkos, proti, profesionāla darbaspēka piesaistē. Tam ir vairāki cēloņi, piemēram, dažāda veida normatīvajos dokumentos noteiktie ierobežojumi, kas ļauj tikai 29% jauniešu iesaistīties profesionālā valsts aizsardzībā u.c. Tas apdraud pēctecību un paaudžu nomaiņu armijā. Turklāt liela nozīme ir jauniešu motivācijai. Savukārt Latvijā veiktā pētījuma (Vaine, Kalēja, Čodere, & Trupavniece, 2006) rezultāti liecina, ka ka 8.klašu skolēni militāro sfēru diemžēl neierindoja 10 perspektīvāko profesiju nozaru sarakstā. To pašu var teikt arī par 11.klašu skolēnu viedokļiem un attieksmēm saistībā ar perspektīvākajām profesiju nozarēm. Tas nozīmē, ka ļoti aktuāli ir sniegt jauniešu militārās karjeras attīstības atbalstu, lai jaunieši spētu saskaņot trīs karjeru nosakošās ietekmes faktoru grupas (Aron, 2017): 1) savas intereses, vajadzības, nākotnes mērķus un nodomus (*es vēlos/gribu*), 2) zināšanas, prasmes, kompetences dažādu spēju veidā un iegūtā pieredze (es varu/spēju), 3) sabiedrības vajadzības un pieprasījums, valsts izceltās prioritātes (vajag).

Militārās izglītības saturs veicina ne tikai jaunu zināšanu un prasmju apguvi militārajā mācībā, kā arī veic karjeras izglītības funkcijas, viens no militārās izglītības uzdevumiem ir arī jauniešu fiziskās attīstības, t.sk. fiziskās izturības, veicināšana. Informatīvajā ziņojumā *Par valsts aizsardzības mācības ieviešanu un Jaunsardzes attīstību 2019.–2027.gadā* (LR Aizsardzības ministrija, 2019) ir

norādīts, ka līdz ar jauna, kompetencēs balstīta mācību satura ieviešanu nepieciešams pārskatīt un aktualizēt arī to, kā izglītības ieguves procesā bērni un jaunieši visos izglītības posmos attīsta un nostiprina valstiskuma apziņu un piederības izjūtu Latvijai, mācās uzņemties atbildību par sevi, savu ģimeni, kopienu un valsti, kā arī attīsta ne tikai intelektuālās, bet arī *fiziskās spējas* (raksta autoru izcēlums).

Mūsdienās īpaši tiek aktualizētas ***informatīvā*** un ***psiholoģiskā dimensija*** (Berzina, 2020), kas pamatojams ar izmaiņām globālajā varas struktūras līdzsvarā, kā arī ar strauju informācijas un komunikācijas tehnoloģiju attīstību. 21.gadsimtā ir izveidojusies plaša izpratne par informācijas un psiholoģisko operāciju kā kara elementu pieaugošo nozīmi. Mūsdienās valstu drošības jautājumos tiek aktualizēts psiholoģiskās vai informācijas operācijas jēdziens (Mattis & Hofman, 2005), 21.gs. notiek ideju kari, un mūsu idejām ir jākonkurē ar ienaidnieka idejām (Annis, 2020). Krievijas militārie eksperti informāciju definē kā atsevišķa kara dimensiju: palielinājusies nemilitāro instrumentu pieaugošā nozīme mūsdienu karadarbībā (Berzina, 2020). Gan zinātniskajā, gan sadzīviskajā terminoloģijā un leksikā ienāk hibrīdkara termins, lai raksturotu mūsdienu drošības problēmu specifiku. Dažādu rīku sintēze un metodes - gan militāras, gan nemilitāras - ir galvenais princips, kas raksturo "hibrīdkaru" un "hibrīdkaru draudus" (Mattis & Hoffman, 2005). Hibrīdo rīku saraksts, ko pamatojuši zinātnieki (Treverton, Thvedt, Chen, Lee, & McCue, 2018, 4), ko var izmantot ienaidnieki hibrīdkarā, ir samērā plašs: propaganda; viltus ziņas; stratēģiskas noplūdes; organizāciju finansēšana; politiskās partijas; organizētas protesta kustības; kiberinstrumenti (spiegošana, uzbrukumi un manipulācijas); ekonomiskā ietekme; pilnvaras un neatzīts karš; un paramilitārās organizācijas. Saraksts nav pilnīgs, un viss iepriekšminētais rīkus var izmantot arī kopā ar parasto karadarbību. Šajā sakarā Latvijas Republikā ir izstrādāta *Latvijas kiberdrošības stratēģija 2019 - 2022* (LR Aizsardzības ministrija, 2019a). Augstāk teiktais ir pamatojums tam, ka Valsts aizsardzības mācības programmā (Bērziņa u.c., 2020) ir iekļauta arī s*akaru procedūru un kiberdrošība*s tematika. Ir gaidāmi jaunievedumi arī *Jaunsardzes* neformālās izglītības saturā, tiks realizētas jaunas *Jaunsardzes izglītības programmas.* Piemēram, kā jauninājums ir plānotas *Kiberjaunsardzes* nodarbības, kas tiktu piedāvātas paralēli jaunsargu interešu izglītības 2.līmeņa programmai (7. un 8.klašu skolēniem). Šie skolēni vēlāk varētu izvēlēties iegūt attiecīgu vidējo profesionālo izglītību (jau šobrīd Saldus tehnikums piedāvā kiberdrošības speciālista izglītības programmu) vai augstāko izglītību informāciju tehnoloģijas jomā ar specializāciju kiberdrošībā (LR Aizsardzības ministrija, 2019). Tas nozīmē tiek pavērtas jaunas perspektīvas jauniešu karjeras izvēlē un attīstībā.

Valsts aizsardzības mācības satura apguves procesam būs izteikta ***audzinoša funkcija.*** Didaktikas (mācību teoriju) skatījumā mācību procesam ir vairākas

funkcijas, viena no tām ir audzinošā funkcija (Žogla, 2001). Savukārt audzināšanas teoriju skatījumā mācību saturs kalpo par audzināšanas līdzekli vērtību un attieksmju sistēmu veidošanās veicināšanas procesā, kas pēc savas būtības ir pedagoga un skolēna mijiedarbības process (Špona, 2001).

Valsts aizsardzības mācības viens no svarīgajiem uzdevumiem ir jauniešu ***patriotiskā audzināšana*** (Jaunsardzes un informācijas centrs, 2020). Zinātniskajā literatūrā pastāv vairāki jēdziena *patriotisms* skaidrojumi. Patriotisms ir būtiska personības individuālā iezīme. Patriotisms kā sociāla parādība ir jebkuras tautas un valstiskuma pastāvēšanas un attīstības pamatā (Takeuchi, 2016).

Patriotisms ir valsts dzīvotspējas morālais pamats un kalpo kā svarīgs mobilizācijas resurss sabiedrības attīstībai, indivīda aktīvai pilsoniskai nostājai un gatavībai kalpot Latvijai (Indriksons, 2019).

Pētījumu rezultāti liecina (Bērziņa, 2016), ka kopumā Latvijas sabiedrībā ir augsts nacionālā lepnuma un patriotisma līmenis – 74% ir lepni, 75% ir lepni, ka Latvija ir neatkarīga valsts, 71% ir Latvijas valsts patrioti un 86% ir Latvijas kā savas dzīvesvietas patrioti. Gatavību aizstāvēt valsti ir pauduši 70% respondentu. Savukārt militāra uzbrukuma gadījumā gatavi aizstāvēt Latviju ar ieročiem rokās ir 34% , šie respondenti ir gatavi Latvijas valstiskās neatkarības dēļ ziedot pat savu dzīvību.

Par to, ka jauno paaudžu patriotiskā un militāri-patriotiskā audzināšana ir aktuāla arī citās valstīs, liecina vairākas publikācijas (Fedorenko, 2019; Mardonov, Khodjamkulov, Botirova, & Shermatova, 2020; Mikriukov, 2009).

Pēdējā laika pasaules notikumi un ģeopolitiska situācija liecina, ka ir nepieciešams vairāk pievērst uzmanību izglītības videi, kas ir viena no svarīgākajām patriotisma veidošanās vietām (Indriksons, 2019). Tas nozīmē, ka ir svarīga ekoloģiskā pieeja atbilstošas izglītības vides nodrošināšanā.

Valsts aizsardzības mācības īstenošanā tiks apvienotas teorētiskās mācības ar praktiskām mācībām lauka apstākļos, tāpēc, balstoties uz *ekoloģisko pieeju***,** īpaša vērība būs jāpievērš *iekštelpu* un *ārpustelpu vides* kontekstiem.

Teorētisko pētījumu rezultāti ļauj ***secināt***, ka: 1) mācību priekšmeta *Valsts aizsardzības mācība* saturs ir izteikti daudzdimensionāls un nozīmīgs gan visaptverošās valsts aizsardzības, gan pilsoniskās izglītības un karjeras izglītības, gan jauniešu vispusīgas attīstības un audzināšanas, īpaši patriotiskās audzināšanas, veicināšanas kontekstā; 2) valsts aizsardzības mācību procesā svarīgi respektēt ekoloģisko pieeju.

Secinājumi
Conclusions

Lai sabiedrība būtu gatava prognozējamiem un mazāk prognozējamiem pavērsieniem pasaules ģeopolitiskajā telpā, katram sabiedrības indivīdam būtu

jābūt sagatavotam dzīvei un darbībai krīzes situācijās. Svarīga ir visas sabiedrības kopumā un katra tās indivīda gatavība aizsargāt savu valsti, tās neatkarību. Latvijā visaptverošas valsts aizsardzībai ir izveidots tiesisks pamats. Vairākos normatīvos dokumentos ir uzsvērts, ka jāveicina jauniešu līdzdalība valsts aizsardzībā, skolās ieviešot jaunu mācību priekšmetu *Valsts aizsardzības mācība*, kā arī jāturpina darbs ar *Jaunsardzi*, kas varētu būt jaunā maiņa zemessardzei un profesionāliem kareivjiem Latvijas Republikas Nacionālajos bruņotajos spēkos.

Ir jau izstrādāts un šobrīd vairākās Latvijas skolās tiek eksperimentāli aprobēts formālais izglītības saturs *Valsts aizsardzības mācībai*. Šis mācību priekšmets kopš 2024./2025. mācību gada tiks īstenots visās Latvijas skolās. Šīs mācību programmas apguve būs obligāta vidējās izglītības 10. un 11. klasēs, kā arī vidējās profesionālās izglītības iestāžu 2. un 3. kursā. Jaunais mācību saturs ir iekļauts šādās mācību jomās: *Veselība, drošība un fiziskās aktivitātes,* kā arī *Sociālā un pilsoniskā mācība.*

Valsts aizsardzības mācības saturs ir izteikti daudzdimensionāls un nozīmīgs gan visaptverošas valsts aizsardzības, gan jauniešu vispusīgas attīstības veicināšanas, gan arī karjeras attīstības atbalsta kontekstā. Visaptverošas valsts aizsardzības jēdzienam ir četras dimensijas: militārā, informatīvā, psiholoģiskā un civilā dimensija. *Valsts aizsardzības mācības* saturā ir respektētas visas četras šīs pamatdimensijas. To nodrošina militārās izglītības, pilsoniskās izglītības un karjeras izglītības satura integrācija vienotā mācību programmā *Valsts aizsardzības mācība.* Gan militārās izglītības, gan pilsoniskās izglītības, gan karjeras izglītības saturam ir zinātniskais pamats, ko veido teorētisko un empīrisko pētījumu rezultāti, kas iegūti gan Latvijas, gan citvalstu zinātnieku pētnieciskās darbības rezultātā. *Valsts aizsardzības mācības* apguves procesā nozīmīga loma būs skolotājam, t.sk. viņa metodiskajam kompetentumam.

Valsts aizsardzības mācības satura apguves procesam būs izteikta audzinoša funkcija, jo viens no jaunā mācību priekšmeta īstenošanas uzdevumiem ir patriotiskā audzināšana.

Valsts aizsardzības mācības īstenošanā ir jābalstās arī uz ekoloģisko pieeju atbilstošas izglītības vides nodrošināšanā, pievēršot uzmanību iekštelpu un ārpustelpu vides kontekstiem.

Summary

To ensure that the society is ready for predictable and less predictable changes in the world geopolitical space, every individual of the society should be prepared for life and action in crisis situations. One of the most important things is the readiness of the whole society and each of its individuals to protect their country, and its independence. For the comprehensive protection of the state a legal basis has been developed in Latvia. Several normative documents emphasize that the participation of young people in national defence should be promoted by introducing a new subject *National defence training* in schools, as well as work with the *Youth*

Guard should be continued, which could be a new shift for national guards and professional soldiers in the National Armed Forces of the Republic of Latvia.

The formal content of education for *National defence training* has already been developed and is currently being experimentally tested in 69 Latvian educational institutions. This subject will be implemented in all Latvian schools starting from the academic year 2024/2025. Acquisition of this curriculum will be compulsory in Grades 10 and 11 of secondary education, as well as in the 2nd and 3rd year of vocational secondary education institutions. The new curriculum includes the following areas of study: *Health, Safety and Physical Activity,* and *Social and Civic Learning*.

The content of *National defence training* is distinctly multidimensional and important in the context of comprehensive national defence, promotion of the comprehensive development of young people and supporting their career development. The concept of comprehensive national defence has four dimensions: military, informational, psychological and civilian. All four of these basic dimensions have been taken into consideration when developing the content of *National defence training*. This has been ensured by integrating the content of military education, civic education and career education into the unified curriculum *National defence training*. The content of military education, civic education and career education has a scientific basis, formed by the results of theoretical and empirical research obtained from the research activities of both Latvian and foreign scientists. A significant role in the process of acquiring *National defence training* will be given to a teacher, incl. his methodological competence.

The process of mastering the content of *National defence training* will have a distinctly educational function, as one of the tasks of mastering the new subject is to provide patriotic education.

The implementation of *National defence training* shall also be based on an ecological approach when providing an appropriate educational environment, by paying attention to the contexts of indoor and outdoor environments.

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VALUES CREATED BY MUSIC EDUCATION IN GENERAL COMPREHENSIVE SCHOOLS

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Abstract. *This is the final part of research started in 2014 when development of the new National Curricula (NC) was initiated. The role of music education had to be mapped to prove its meaning as a traditional mandatory subject in the NC. According to the research program, different aspects, related to music education (content, integration of art subjects, informal and non-formal music activities, supportive learning environments, etc.), were analysed. The research of 2020 is summarising the values music education can provide for development of educated, responsible, ethical and creative people. The data collected from essays of school students and (future and in-service) music teachers (n=166), were analysed by qualitative methods. The values were classified by the following categories: social, cultural, cognitive, moral, aesthetic, personal. The research results can be used as arguments for developing music education syllabi in the NCs from kindergartens to gymnasia. The whole program of research is already being used for further development of music teacher education.*
Keywords: *identity building, music education in NC, music teacher training, values provided by music education.*

Introduction

Music education at schools has been a topic for discussion among different social groups at different times. Politicians, curriculum developers, school leaders, teachers and parents have often questioned the role of music education as a mandatory school subject and in the majority of countries it has become an optional field of studies after primary grades. Estonia has been and still is an exception where music has a very special meaning and value in society. Music in this country is often called *the second mother tongue* after Estonian, our native

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language, and our tradition of song festivals, uniting people of different ethnic origin into a nation and cohesive society is over 150 years old. In critical political periods musical activities were a part of resistance culture. It means that the role of music education has been recognized as something especially significant not only for public education, but also something that individual people residing in Estonia accept as a value. Accordingly, Estonia is the only country in the world where music education is provided throughout all the cycle of general education starting from kindergartens and ending up with the final grade of high schools. It is a cultural landmark that has to be preserved, not lost to the global educational reform movement.

However, activities for development new NCs have never stopped and are in full swing now. Following the global OECD and regional EU recommendations, new discussions are there, as other countries have also questioned the need to offer music education for everybody. There are basically two arguments: firstly – not everybody is interested in music, or talented in the field, and secondly: music education is very expensive. Understandably, music teacher education lasts considerably longer as future teachers usually start already at music schools for children and, after attending specialised music classes or studios, proceed at conservatory level, using all 5 years of academic studies (BA+MA) to become a professional music teacher. In addition, music instruments needed are costly. The third resource – time for rehearsals and choir exercises is also necessary. Young people in welfare societies have more diverse interests than music only.

As research in curriculum theory and practice has shown, the content of every school subject represents a summary of human experience in the respective field, which has a different functional potential in people's lives. The perennial question – what is really worth learning in the 21st century schools, needs an answer again. The developers of the new NC have asked to provide arguments for all school subjects, why mother tongue, math, or music should be included into school curricula, providing education for all the population.

A team of lecturers at Estonian Academy of Music and Theatre devised a plan to research the meaning and opportunities for music education at Estonian general comprehensive schools in 2014. It has developed into a small lab, led by professor Kristi Kiilu, and we have mapped different aspects of music education (content, integration of art subjects, informal and non-formal music activities, supportive learning environments, etc.), the results of which have also been presented at local and International conferences (Kiilu, Läänemets, & Kalamees-Ruubel, 2020; Läänemets, & Kalamees-Ruubel, 2015; Läänemets & Kalamees-Ruubel, 2016; Läänemets, Kalamees-Ruubel, Kiilu, & Sepp, 2018; Läänemets, Kalamees-Ruubel, Sepp, & Kiilu, 2019; Sepp, Läänemets, Kalamees-Ruubel, & Kiilu, 2017). This study is the final part of the program, summarising the 7-year Project. We are grateful to students, professional teachers, experts, parents and

opinion leaders, who have participated in the program during these years, carried out without any grants provided by the state.

The fundamental research problem for all these years has been to prove the value and meaning of music education for Estonian society, people and culture to be preserved and developed as a tradition and a meaningful school subject in the NC. The goal of the final part of the research of 2020 has been to collect arguments characterising the potential of music education for development of a personality and culture at large as perceived by students and teachers, which would justify its position in the NC.

Theoretical Background

Music has rather different positions in societies and cultures, including school cultures. Philosophical studies in the field of music education have specified different values. Thomas A. Regelski (2002) postulates intrinsic, extrinsic contributory and instrumental values. Heidi Westerlund (2008) provides sound arguments for justification for wider music education, by analyzing its social and individual meaning, especially considering Dewey's theory of experience. It is just the place to recall Dewey's famous idea of every culture having its collective individuality (Dewey, 2019, 335). Even China has taken steps to promote musical diversity in the curriculum (Wing-Wah Law & Wai-Chung Ho, 2009).

David J. Elliott has summarized the values of music education as follows: "Music making is a unique and major way of gaining self-growth, self-knowledge, and optimal experience, both now and in the future. And to the extent that these values are achieved in and through the development of musicianship, musicing is also a unique and major way of developing self-esteem. For these reasons, music making is something worth learning to do well by all students." (Elliot, 1995, p. 122).

The well-known quote by Carl Orff says: "Music begins inside human beings, and so must all instruction." This idea has been recognized wherever education has served humanistic purposes. (Orff, 1932, as cited in Salmon, 2012) However, music plays a considerably greater social and educational role. Hannele Niemi (2009, p. 28) says: "Every society needs for its existence specific moral and cultural values, which help to deal with social problems. A biologically born person, must be born into the culture of its society as well." Maia Muldma and Kristi Kiilu (2012) emphasize that values education is not merely about learning facts and formulae or maintaining discipline, but providing students with opportunities to learn making morally sound decisions, based on ethical principles and cultural awareness. Music education at schools is not meant for training

professional musicians but for showing students the way, how to become an educated and responsible human being.

Estonian example of music education deserves particular attention, "as music as a school subject fulfils objectives related to values and values education more widely in the society by supporting interpersonal relations, creating social cohesion and laying the foundation for creating and/or reviving and maintaining the notion of tradition." (Ross, 2007, p.174). Riho Päts, one of the founding fathers of Estonian music education considered joint singing, especially choir singing one of the greatest socio-emphatic skills people can acquire (Raudsepp, 2013).

Forest Hansen, analyzing and comparing school subjects stresses the objective character of sciences and math and highlights stronger value orientation of social and art studies, including music (Hansen, 1994). Wayne Bowman (2012) brings forward the role of musical activities and events for development of social skills and comprehension of cultural values. Joan Russell & Michalinos Zembylas (2007), when analyzing arts' integration in the curriculum, find music useful for making intensive schooldays more interesting and reducing stress.

Shirley Salmon (2012) highlights the social value of music education. Not all families can provide their children with access to musical activities, so the school can do it, maybe even discover young talents. More important is the early musical experience which can make a difference for a person's all future life. The same idea – the value of pre-school music education – has been analysed by Kristi Kiilu in her dissertation of 2010, providing a historical-critical overview of 1905–2008. Development of children's cognitive skills through music education is extremely important for their school readiness. Ilsija Nigmatullina (2007) stresses the potential of music to influence children and develop their aesthetic and ethical comprehension. She considers music an artistic reflection of life, greatly contributing to development of students social skills, and also recommends to start with music education earliest possible.

The well-known fact is that nothing happens at school without dedicated professional music teachers and there is ample research in this field (Sepp 2014a, 2014b). Virginia Richardson & Catherine Fallona (2001) stress the role of teachers as independently thinking creative professionals, able to explain values, create supportive learning environments. The same idea is expressed by Arvydas Girdzijauskas (2007), discussing development of students' moral culture by art subjects. It has to be admitted that professional music teachers at school are very special people – the *cultural envoys* of the national traditions and world culture, who are intellectuals and professionals in the best sense of the word, students consider to be examples to follow (Läänemets, 2013; Muldma, 2004).

Theoretical research has highlighted rather diverse value aspects and meaning of music education for society and the role of professional music

teachers for its implementation. Periodical monitoring, how students and society at large accept values offered by music education, is of utmost importance for development of NC for schools.

Aims, Research Questions, Methods

The aim of the current study was to collect and analyse material characterising music education at schools as perceived by the two most important groups – by the learners at schools with two subgroups (junior and high school students) and music teachers with two subgroups (in-service teachers and future music teachers at the academy), which can provide arguments from different viewpoints.

The research questions were:

1. How do different age-groups of students understand and evaluate music education at school?
2. What makes meaning for students in music lessons and extracurricular music activities?
3. What statements can be found and used for future development of a music syllabus in the NC?

The study of 2020 used a random sample of 166 respondents, representing the 4 afore-mentioned target groups: 1) students of final grades of compulsory schools (n=94), 2) students of high schools (n=30), 3) future music teachers, still studying at the academy (n=20) and 4) in-service teachers (n=22). The students were asked to write an essay about positive and valuable contributions learning music has made on their individual development. They were also asked to make some proposals for making music lessons more interesting and meaningful. Both groups of teachers were asked to write essays about values music education at schools can contribute to human development. Their essays were based on observations from school practice and personal experience.

The data were analyzed qualitatively by using content analysis (Cohen, Manion, & Morrison, 2007) with the conventional approach. Considering the possibilities of carrying out analysis (conventional, directed and summative) as suggested by Hsieh & Shannon (2005), the approach used in this research analysis is conventional as the coding categories are directly derived from the text data. The advantage of this approach allows to gain direct information from study participants without imposing preconceived categories or theoretical perspectives, which suits best considering the material collected.

The data have been analysed from two perspectives: 1) junior and high school students' perceptions of the meaning and value of music education as a school subject; 2) in-service and future music teachers' perceptions. The categories and framework of analysis are the same for all target groups, and they

are based on what the respondents have highlighted as being of value considering both the content of music education and the process of learning. The values participants ascribed to music education has been categorised as social, cultural, cognitive, and personal, including moral and aesthetic dimensions, and are supported by relevant quotes. Considering the full amount of statements, only the most characteristic ones are presented in this article. The quotes have been provided with abbreviations specifying the group the respondent belongs to: junior students – JR; high school students – HSS; future music teachers – FMT and in-service music teachers – ISMT. The number after the abbreviation refers to the concrete respondent. A review of results is presented by research questions.

Results and Discussion

The results of the research have been grouped by established qualitative categories and provided with some of the most eloquent examples. All the collected data can be used for further analyses. However, the majority of teachers, both in-service and still in their studies have taken a wider philosophical view about the role of music education. They generally share the opinion, according to which it has a special value for the country and social cohesion as music has been uniting people as a tradition at different times, from past to the present. An in-service music teacher has expressed it as follows: *Music is one of the seven ancient liberal arts upon which all European education has been built from those days up to the present.* (ISMT 17)

We will proceed with presentation and analysis of results according to the questions asked. The values of music education, different groups of students and teachers have highlighted and considered important, can be classified as follows.

The greatest potential of music education– the means for development of social skills

The data showed that all respondent groups perceive the greatest value and potential of music education for development of students' social skills. The respondents have highlighted singing together, which develops the sense of belonging and responsibility: *It is good to sing together, it develops communication skills and a sense of belonging* (JS 17); *When singing together we communicate with each other, it creates a feeling of safety and at the same time, you feel the enhanced quality and power when we perform together* (HSS 21).

When singing in choir development of social skills leads *to realisation of the value of collective achievement* (FMT 20) and *everybody understands that they all can contribute to collective achievement* (HSS 24).

Music education also has a potential for development of cooperative skills, which a junior student (87) characterized as follows: *Group work has developed our cooperation skills and it is important for the future.*

Development of the sense of responsibility was also highlighted: *It makes you feel responsible for doing your part and rehearsing all together allows you to experience success when we have performed well.* (HSS 13) When making music together either in group work or other joint activities, common values become understood and accepted, which a teacher (INMS 19) summarized in the following way: *A choir is like a big family, it supports cohesion, and it makes students aware of collective values.*

The factor initiating development of social skills in music education is experience and sharing of positive emotions: *Playing different instruments and making music together creates many positive emotions you can share with others.* (HSS 7)Positive emotions in turn help to reinforce and sustain motivation for learning music: *Group projects can increase your motivation for teamwork and lead to a better understanding of your peers.* (JS 76)

Comprehension of tolerance and cultural awareness of differences are also meaningful for respondents, when developing their social attitudes, for which music education can provide ample experience. *You don't have to like everything, but you learn to understand that people can have different preferences.* (JS 54).

This study has confirmed the importance of social values through music education as already found by Heidi Westerlund (2008), with special stress on music philosophy specified by Wayne Bowman (2012) as well as with pedagogical views expressed by Shirley Salmon (2012). At the same time the significance of joint singing and musicking stands out as it was already presented in the study by Inge Raudsepp (2013).

Development of cultural knowledge and widening students' horizons

Respondents of all groups confirmed great power of music education for acquisition of cultural knowledge. An answer given by a teacher clearly characterizes it: *Music helps to develop cultural awareness and mutual understanding* (ISMT 6). Students learn to comprehend the value of culture-related knowledge when studying development of music as a field of human experience and professional skills related to that. A junior student said: Music lesson is *the only place where it has been explained to me what classical music is* (JS 82). Activities related to learning to play some instrument (Orff-instruments, recorder, zither, guitar) in a class are considered useful and meaningful for broadening one's horizons, and so are the studies of music history: *You learn about outstanding composers and their works, and you even start to recognise some melodies* (JS 43). The history of music offers material about *many different styles of music* (HSS 18) and besides traditional classical music students are

introduced to different styles of contemporary music in all its richness and diversity.

When learning about music of other ethnic groups, students also start to better comprehend their own culture and deeper perceive its specific essence: *Music lessons have made me respect our Estonian culture and understand that culture is always related to people* (JS 90).The respondents stressed the value of good and diverse selection of the content of current Estonian music education, considering the repertoire, genres, music of different eras and ethnic groups; they considered it to be the basis for all their cultural knowledge in the field of music. *Listening to different types of music is really surprising and educational.* (HSS 28) *Music helps to develop cultural awareness and mutual understanding* (ISMT 3).

Earlier research (Kiilu and Muldma 2012) has also highlighted widening students' cultural horizons and their development as educated individuals as aims for music education. Similar to statements made by Jaan Ross (2007) the issue of social cohesion and reviving and maintaining notion of tradition was confirmed. The same can be said about Wayne Bowman's (2012) comprehension of cultural values.

Development of cognitive skills

The answers given in this category highlighted the general potential of music for development of cognitive skills, but also for enhancement of intellectual skills and emotional intelligence. *All music is a powerful tool for the development of emotional intelligence and cognitive development in general* (FMT 12). *New knowledge of music history and musical examples in the lessons can greatly contribute to the development of students' intellectual skills* (ISMT 4).

Acquisition of cognitive skills was observed as valuable for perception of the quality of the sound, comprehension of the mood of a piece of music, which contribute to development of musical memory, melody, rhythm and harmony. The respondents also brought to the foreground the emotional potential and character of a music lesson for creating supportive learning environments for development of cognitive skills. *Now we can recognise the sound of instruments in ensembles and orchestras when listening to music* (JS 53). *I think the emotional side of music lessons is really important – a beautiful piece of music, its melody or character* (HSS 30). Comprehension of students' individual potential to express oneself by means of music greatly increases their self-esteem and dignity, as music lessons provide them opportunities to learn about themselves. As a high school student (23) said: *Musical self-expression can be different, but there is always something to discover.* All groups of respondents stressed the value of becoming brave enough to express their emotions, as this opportunity is usually offered in music lessons only. *When students listen to different types of music, they learn to*

understand different emotions and they also learn to react and not be ashamed of showing their own emotions (FMT 14). Arvydas Girdzijauskas (2007) has stressed the importance of moral culture present in all art subjects, and the same was confirmed by this piece of research.

Development of personal skills, including moral and aesthetic dimensions

The respondents also confirmed that their personal presentation and performing skills have greatly improved through activities they have been involved in in music lessons: *I have learned how to behave when performing in public* (JS 13).They also highlighted the potential of music for regulation of mood and support motivation for learning, which can be used individually at the needed moment: *Nice songs related to different seasons improve your mood* (JS 12).…*it helps you to calm down when school days are really hard* (JS 36).

In the same category, comprehension of students' personal development through their peers' feedback became evident, which again shows the significance of the social aspect of all music education: *I have come to understand that it is normal for people to have different ways of expressing themselves* (JS 4). *I have learnt to assess my abilities more accurately* (JS 77).

Responding teachers indicated that it was possible to enhance students' dignity and self-confidence through music education, as they also learn to find arguments when having discussions on musical topics: *I think music lessons and our discussions have made them somehow more dignified. They have started to behave more politely* (ISMT 18). *They have started to talk about musical taste and discuss why they like a particular piece of music* (ISMT 6).

Making meaning for students in music lessons and extracurricular music activities

Considering the collected data, it can be claimed that meaning of any learning is usually made by a professional and dedicated teacher. The teacher of that kind is usually at the same time a good professional musician able to play several instruments and sing well in tune: *Our teacher is a good musician, he also plays in an orchestra and has two high-level choirs* (JS 56). In addition to pedagogical competences and professional music skills, the teacher also shows respect towards Estonian national music culture and makes students understand and accept these values. *Our teacher has led us to respect Estonian music and culture* (JS 86); *Our teacher does everything with passion* (JS 85).

Students of both age-groups are particularly pleased with creative, friendly and supportive atmosphere in music lessons, which supports acquisition of musical literacy, instrument playing skills, and knowledge about history of music. All field trips, related to concerts and other music events as well as other musical

extra-curricular activities are popular and meaningful for students. *Our music lessons are always enjoyable.* [The teacher] *creates a good and peaceful atmosphere* (JS 42). *...we can become educated "consumers" of music and attend concerts. One starts to understand that concert experiences are special, and can be beautiful* (JS 27).

Music education at school also guarantees the sustainability of the Song Celebrations' tradition. It sounds patriotic in a way, but *it is something we have and others don't. I think that if you respect your country and your culture, you also respect yourself* (JS 82).

School music has also helped to create music traditions in families. People always sing on birthdays and other occasions. If you have started to attend concerts and theatre performances, you tend not to stop. It becomes a habit, as it gives so much emotionally. It also has a moral dimension that sometimes makes you strive to be a better person. Also cultural and national studies analysed by Maia Muldma (2004) and Hannele Niemi's principle of cultural growth (2009) were confirmed.

Future development of a music syllabus in the NC

Suggestions from students also deserve attention for development of future music syllabi in NC. Junior students wanted to have more time for music lessons, more time for playing instruments, more concert films, more videos of famous performers, and more opportunities to perform and demonstrate what they have learned. They also wanted more group work and less theory, and complained about being really tired on some long schooldays with difficult subject lessons. In those cases, they simply have *too little energy for singing*.

High school students were very satisfied with music lessons as they *widen our horizons,* and *if you want to be considered an intelligent person, you should also know something about music*. They wanted more films with opera and concert performances to be shown in lessons or at extra-curricular events, preferably in the company of partner schools.

All the research questions of 2020 were answered, and the collected materials are still available for further analyses and discussions. The rich data collected by this research allow to draw conclusions within this sample, but they also indicate, what the trends in the Estonian society at large are.

Conclusion and Recommendations

The research results of 2020 as well as the previously collected and analysed data over the course of the seven-year project can be used for several purposes. First, it has demonstrated the multiple benefits of music education for learners of different ages from the standpoint of their social, intellectual, moral and emotional

development. Second, it has great potential for the development of social skills as well as societal cohesion. Third, music education has great value with regard to making national music traditions sustainable, as well as developing educated audiences for cultural events. Fourth, the project materials provide information for updating the syllabus for music education in the NC. Fifth, the research results would also facilitate the development of music-teacher-training curricula as well as supportive learning environments in Estonian general comprehensive schools.

The conclusion is: it is possible and important to provide opportunities for learning music to everybody. Music education can greatly contribute to development of any society and its people, if its aims, content and possibilities of implementation have been rationally planned, and if there are professional and dedicated music teachers available to put it into practice. Music makes meaning.

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CHALLENGES OF ONLINE TEACHING DURING THE COVID-19 PANDEMIC

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Abstract. *The teaching profession has always been complex and dynamic, but now the challenges are posed to a society as a whole by the COVID-19 pandemic. The purpose of the research was to determine teachers' perceptions of the challenges of conducting online teaching during the COVID-19 pandemic. 413 teachers from Croatia participated in the research. Respondents were distributed according to the level of education at which they work in three groups (primary school teachers - grades 1st to 4th, subject teachers – grades 5th to 8th of primary school, subject teachers - secondary school). According to the results of the research, teachers estimated that difficulties in online teaching generally occur occasionally. There were statistically significant differences in some of the items in the perception of the challenges in online teaching among teachers depending on the level of education at which they work. Still, in general, teachers at all three levels of education experienced approximately the same amount of challenges. More challenges in online teaching have been related to a higher level of burnout and correlated positively with higher numbers of students to teach. Age has been unrelated to challenges in online teaching. Since difficulties in conducting online teaching hinder the educational process, this research could serve as an indicator of problems and an initial step to solving them.*
Keywords: *burnout, JD-R model, online teaching, pandemic, teachers.*

Introduction

The vocation of a teacher is one of the most complex ones. Teachers are expected to participate in the implementation of educational reforms and the creation of the subject curriculum, continuously improve and prepare for teaching, keep up administrative records, and adapt teaching methods to new generations of students growing up in a time of highly developed technology (Chang, 2009; Jurčić, 2014; Miljković, Đuranović, & Vidić, 2019). Furthermore, teachers are expected to create a stimulating classroom environment that will enable the

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growth and development of each student (Durrant, 2010; Klasnić, Đuranović & Maras, 2018). The teacher should teach students to learn, think critically, solve problems, encourage their creativity, help them develop social and communication skills, train them for teamwork, and for humane and responsible behaviour (Jurčić, 2014). Continuous monitoring and evaluation of students is also one of the tasks of teachers. In addition to the above, the teacher should cooperate in their work with the principal and the professional service of the school. The teacher is expected to motivate parents to be actively involved in the life and work of the school and to build a partnership with them (Epstein, 2001; Ljubetić & Zadro, 2009; Maleš, 2015; Zrilić & Marin, 2019).

It is evident that teaching is challenging, but it became even more difficult in 2020 when an epidemic caused by the SARS-CoV-2 virus has spread all over the world. The pandemic caused considerable changes in everyday functioning, in almost every domain of peoples' lives. For the educational system this meant that the schools have closed and real classrooms were replaced by virtual ones. Distance education has a long history dating back to the 18th century. There are numerous definitions of distance learning in the literature, but it is most often defined as an approach to learning in which the teacher and the student are in different environments, i.e. they are physically distant and therefore communicate using technology (Batarelo Kokić, 2020; Guilar & Loring, 2008; Matijević, 2000). Distance learning is nothing new, but in the case when it completely, suddenly and unexpectedly replaces real classroom teaching, it is surely challenging for teachers. It requires teachers to use new and different methods and procedures, new forms of communication with students, new ways of monitoring, evaluating and assessing them and to use different (and unknown) tools.

Studies prove that teaching is a stressful profession (Kyriacou, 2001; Olčar, 2015) and prolonged stress can lead to burnout. Burnout is a state of exhaustion in which one is cynical about the value of one's occupation and doubtful of one's capacity to perform (Maslach & Jackson, 1986). Burnout syndrome is characterrized by high exhaustion and low engagement towards work (Demerouti, Bakker, Vardakou, & Kantas, 2003). According to job-demands and resources (J-DR) model (Schaufeli & Taris, 2014) the more challenges the person is exposed to at work, the higher is the possibility of burnout. Burnout can affect teachers' success in teaching, career decision-making, physical and mental health, and job satisfaction (Jepson & Forrest, 2006) so it is necessary to prevent it by lowering the exposure to stressors. The occurrence of stress is determined by factors such as workload, work role, working conditions, autonomy at work, cooperation with students and parents, support from colleagues and administration, and working and organizational conditions (Schaufeli & Taris, 2014). Working at different educational levels and with students of different age, can create various challenges for teachers. For example, research with teachers in England found that primary

school teachers were more exposed to negative parental behaviour and high school teachers were more exposed to poor student behaviour (Ravalier & Walsh, 2018). Therefore, one of the aims of this research was to find the differences in challenges that teachers are facing given the level of education at which they work.

The research of teachers' adjustment during the pandemic is lacking and still being made. Still, one very recent research on a sample of 1266 Croatian primary school teachers (Sablić, Klasnić & Škugor, 2020) showed that teachers state that they spend much more time preparing for online classes than when working with students in the classroom and that it is difficult to draw the line between working and free time. Furthermore, study showed that teaches invested a lot of time in researching and testing new technologies. They were more satisfied with the support of the school principal than with the support of the Ministry of Science and Education. As the times we live in are unprecedented, it is important to examine the teachers' adaptation so that we are able to give teachers adequate support if it is needed.

Therefore, this paper seeks to answer the following problems:

1. Determine the teachers' perception of the challenges of conducting online classes during the COVID-19 pandemic.
2. Examine the differences in the teachers' perception of the challenges of online teaching depending on the level at which they teach.
3. As these are unprecedented times and the first time online teaching is happening to this extent, the hypotheses for the first two problems were not proposed.
4. Examine the relationship between the challenges in online teaching and teacher burnout, age, years of service and the number of students.

Hypothesis 1 – The teachers who experience more challenges in online teaching will also experience higher exhaustion and lower engagement.

Hypothesis 2 – More challenges in online teaching will be experienced by older teachers and teachers with more students.

Methodology

Participants

Teachers from all parts of Croatia (N=413) participated in the research. The participants were mostly female (94%). The mean age of participants was 43.91 years (*SD* = 9.46; range = 24 – 65 years) and on the average, they had been teaching for around 18 years (*M* = 17.89; *SD* = 9.96; range = 1 – 43 years). On the average, they had around 104 students (SD = 90.45), with a range from 3 to 680 students. For the purpose of this research the participants were divided in three groups according to the level of education at which they worked as it is presented in Table 1.

Table 1 ***Distribution of Respondents According to Workplace***

Teachers according to the level of education at which they work	N	Percent
1. Lower grades primary school teachers (LGPST – grades 1st to 4th) – one class teacher for all subjects	121	29.3%
2. Higher grades primary school teachers (HGPST – grades 5th to 8th) – different subject teacher for each subject	186	45%
3. Secondary school teachers (SST – grades 9th to 12th) – different subject teacher for each subject	106	25.7%
Total	413	100%

Procedure

The research was conducted in August 2020. Online surveys were sent to teachers in the Republic of Croatia via the Facebook social network. The purpose of the research was explained at the beginning of the questionnaire. By filling in the survey the participants agreed to be a part of the research. It took the respondents an average of 15 minutes to complete the questionnaire. The participants were anonymous.

Instruments

For the purpose of the research, a questionnaire for measuring challenges during online teaching was constructed based on previous literature about the stress in teaching (Kyriacou, 2001; Schaufeli & Taris, 2014), the relevant literature on online teaching during the COVID-19 pandemic (e.g. Rasmitadila et al., 2020; Sablić et al., 2020; Sokal, Eblie Trudel & Babb, 2020) as well as authors' interviews with teachers during June 2020. The questionnaire consisted of 18 statements which participants had to asses if and to which extent they represented a challenge for them during online teaching. A five-point Likert-type scale was used to assess teachers' perceptions ("*1* –"Not at all difficulty for me" to "*5* – A great difficulty for me"). Crombach α for a scale was α = .88.

Oldenburg Burnout Inventory (Demerouti et al., 2003) measured the burnout on a two dimensional scale. The scale included 16 items; half of them worded positively, half worded negatively. Items were assessed on a four point Lickert type scale ("1 - Strongly agree"to "4 - Strongly disagree"). In our study, after four items were removed from the analysis, the PCA factor analysis loaded two factors: engagement (e.g. "I always find new and interesting aspects in my work", α = .75) and exhaustion (e.g. "After my work, I usually feel worn out and weary.", α = .86).

Results and Discussion

In table 2 teachers' perceptions of the source of difficulties in conducting online teaching on 18 items according to the level of education at which the

teachers work are presented. The mean value for all items for all three groups of teachers was *M* = 2.95 (*SD* = 1.28). Furthermore, the means for all items, for all three groups of teachers, were estimated between 2.06 and 4.04. Since the higher value represented a higher assessment of the difficulty, it seems that difficulties existed, but that they mostly occurred occasionally. Therefore, it can be concluded that teachers competently and successfully overcame the initial challenges.

Table 2 ***Descriptive Statistics, One-way ANOVA and Scheffe Tests (N=413)***

		(grades 1st – 4th)	(grades 5th– 8th)	Secondary sch. (grades 9th -12th)			
	M (SD)	M (SD)	M (SD)	M (SD)	F (2,401)	p	Scheffe
Working conditions at home.	2.56 (1.21)	2.66 (1.14)	2.45 (1.23)	2.64 (1.22)			
Technical difficulties.	2.54 (1.15)	2.78 (1.21)	2.46 (1.16)	2.44 (1.01)			
Lack of digital competencies.	2.24 (1.15)	2.60 (1.23)	2.10 (1.07)	2.06 (1.10)	**8.92**	**.00**	**1>2,3**
Preparation of activities.	2.75 (1.19)	2.63 (1.20)	2.77 (1.13)	2.85 (1.26)	1.01	.37	
Correcting tasks.	3.38 (1.29)	2.97 (1.31)	3.49 (1.26)	3.65 (1.23)	**9.29**	**.00**	**1<2,3**
Monitoring students' progress.	3.38 (1.32)	3.14 (1.38)	3.43 (1.32)	3.54 (1.23)	2.96	.05	
Communication and interaction with students.	2.97 (1.33)	2.80 (1.44)	3.06 (1.29)	2.99 (1.24)	1.39	.25	
Lack of feedback from students	3.53 (1.24)	3.32 (1.38)	3.59 (1.16)	3.69 (1.20)	2.69	.07	
Cheating by students.	3.54 (1.28)	3.05 (1.36)	3.73 (1.17)	3.83 (1.19)	**14.19**	**.00**	**1<2,3**
Lack of support from school management.	2.58 (1.34)	2.58 (1.27)	2.60 (1.39)	2.59 (1.33)	0.00	.99	
Lack of support from the Ministry of Education.	3.37 (1.32)	3.35 (1.28)	3.37 (1.36)	3.37 (1.31)	0.01	.99	
School leadership pressures.	2.20 (1.32)	2.15 (1.17)	2.28 (1.39)	2.15 (1.35)	0.44	.64	
Lack of parental support.	2.50 (1.94)	2.24 (1.15)	2.66 (1.19)	2.57 (1.23)	**4.64**	**.01**	**1<2**
Parental interference in my work.	2.39 (1.31)	2.31 (1.21)	2.57 (1.39)	2.14 (1.24)	**3.85**	**.02**	**2>3**

Lack of social interaction with colleagues.	3.07 (1.30)	3.09 (1.29)	3.20 (1.35)	2.83 (1.25)	2.78	.06	
A large number of students I teach.	3.02 (1.49)	2.36 (1.35)	3.22 (1.45)	3.36 (1.46)	**17.65**	**.00**	**1<2,3**
Difficulties in organizing working hours.	3.22 (1.42)	3.05 (1.39)	3.25 (1.41)	3.33 (1.44)	1.22	.30	
Lack of recognition of teacher work / effort.	3.79 (1.27)	3.51 (1.33)	3.82 (1.32)	4.04 (1.06)	**5.04**	**.01**	**1<3**
Total	2.95 (1.28)	2.81 (0.74)	3.00 (0.74)	3.00 (0.70)	2.94	.05	
Burnout – Engagement	3.11 (0.52)	3.21 (0.46)	3.07 (0.55)	3.06 (0.53)	**3.16**	**.04**	**1>2,3**
Burnout – Exhaustion	2.89 (0.70)	2.88 (0.71)	2.90 (0.70)	2.90 (0.73)	0.03	.97	

The last item, "*Lack of recognition of teacher work/ effort*" (*M* = 3.79; *SD* = 1.27), has the highest mean for all three categories of respondents. That indicates that teachers, no matter at which level of education they work, feel not recognized and appreciated for their engagement. This finding is consistent with previous studies which also state that one of the sources of stress at work is lack of recognition (Brun & Dugas, 2008; Maphalala, 2014). Other considerable stressors were: correcting tasks (*M* = 3.38; *SD* = 1.29), monitoring students' progress (*M* = 3.38; *SD* = 1.32), lack of feedback from students (*M* = 3.53; *SD* = 1.24), lack of support from the Ministry of Education (*M* = 3.37; *SD* = 1.32), lack of social interaction with colleagues (*M* = 3.07; *SD* = 1.30), a large number of students to teach (*M* = 3.02; *SD* = 1.49) and difficulties in organizing working hours (*M* = 3.22; *SD* = 1.27). Item "*School leadership pressures (principal and pedagogical support staff)*" has the lowest general mean *(M = 2.20; SD = 1.32),* so it can be concluded that school leadership was supportive towards teachers during distance learning.

Finally, ANOVA showed that in general all three groups of teachers show the same perceived amount of challenges due to online teaching (*F* = 2.94; *p* = 0.05). Previous studies showed that stress and burnout are related to working conditions (Ravalier & Walsh, 2018; Schaufeli & Taris, 2014), nevertheless, the small differences in working conditions with students at different levels of education and with students of different age at the end obviously sum up to the same level of challenges.

The one-way ANOVA and Scheffe tests were used to find if there are statistically significant differences in the perception of the source of difficulties among teachers depending on the level of education at which they work. Lower grades primary school teachers (LGPST) reported having more difficulties with

technical problems (F = 3.43; p = 0.03) and lack of digital competencies (F = 8.92; p< 0.01) than higher grades primary school teachers (HGPST) and secondary school teachers (SST). LGPST work with ages 7 to 10/11 so the biggest challenge for them was that students were not being accustomed to working with digital technology. On the other hand, subject teachers, both working in primary (HGPST) and secondary school (SST), reported having more problems with correcting tasks (F = 9.29; p< 0.01), cheating by students (F = 14.19; p< 0.01), and having a large number of students they teach (F = 17.65; p< 0.01) than class teachers - LGPST. All these results are expected. Cheating is more prevalent as students are older and stakes are higher (Davis, Drinan, & Gallant, 2009) and subject teachers teach one subject in many classes so they have many students and therefore more students' assignments to correct and mark.

There was a statistically significant difference in the perception of parental support (F = 4.64; p< 0.01) between teachers of lower grades and higher grades of primary school. The transition to the 5th grade, when each subject is taught by another subject teacher, can be quite a problem for the students, and additional parental involvement is needed to make the transition as easy as possible. Unfortunately, some parents feel that their children are old enough to overcome these difficulties on their own and do not provide them with sufficient support which is clearly showed in these results. On the other side, HGPST in comparison to SST struggled with parental interference in their work (F = 3.85; p = 0.02). Parents of students in higher grades of primary school are worried whether the marks of their children will be good enough to ensure them opportunity to enrol in the preferred secondary school so they can try to pressure teachers to give better marks to their children. SST perceived more than LGPST that there was a lack of recognition for their work. In higher grades parents are more stressed about their children's marks so they may have more strained relationship with teachers, which can be perceived by teachers as lack of recognition for their effort.

According to the J-DR model (Schaufeli, & Taris, 2014) it was expected that the more challenges teachers experience in the online learning, the more burnt out they will be, which is operationalized as greater exhaustion and lower engagement. As it can be seen in Table 3, this hypothesis was confirmed. A teaching is a stressful profession (Kyriacou, 2001), especially during pandemic, when conditions for teaching are constantly changing. However, from Table 2 it can be seen that teachers were doing relatively well. Their level of exhaustion was not too high (M = 2.89; SD = 0.70) and their level of engagement was somewhat higher (M = 3.11; SD = 0.52). These findings are in line with previous findings which show that, although teaching is a stressful profession, the teachers are still resilient to stress and engaged in their work (Brkić & Rijavec, 2011; Olčar, 2015).

Table 3 ***Descriptives and Correlation Table***

	Engagement	Exhaustion	Age	Years working	No. of students
Challenges in online learning	-.19**	.47**	-.07	-.02	.12*
Engagement		-.28**	-.05	-.02	-.09
Exhaustion			.11*	.11*	.10*
Age				.89**	-.02
Years working					-.09
Mean (SD)	3.11 (0.52)	2.89 (0.7)	43.91 (9.46)	17.89 (9.96)	104 (90.45)
Range	1 – 4	1 – 4	24 – 65	1 – 43	3 – 680

Note. **p<0.01; *p<0.05

It was also shown that perception of challenges in online learning was not related to teachers' age and length of service, only to the number of students ($r = .124$; $p < .05$). Obviously Croatian teachers were well prepared for teaching online, but still the realistic challenges like the high number of students were present, probably because of higher workload that comes with higher numbers of students to teach. Pre-training in the use of ICT has shown to be an important determinant of perceived competence in the use of ICT (Krajnc, Huskić, Kokol & Košir, 2020). As teachers less competent in the use of ICT showed greater levels of stress related to online teaching (Krajnc et al., 2020), it can be concluded that in Croatia younger and older teachers are relatively equally well prepared for online teaching. It is also possible that younger teachers are better skilled at ICT and older teachers have better skills needed for teaching itself, which in the end puts all teachers in a relatively similar position.

Conclusion

Online education is a specific way of conducting teaching and learning. In the pandemic conditions, it has become an unavoidable part of the teachers' job. In this study, teachers estimated that difficulties during online teaching generally occur occasionally. This is encouraging information given the large amount of changes in the organization of teaching that have occurred in a very short time. Depending on the level of education that the teachers are working at, there were small differences in the perception of difficulties. Still, on average all three groups of teachers showed the same perceived amount of challenges due to online teaching, regardless of the educational level that they teach. The biggest challenge for all groups of teachers was lack of recognition of teachers' work/ effort, which

is, in our opinion, easily avoidable even without imposing substantial financial burden on schools' or states' budget.

This study has shown an average level of teachers' burnout. Burnout levels correlated positively with the number of challenges and higher number of students and it was not related to the teachers' age. We can conclude that Croatian teachers have showed to cope well with the challenges of online teaching regardless of their age.

Since the difficulties related to conducting online teaching hinder the educational process, this research could serve as an indicator of problems and an initial step to solving them in order to strengthen the teacher and student competencies.

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TEACHERS' INFLUENCE ON STUDENTS IN THEIR LIFELONG DEVELOPMENT

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Abstract. *The impact teachers have on their students is imprinted to a much extent in each person's life. Every child, teenager or adult speaks of present or previous experiences related to teachers who left their marks on their development in life. Teachers are important people in children's life providing them with education, discipline, motivation and role-models. The guiding role of teachers is not limited to school classroom and school disciplines, but it surpasses didactic activities and extends into personal life. Truth is that children feel differently the influence exerted by teachers due to their sensitivity, personalities, life experiences. The identification of the aspects that influence students to a greater or less extent is important as it helps to shape a profile of an authentic teacher as s/he is perceived by students. Such a perspective may help teachers become aware of their role in students' lives and as a consequence they should make adjustments in order to become better partners for their students.*

The present paper intends to study teachers' impact on students in their life lifelong development. The aspects taken into consideration, according to specific literature and experiences in classrooms, were: school performances, behavioural patterns, adjustment to school requirements, motivation for learning, professional choices for future careers, outlooks on life. The research methods were the investigation based on questionnaire, the conversation and the systematic observation. The participants in the research were 200 students from two school levels: high school (students 15-19 years old) and faculty (students 19-30 years old). The data collected were processed using the SPSS analysis. The results of the research could be used to increase teachers' awareness on their impact on students in their lifelong development.

Keywords: *Lifelong development, Student's perception of the teacher, Teachers' influence on students.*

Introduction

Generally speaking, lifelong development refers to one's development with the purpose of achieving personal fulfilment. As part of society, people need to develop and grow through learning, experiencing, socialization etc. Personal fulfilment and development throughout life refers to personal, emotional,

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professional, social growth. In short, lifelong development means improving one's own quality of life and sense of self-worth (Duclos, 2018).

Lifelong development begins inside a formal education institution. That is why, teacher-student relationship is important and may have a major influence on student development. The student does not only acquire knowledge and skills from their teachers, but also values, interaction skills, perspectives on the world. As such teachers' influence on students surpasses the didactic span and prolongs into their personal and social life. For this reason, teachers have to carefully exert their attributes on the individuals forming the classroom group and on the group as a whole. They must make decisions, organize, guide, council, appreciate, they must be models of positive moral and civic behaviour. The goal is to form prosocial behaviours, to direct interpersonal relationships within the group in order to ensure a positive psychosocial climate needed for the harmonious development of students' personalities.

The influence teachers have on their students is obvious if we take into considerations the emotions teachers stir in children. On the one hand, students may foster much admiration, respect and even affection for their teacher; on the other hand, students may harbour negative feelings for their teacher. The teacher influences the student directly through their active presence transposed into attitude, verbal message, gestures, mimics, affective state and personal example. Indirectly, the teacher influences their students through other educational factors such as family, teaching council, parents' committee, students' collective etc. Teachers' influence is determining on aspects such as: students' self-esteem, students' motivation for learning, students' school performances, students' behavioural patterns, students' adjustment to school requirements, students' professional choice for future careers, outlook on life.

Literature Review

For a harmonious development each child has to develop a positive feeling of one's identity as this is the inner mirror through which each individual sees and identifies oneself (Vrăsmaș, 2014). Teachers play an important role in shaping student's self-esteem. More accurately, they can encourage students and help them create powerful self-esteem, or, on the contrary, they can often criticise them, thus affecting their self-esteem. A student with low self-esteem comes across real problems in his school activity, as well as in the future since a person with low self-esteem does not have a satisfactory life. On the other hand, a supportive teacher who encourages and avoids personalised criticism, who creates trustworthy and cooperative atmosphere can sustain the formation of high self-esteem (Mălureanu & Enachi-Vasluianu, 2019). A child with high self-esteem manifests among other characteristics certitude, trust in one's skills, the

ability to perceive and accept the differences from the others, motivation for learning, perseverance in front of difficulties (Duclos, 2018).

Teachers can engage student's interest for learning, or, on the contrary, they can make it seem difficult and dull. It all depends on the way the teacher interacts with the students and the way they display the information. Teachers who can explain the information so that the student can easily understand it, who do not assess relying on memorisation only can stimulate the child to manifest interest in learning. If the teacher-student relationship is positive, than the motivation, be it intrinsic or extrinsic, is enhanced. The targeted goals are considered as having personal value, competence motivation and autonomous motivation. At the same time, teacher's positive attitude and enthusiasm with teaching and learning has students develop positive affect and enthusiasm for learning and academic achievement (Wood, 2017). As such, students' school aspirations and performances are mainly influenced by the teacher, the way s/he knows to support them, to appreciate their results and constructively assess them (Davis, 2013), without affecting their self-esteem.

Teachers influence students' school performances through their teaching and assessing. Some research showed that teachers' expectations of their students also directly influence their academic performances (Neculau & Boncu, 1999). That is, if the teacher has positive expectations from a student s/he perceives as intelligent and diligent s/he will pay special attention to that student by giving him more explanations, encouraging him, overlooking his mistakes etc. As a consequence, the student feels encouraged to raise to teacher's expectations and puts a lot more effort in his work. By contrast, when the teacher has negative expectations from a student labelled as troublesome, that student will not be stimulated to have good school results, he will feel blocked by criticism and lack of self-confidence.

Teachers are models of behavioural patterns for students. Irrespective of their will, teachers act as models in front of their students influencing their thinking and their behaviour (Pânișoară, 2009). Most of the times, students assume teacher's behavioural elements. They can adopt teacher's facial expressions, gestures and way of communication. As teacher's behavioural patterns are copied to a great extent, then s/he should display permanent self-control, self-imposed equilibrium. The emotional behaviour of teachers influences students' behaviour directly through contamination and indirectly through the affective climate imposed in the classroom. This behaviour can stimulate invigorating affective states or can diminish students' work capacity and block the communication flow between the teacher and the student.

Positive psychosocial development is important for students as it can lead to good outcomes such as academic achievement, good social functioning, well-being, reduced dropouts rates, boredom and disengagement with learning

activities (Wood, 2017). The teacher influences student's adjustment to school environment. By developing and maintaining a good relationship with the student, this one copes with school rules and tasks, is motivated to take active part in the school activities, to develop good relationships with their peers and other teachers, feels integrated in the school environment. As a rule, teacher's availability for cooperation influences voluntary involvement of the student in his own formation. The student who has a good relationship with the teacher is motivated to learn, to accept advice and criticism more easily. By contrast, negative teacher-student relationship deprives the student of satisfaction and motivation and makes him lose respect for school environment.

Teachers can influence student's professional aspirations. Many times, teachers grasp a special potential of the student and guide him/her in accordance to a certain professional path, inspiring them with their own passion for study, for performance. Some teachers who are loved and admired can become professional models for later. Many adults admit that they chose their careers according to their favourite teacher's specialization. Some became teachers themselves following the model of the teacher admired.

Teachers' influence on students does not limit to education and school performances. There are times when children would rather solicit teacher's help or advice especially with problems at home or issues related to their peers (since teachers are more familiar with school environment). Additionally, at all times, teachers constitute a source of influence that can modify certain percepts or trigger others. Ideally, students should copy from the teachers they interact with an optimist perspective on life, a courageous approach to challenges, perseverance in touching goals. Irrespective of the negative or positive influence, the role of the teacher is prominent and its correct exercise depends on his/her personality, the educational situations they come across with and deal with.

Methodology of Research

Objectives - The research objectives are a) to identify the aspects that influence students' lifelong development in their relationship with teachers, b) to realize descriptive analyses of the selected elements in order to determine a hierarchy for the students from high school and faculty.

Participants - The sample used for research was made of 100 students from high schools, from urban and rural areas (aged 16 to 19), and 100 students from one faculty with pedagogical majoring (aged 19 to 35) from Vrancea County, Romania. The participation in the research was done based on volunteering. The sample needed to be old enough to have gone through various experiences of

life and to be able to treat as objectively as possible matters of teachers' influence in their personal development.

Research instrument - The research was accomplished based on a questionnaire addressed to the sample described above. The questionnaire was made of seven items: shaping self-esteem, school performances, behavioural patterns, adjustment to school requirements, motivation for learning, professional choices for future careers and outlooks on life. The answers were variants of a five-step scale: (1) to a very low extent, (2) to a low extent, (3) to an average extent, (4) to a large extent, (5) to a very large extent. Students' choices showed each item's relevance for the teacher's influence on their lifelong development. Mention must be made that our research took into account teacher's positive influences on the students. The teacher under the lens is the supportive teacher who is responsive to students' needs and promotes good social outcomes.

Results and Discussion

The SPSS software was used for the descriptive analyses, the t-test for the independent samples.

Table 1 ***Means and Standard Deviation of Indicators of Teachers' Influence on Students in Their Lifelong Development***

Items o of teachers' influence on students in their lifelong development	High school Mean (std. dev.)	Faculty Mean (std. dev.)
Shaping self-esteem	4.84 (0.438)	4.78 (0.418)
Outlooks on life	4.56 (0.614)	4.20 (0.670)
Adjustment to school requirements	4.46 (0.563)	4.10 (0.931)
Behavioural patterns	4.36 (0.874)	4.42 (0.612)
Professional choices for future careers	4.24 (0.960)	4.16 (0.940)
Motivation for learning	4.18 (0.661)	4.74 (0.702)
School performance	4.02 (1.185)	4.76 (0.262)

Source: Authors

Using the means in Table 1 we established a hierarchy of the indicators for the teacher's influences on students in their lifelong development for high school and faculty levels. As such, the indicator ranking 1st was viewed as most influential on students, whereas the item in the 7th rank was perceived as less important for the same purpose.

Table 2 ***Descriptive of Hierarchy of Indicators of Teachers' Influence on Students in Their Lifelong Development***

Rank	High school	Faculty
1.	Shaping self-esteem	Shaping self-esteem
2.	Outlooks on life	School performance
3.	Adjustment to school requirements	Motivation for learning
4.	Behavioural patterns	Behavioural patterns
5.	Professional choices for future careers	Outlooks on life
6.	Motivation for learning	Professional choices for future careers
7.	School performance	Adjustment to school requirements

Source: Authors

As Table 1 shows, the highest mean in high school as well as in college was recorded for self-esteem, with the value of m = 4.84 in high school and m = 4.78 in faculty. The answers of the two samples clearly showed that the teacher's influence on students' self-esteem is very important. Irrespective of the age, being encouraged, having positive feedback on learning or behavioural efforts helps students develop self-confidence. This influences students' formation of positive self-esteem. The items ranking second and third for high school are outlooks on life (m = 4.56) and adjustment to school requirements (m = 4.46). High school students are easily influenced. An optimist outlook on life can help them believe in their future and in what it has in store for them if they get actively involved. In regard to adjustment to school environment, students need to feel accepted and valued within the group, that is why a teacher-student relationship based on mutual trust and collaboration will help the student to adjust more easily to school requirements and be more open with the others. The second and the third ranks for faculty are for school performance (m = 4.76) and motivation for learning (m = 4.74).

The lowest mean in high school is for school performances (m = 4.02), whereas for faculty the lowest mean is for adjustment to school requirements (m = 4.10). With the other items, the hierarchic order varies as shown in Table 2.

The two items ranking last in high school hierarchy are motivation for learning and school performances which are viewed in a dependent relationship. They show that teacher's influence on both motivations for learning (m = 4.18) and school performances (m = 4.02) decrease in importance for students. This is possible because in high school there is a decrease in motivation for learning during the first years, a lower involvement of students in school activities due to the fact that, in general, the results of learning are not considered so important by students. School results during high school years are of little importance for the

enrolment in faculty or future career. Students consider the results of the last year of high school to be important when preparing for the final exams. Their baccalaureate (final high school exam) mean is important for college admission, being a condition of admission or even percentage of the mean for admission. By contrast, school performances and motivation for learning ranked second and third in the faculty hierarchy with m = 4.76 for the former and m = 4.74 for the latter. This is due to the fact that the grades obtained during faculty are important for scholarship grants and the annual ranking which allow students to preserve or lose their tax free enrolment.

The lowest mean registered for faculty is for adjustment to school requirements (m = 4.10). This is motivated by students being more independent, as the model offered by influential teachers is no longer so important in relation to their own value judgments. With the other items, the hierarchic order varies as shown in Table 2.

We applied the T test for the independent groups in order to determine the differences between opinions of the students from high school and faculty regarding the teachers influence on students' lifelong development. The significance level was set to 0.05. Starting from the significant differences from a statistical point of view among the appreciations of the students we can state the relevance of the items which determine the degree of influence for each school level.

Analysing the appreciations of the students we notice significant differences for four items (outlooks on life, adjustment to school requirements, motivation for learning and school performance, $p<0.05$). For the first two items the means are higher for high-school than for faculty, which shows that the students in high school appreciate outlooks on life and adjustment to school environment as having greater relevance for students' lifelong development. For the other two items the means are higher for faculty than for high school as motivation for learning and school performances were considered of greater relevance for the former school level.

The data analysis shows that there are statistically insignificant differences between three items: shaping self-esteem, professional choice for the future, behavioural patterns. This demonstrates convergence of appreciations between the investigated groups.

Conclusions

The paper focussed on the study of teacher's influence on students in their lifelong development. Teacher's influence on students is important as it affects students not only during school span, irrespective of the level, but also during

their lifelong development. As such, these influences can develop into a positive model of action in students' personal, social and professional life.

Good knowledge of the impact of their own actions, of the interaction with the students will allow teachers to better conform to students' expectations, which will increase the chances of success of teacher-student interaction. In order for the teacher to construct efficient didactic activities and profound relationships with the students, s/he needs to know the way s/he may influence their students positively.

Of equal importance with teacher's influence on students is his/her being influenced by the students. An efficient didactic process means constant adjustment of teacher's actions to student's personality and to the characteristics of the group s/he interacts with. As such, the teacher adjusts his/her behaviour, consults with his students, thus getting feedback regarding his/her influence exerted on the students. This research could be continued with the study of the aspects which influence teachers and what they take from their relationships with their students. On the other hand, we consider that one of the limitations of the study is the variety of participants. If we had included alumni in the sample of research, maybe the data of the study would have been more varied and more objective as the alumni had grown detached from the school institutions.

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THE ROLE OF LEADERSHIP IN TEACHERS' SELF-EFFICACY

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Abstract. *The self-efficacy of teachers is an important aspect that must be considered in evaluating educational systems. It is affected by several factors such as teachers' professional development, motivation, and satisfaction. These factors are in turn, affected by leadership roles in the educational system. This paper aimed to determine the correlation between the role of leadership and teachers' self-efficacy through these factors. A qualitative approach was used where secondary analysis of written articles was conducted. The demographic of the sample in each journal article studied included primary, secondary, and tertiary schoolteachers in Europe. Results show that the factors under study are affected by the leadership roles of principals, school administrators, and teachers. Leadership roles improve teachers' professional development, boost motivation, and increase job satisfaction which as a result, affects the self-efficacy of teachers. Thus, the leadership roles of principals, school administrators, and teachers, particularly a transformational type of leadership in contrast with a transactional form of leadership, affect the self-efficacy of teachers positively and ultimately their performance in their classes.*
Keywords: *leadership roles, motivation, professional development, satisfaction, self-efficacy, teaching.*

Introduction

Self-efficacy is an individual's confidence in his or her ability to perform or deal with situations to arrive at a specific goal. It is a concept that was originally initiated by psychologist Albert Bandura (1995), where he gave thought to have the belief in the capacity to exercise control over one's personal motivation, behavior, and social environment. Bandura (1995) further stated that individuals carrying out their activities are not solely driven by internal forces but are also motivated by outside factors through a chain of cognitive activities.

In the field of education, the teachers have trust in their ability to teach well. The existence of self-efficacy in teachers shows their psychological maturity thus, their belief in effectively handling tasks, obligations, and challenges play a vital role in coming up with successful academic outcomes and a better working environment. As teachers, self-efficacy is an important factor that will help ensure an improved students' learning experience. A series of research have shown that

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it is an important variable because it affects students' motivation and learning (Ma'mun & Suryana, 2019).

The results of previous studies indicate that teaching self-efficacy is influenced by external factors such as professional development, motivation, andsatisfaction in teaching.

The research aims to show the role of leadership in the self-efficacy of teachers by determining factors affecting teachers' self-efficacy and how these factors are affected by school leadership in a qualitative analysis of related literature.

Literature Review

Teachers' self-efficacy is acknowledged to play a major part in school psychology research as shown by the effects it has on instructional practices and students' academic performance (Klassen & Tze, 2014). It was shown that teachers with high levels of self-efficacy have also higher levels of job satisfaction. They experienced lesser job-related stress making them better equipped in handling misconducts and other related problems of students (Caprara et al., 2003). With all of these in mind, studying and understanding the beginnings of self- efficacy will make significant and crucial benefits in working and building for teachers' welfare, school effectiveness, and advancement.

The Role of Professional Development in Teachers' Self-Efficacy

A study by Yoo (2016) on the effect of teachers' professional development effort has shown that it has a beneficial impact on teachers' efficacy. Moreover, the descriptive self-analysis of teacher efficacy has revealed that acquiring new knowledge such as strength training programs was as a whole positively related to teacher efficacy. However, one finding in the study noted that participants, after having gained further knowledge or comprehension about contents and educational strategies, realized that they either overrated themselves with overconfidence or underrated themselves and having a feeling of skepticism. Consistent with Bandura's perception, the findings in this research revealed an overall positive teacher efficacy but there is a need for supplementary training that is created to assist in the teaching experience. An individual teacher's length of teaching experience does not affect the teacher's efficacy rather, it is the result of an ongoing professional development experience that increased the teacher's efficacy.

The Role of Teacher Motivation in Teachers' Self-Efficacy

The idea of self-efficacy centers on the teachers' confidence in doing their tasks, obligations, and facing challenges effectively. This belief is resolved by several factors such as personality traits (Caprara et al., 2006). It was analyzed how a broad range of personal values such as openness and adaptability to change, the capacity to transcend oneself, and self-enhancement connected to self-efficacy, and if such relationship is checked by controlled or autonomous motivations for teaching. Control-motivated teachers conduct teaching activities for external rewards like a school official's approval or acceptance or to keep away from any guilt feelings, whereas autonomously motivated teachers carry out teaching activities because of the inherent value derived from it (Roth et al., 2007). Teachers' self-efficacy plays an important part in academic outcomes such as students' achievement and motivation. Results of the study showed that the relationships of openness to change and self-efficacy on one side and self- transcendence and self-efficacy on the other changes depending on the motivations of the teachers. The relations were stronger when teachers were aware that there was lesser external pressure and felt to be more resolved and motivated to teach which resulted in better teaching outcomes (Barni et al., 2019).

The Role of Teacher Satisfaction in Teachers' Self-Efficacy

Job satisfaction is a salient aspect in teachers' efficacy as it will increase themotivation of teachers to attain the school's objectives (Obineli, 2013). The factors of job satisfaction have been classified into two primary aspects which are extrinsic and intrinsic. It was found out that teachers with an immense feeling of self-efficacy are much unrestricted to unique thoughts and creations, manifest more dedication to educating thus improving the performance of students (Tsigilis et al., 2010). In the study investigating the relation between job satisfaction and self-efficacy by employees like teachers, several sources and instruments like theTeachers' Sense of Efficacy Scale (TSES) were used. It was found out that educational institutions must focus on enhancing the work experience and self-efficacy of teachers as well as other contributory variables that encourage teacher's job satisfaction and individual efficacy. Furthermore, various aspects ofteachers' job satisfaction are connected and have made a beneficial impact on several conditions affecting the efficacy of teachers (Gkolia et al., 2014).

From the three articles reviewed, they showed that the self-efficacy of teachers is affected by factors such as their professional development, motivation, and self-satisfaction.

Methodology Research Design

Qualitative approach using secondary analyses of written articles was employed to conduct the analysis and interpretation of data. Taylor, et al. (2015) said that a qualitative method is appropriate to develop perceptions and understanding from patterns in the data instead of gathering data to evaluate predetermined models, hypotheses, or theories. Data was analyzed by collating relevant literature in the process of literature basis analysis method.

Sampling and Procedure

The study involved research journals from the Google Scholar database. The research journals were selected by using the keywords "factors affecting leadership role of teachers" and "factors affecting the self-efficacy of teachers". The study focused on teachers in primary, secondary, and tertiary levels situated in Europe.

Mode of Analysis

Secondary analysis was employed wherein secondary data from related literature was analyzed.

Research Results

Leadership in this study was defined as the leadership roles undertaken by principals, school administrators, and teachers.

The Effect of Teachers' Leadership Roles on Their Professional Development

Teachers see the barriers to achieving goals in processes and systems in work. With this, a decentralized decision making was implemented, supported, and found effective. This allows teachers to be leaders in school. The collaborative process enables groups to take part in leadership decisions and create a sense of ownership within organizations.

Teachers are at the center of the education system since they mold students towards success. They are leaders in each of their classes and must be provided with ample opportunities in order to upgrade personal learning and at the same time, improve the school (Schlechty, 2001). Giving teachers a chance to improve their leadership skills allows for their self-improvement, the improvement of their individual classes, and their entire school as well since it develops professionals

that will assume administrative leadership roles later on. A strong culture in an organization must be nurtured by consistent leadership (Collins & Porras, 1994).

The study by Hickey and Haris (2005) traversed the concept of teachers as leaders and shows findings on the effects of leadership on teachers' professional development. The research employed the practitioner research methodology that is organized at the center of the ideas of teachers as experts, cooperation with school organizations, and teacher leadership. Findings reveal that allowing teachers to present in front of their colleagues gives several benefits like increased collaboration, teamwork, and teacher leadership. Such benefits are relevant for schools. This study focused on four topics that gave the rationale for this research. First, the foundation of practitioner research was tackled to represent the basis of the research. Second, there was a discussion on teachers as experts who can provide unique perspectives to their colleagues. Third, the necessity for collaborative efforts of school organizations was directed. Lastly, the role of teachers as leaders was discussed.

The first theme that was inspected was the experience of teacher-leaders with professional development. Results show that out of 52 respondents, 33 provided positive comments, 14 were neutral, while five were constructive. With this, the majority of the teachers had positive feelings toward professional development as they share their expertise as leaders. Constructive comments were considered in improving professional development in the future. The second theme that appeared was the feedback on how teachers see leader-teachers when they share their experience on personal development. Results from interviews reveal that there was a positive impact among teachers seeing their colleagues lead in sharing information about professional development as this provides them with motivation to excel in their professional development as well. Also, teachers who have presented in front of their peers had a positive overall experience.

Though others experienced anxiety while presenting in front of their peers, the teachers saw it as an opportunity to improve their performance, increase theirsense of leadership, and focus on their professional development.

Another study by Whitworth and Chiu (2015) focused on professional development and its link to leadership. The aim of professional development in science education is to assist the learning of teachers with the eventual objective of bettering how students excel. School and area leaders have an important part in the arrangement and execution of professional development. Considering theirsignificant role, they are considered an essential element of the procedures and therefore must be taken into account as part of any developmental model in the field of science education. Being the case, leadership within the locality of the educational institution would ultimately affect student achievement (Pianta, 2011). Hence, school and district leaders must be given additional attention.

Even though schools and districts are not the single mediators of professional development for educators, they are the primary providers (Spillane, 2002). It is essential to comprehend the perspectives of school leaders on professional development, their practices, and the aspects that impact said leaders in selecting and devising professional development. By comprehending the variables involved, it will shed light on what kind of professional development districts prefer and implement for teachers. Education leaders who take advantage of professional development may be more active in hastening the productivity of professional development for their locality.

By their involvement, they can help teachers develop professional communities, connecting teachers with materials, and advocating and supporting changes in practice. Based on this review, support should be given to district leadership to have a successful professional development program (Halverson et al., 2011).

The involvement of school leaders in professional development can also aid leaders to grasp the usefulness of the professional program, the resources required for teachers to implement the change in practice and provide them the chance to decide on how to keep up the changes needed (Spillane et al., 2001).

In a study where principals were involved in a styled program that incorporated direct intervention of experience with the investigation curricula, among others, the principals detailed that getting a grasp of the curricula and components of theprogram assisted them to identify the best support to be given to the teachers at their schools and also how to strengthen their leadership qualities (Gerard et al., 2008). The research revealed that excellent professional development is a critical aspect of enhancing science education (Wilson, 2013). With all the proper conditions, professional development could possibly aid teachers to be more productive and may therefore proceed to improved student achievement (Yoon et al., 2007). Therefore, it is right to include the part of school and district leadershipin overseeing teacher change if people are to have a comprehensive view of the part of professional development in improving teacher and student learning in thefield of science.

The Effect of Teachers' Leadership Roles on Their Motivation

The environment of a school is demanding and has many pressures that have an effect on teachers' well-being that is usually reflected through their motivation. Research shows that if the power in learning systems is entrusted to school principals and they are trained and encouraged to be helpful to their educational employees, then these measures may possibly accelerate teachers' autonomous motivation, fulfillment, and self-esteem. Autonomous motivation has an important role in teachers' adjustment, ability to effectively learn, ability to

effectively teach, and students' and teachers' performance and welfare, that is why it is important that motivation is studied in relation to leadership.

A study by Eyal and Roth (2011) focused on the relationship between academic leadership and teacher's motivation. It focused on two converging theories of leadership and motivation. The main hypothesis is that transformational leadership would foretell the individual motivation of teachers while transactional leadership would determine limited motivation. Moreover, it was anticipated that autonomous motivation would moderate the connection of transformational leadership and burnout of teachers and between transactional leadership and burnout.

Results show that transformational leadership was not connected with teachers' burnout, and this relationship was in part arbitrated by teachers' autonomous motivation. On the other hand, transactional leadership was positively correlated with the burnout of teachers, and this link was partially moderated by teachers' modulated motivation. With this, the style of leadership employed by the principals was seen by the teachers as a determinator of teachers' motivation along with their feelings of tiredness and fatigue.

Thus, the results imply that principals' actions play a considerable part in motivation of teachers. Also, transactional leadership which the controlling practices like monitoring subordinates and being demanding more than is properly required is linked with controlled motivations which makes teachers act due to extrinsic motivation, (Roth et al., 2009). On the other hand, transformational leadership which involves empowering of teachers is connected with autonomous motivation which allows teachers to incorporate their ideas and opinions. As a whole, this allows the overall development of teachers and their self-actualization (Bass & Riggio, 2006).

It is essential for school principals to apply teacher-supportive leadership practices to students' learning. The study by Shepherd-Jones & Salisbury-Glennon (2018) incorporated the differing areas of educational leadership and the psychology of education in order to look into the outcomes of leadership styles of principals on teacher motivation. The outcomes of the principal leadership styles of authoritarian and laissez-faire or democratic practices on teachers' motivation were specifically probed from the methodology of the Self-Determination Theory (SDT). Findings show that leadership styles of principals, in this case, a democratic style, have given teachers a higher level of autonomy, relatedness, and competence. Moreover, administrators shared their course of action in how they aided teachers' autonomy, relatedness, competence, and other motivational methods.

There were three objectives of the study. First, the research from the merging of the different areas of educational psychology and educational leadership. Next, the relationship between the teachers' appreciation of their principals' leadership

styles and their motivation at work were analyzed. Third, there was a merging of the results of researchers from the academe and educational leaders by summoning them to explain the real-life inferences of teacher-reported outcomesprovided from the study.

This research created a distinctive contribution by incorporating the educational leadership study with the leadership styles of authoritarian, democratic, or laissez-faire usages with educational psychological research into the psychological needs of autonomy, capability, and relatedness as identified by the Self-Determination Theory. The results of this study revealed that the way in which teachers viewed their principal's style of leadership was related to the motivation they encountered at work. The principals' perceptions had an effect on the tactics they used to boost teachers' motivation. In this case, it clearly showed that perceptions are important.

The Effect of Teachers' Leadership Roles on Their Satisfaction

The most favored discussion to assess within the structure of leadership is job satisfaction. Based on the two-factor theory of Herzberg (1966), the leadership of school administrators and the principal affect teachers' satisfaction and experiences that can either be in a good or bad way. The study by Çogaltay & Karadag (2016) aimed to examine the outturn of educational leadership on teachers' job satisfaction using the meta-analysis method. The objective was to analyze quantitatively the relationship outcomes obtained from the study by examining the connection between educational leadership and job satisfaction. This way the findings were used in rendering more dependable choices on the propensity and strength of the relationship related results by meta-analysis.

As gleaned from the results, educational leadership play a strong positive effect on the job satisfaction of teachers. The levels of job satisfaction are high both on the external and internal factors with the exceptions of salaries and wages of teachers.

Therefore, teachers' perceptions of job satisfaction that are on top of the normal can be viewed as the cause of a large effect of leadership on job satisfaction. Furthermore, based on Maslow's Hierarchy of Needs, the self-confidence level is immediately linked with the points of view of the school administrators (Spector & Bruk-Lee, 2008). There is a positive connection between job satisfaction and constructive leadership behavior. On the other hand, job satisfaction has a negative correlation with destructive leadership behavior. Every research included in the study came up with the same result that the relationship between constructive leadership and job satisfaction were discovered to be positive. The study on the relationship between detrimental leadership behaviors and job satisfaction demonstrated that the correlation was negative

using the meta-analysis method (Schyns & Schilling, 2013).

The article by Bogler (2001) tried to discover the extent of the dissimilarity in teachers' job satisfaction that could be ascribed to their ideas of the profession in comparison to their ideas about their principals' decision-making leadership style. By using a quantitative questionnaire and path analysis to describe teacher job satisfaction by the external factors, the most important observation was that teachers' professional connotations strongly influenced their satisfaction. The principals' transformational leadership had an effect on teachers' satisfaction directly and indirectly through their professional perceptions. Outcomes of the study were tackled in relation to principals and supervisors and also to policymakers at the government level.

The conclusions of this report uphold the study performed which presented that teachers favored working with a principal who acts as a transformational leader who works with teams as opposed to that of a transactional leader or one who focuses on supervision. Transformational leadership seems to advance the autonomy that teachers have always possessed but this should also serve as a challenge for education considering that it is in the area of how teachers can improve coordinating their work that should be emphasized and not on how they maximize their autonomy which seems to be reinforcing organizational structures and functions that may be becoming outdated. The research reveals that to boost the level of job satisfaction of teachers, attention should be given to aspects related to all variables of the teaching profession. Considering that perceptions of their profession are very important in their satisfaction from the job, decision-makers from the local level up to the top level of government should acknowledge these findings. Moreover, principals in educational institutions must be more conscious of how massively their leadership roles and behaviors affect teachers' perceptions about their profession and job satisfaction.

By practicing transformational leadership and participative behavior, school principals can work out and promote positive attitudes and feelings of teachers regarding their occupation. When looking at teaching as their occupation that can give these teachers a sense of self-esteem and professional standing and consider it as an integral part of their lives, this will surely increase their satisfaction from their job.

The satisfaction of teachers derived from their job is crucial between the relationship of teachers and students, for highly satisfied teachers would give more time and energy in teaching their students. Therefore, this study may give the kickoff of the research connecting principals to teachers to students. It is vital then to gather data from the principals regarding their leadership styles, how the variables contribute to the views of teachers about their satisfaction and in the end, the students' learning experiences. This line of research is more useful these days, especially when the assumption of all the people concerned in the education

process is more placed higher than the previous years.

From the related literature selected for study, it can be generalized that the factors professional development, motivation, and satisfaction of teachers are affected by leadership roles undertaken by principals, district leaders or administrators, and teachers. Since the self-efficacy of teachers are affected by such factors, the relationship of teachers' leadership roles and self-efficacy could be correlated. The following diagram shows the general idea for the correlation of the study.

Figure 1 ***Generalization from the Literature Analysis***

Conclusions and Discussion

Teachers' professional development, motivation, and satisfaction are factors that affect self-efficacy. These factors are subsequently affected by leadership roles in school either positively or negatively. Transformational leadership has a positive effect on professional development, motivation, and satisfaction while transactional leadership most of the time has a negative effect on these factors. From the correlation found between leadership roles in the education system and the professional development, motivation, and satisfaction of teachers, it can be concluded that leadership roles are undertaken by principals, administrators, and teachers affect the self-efficacy of teachers.

From this study, leadership functions need to be strengthened. An example is the necessity of school principals to be actively involved in helping teachers solve problems such as by providing educational advice that cannot be overlooked. Principals must also set goals where objectives are identified, and measurable goals and timeframes are established. All these goals discussed with teachers are prioritized in order to achieve higher levels of learning. This is where the essential qualities of good leadership come into play such as being trustworthy, respectful to colleagues and other school co-workers, open to the views and ideas without being judgmental, answer positively to teachers seeking feedbacks, new ideas, and methods, and other positive qualities. In order for

school leaders to be effective, they need the support and cooperation of teachers. Teachers in turn should give them opportunities for professional development so that they can improve or increase their efficacy as leaders.

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ЭМПИРИЧЕСКОЕ ИССЛЕДОВАНИЕ ОТНОШЕНИЯ И СТЕПЕНИ ОСМЫСЛЕНИЯ ПОНЯТИЯ *ПАТРИОТИЗМ* У ЛАТВИЙСКИХ ПОДРОСТКОВ В УСЛОВИЯХ ГЛОБАЛИЗАЦИИ

The Empirical Research of the Attitude to the Concept Patriotism and of the Degree of its Comprehension Among Latvian Teenagers Under Conditions of Globalization

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Abstract. *Succession of generations, especially under conditions of globalisation, polyculture and integration processes in circumstances of socially economic transformation of the society and state leads to the collapse of the system of traditional values and alteration of the content and meaning of numerous phenomena and concepts. The given processes in the modern society are eroding such socially moral and value landmarks as respect and love to the Motherland, self-sacrifice and patriotism, wish and ability to work for the sake of the country, aspiration to be useful for it. The Aim of the research is to determine the attitude and degree of understanding of the concept "patriotism" among Latvian teenagers. The theoretical analysis makes it possible to conclude that the main idea of the concept patriotism consists of considering it as one of the highest values of the individual and is the basis of life orientations, defining the strategy of the individual's development, harmonisation of the society and the state. In the empirical way, the particular and the general understanding of the concept 'patriotism' by Latvian teenagers was defined, how patriotism is manifested, the level of pride for one's country, ways of upbringing of patriotic values, personal qualities of a patriot / an antipatriot and the activity directed towards motivation of active actions for sake of one's country.*
Keywords: *Motherland, patriotism, society, teenagers, values.*

Введение
Introduction

„Не спрашивай, что твоя Родина может сделать для тебя –
спроси, что ты можешь сделать для своей Родины"
(Д. Кеннеди)

Смена поколений, особенно в условиях глобализации, поликультурности и интеграционных процессов, в условиях социально-

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экономической трансформации общества и государства, приводит к разрушению системы традиционных ценностей и к изменению содержания и смысла многих феноменов и понятий. Данные процессы в современном обществе размывают такие социально-нравственные, ценностные ориентиры, как уважение и любовь к Родине, самоотверженность и патриотизм, желание и умение трудиться на благо своей страны, стремление быть ему полезным. Во многом утрачено чувство ответственности и долга перед родителями, семьей, коллективом, обществом, Отечеством. Одним из доминирующих ориентиров в иерархии ценностей для современного поколения становятся финансовое благополучие, развлечения (приятное времяпрепровождение, отсутствие обязательств) и свобода (независимость, самостоятельность в суждениях и действиях). А такие важные личностные качества, как ответственность (чувство долга, умение держать слово), терпимость (к мнению и взглядам других, способность принимать мнение других, уважать вкусы, обычаи и привычки других, терпимость к недостаткам и ошибкам окружающих), счастье других (развитие и совершенствование других людей, всего человечества в целом), к сожалению, утрачивают свою ценность (Marchenoka, 2016).

От личностной ответственности, чувства причастности и принадлежности к тому, что происходит вокруг, сегодня зависит и отношение личности к окружающим его людям, к обществу, следовательно, и к будущему своего государства. Многие подростки перестали гордиться своей страной, ее достижениями. В результате, данное понятие стало восприниматься как „не модное и не нужное качество для современного человека” (Berger, 2011). Так как патриотизм проявляется во всех сферах жизнедеятельности личности (общение, учебная и трудовая деятельность), то и негативные явления, связанные с этим феноменом, проявляются в каждой из этих сфер. Это приводит к деструктивности общения и взаимодействия, снижению ответственности, отсутствию социально значимых жизненных целей, в результате чего происходит содержательно-ценностная переориентация поколения.

Цель статьи: эмпирическим путем определить отношение и степень осмысления латвийскими подростками понятия „*патриотизм*”.

Методология исследования:

- Теоретическая база исследования включает в себя теоретический анализ различных концептуальных подходов к осмыслению феномена *патриотизм* в философском аспекте, а также документы Евросоюза и латвийского государства по проблеме исследования: документы латвийского государства (*Grozījums Latvijas Republikas Satversmē. Latvijas Republikas Satversmes*

- *preambula* (*Latvijas Republikas Saeima,* 2014); *Latvijas Nacionālās attīstības plāns 2014. – 2020. gadam* (2012); *Izglītības attīstības pamatnostādnes 2014. – 2020. gadam* (LR IZM, 2014); *Nacionālās identitātes, pilsoniskās sabiedrības un integrācijas politikas pamatnostādnes 2012. – 2018. gadam* (2011)); документы международных организаций (*United Nations International Children's Fund* (UNICEF, 2012); *European Commission (2009); Universal Declaration of Human Rights* (Muaddi Darraj, 2010));
- Метод получения информации: анкетирование (анонимное);
- Методы обработки и анализа данных: количественная обработка данных с использованием методов математического анализа статистических данных и прогнозирования аналитических методов в программном обеспечении обработки данных *Microsoft Office Excel 2010,* программные пакеты *SPSS (Statistical Package for the Social Sciences 18.0 version),* качественная обработка данных (анализ содержания, кодирование и обработка полученных данных), интерпретация.

Теоретические основы исследования
The Theoretical Background

Об актуальности феномена „*патриотизм*”, представляющего собой одну из „фундаментальных ценностей человеческой цивилизации” (Konfucij, 2014), можно судить по истокам его изучения, который рассматривался уже в трудах античных мыслителей. В своих размышлениях Аристотель (Aristotle, 2009), Платон (Platon, 2018), Демокрит (Chanishev, 2011), Сократ (Kessidi, 2001), Цицерон (Ciceron, 2016), Конфуций (Konfucij, 2014) и др. обращались к вопросу о любви к Отечеству как о высшей ценности и рассматривали идеи патриотизма как основу для нравственного воспитания граждан и процветания общества. Так, древнегреческий философ Платон утверждал, что „патриот – это не только воин – это человек, широко применяющий свои способности для улучшения жизни общества, граждан, для достижения стабильности с целью возвышения государства” (Platon, 2018). Аристотель же вывел свою формулу: „человек – существо общественное, а высшая степень добродетели – деятельность во имя сограждан, ради блага государства. Добродетель эта приобретается не учением и не убеждением, а привычкой к благим деяниям, которая закладывается в детстве и закрепляется благоприятным окружением, в котором и воспитывается человек” (Aristotle, 2009).

Аналогичной точки зрения придерживались и французские философы Ж.-Ж.Руссо (Russo, 2017), Д.Дидро (Didro, 1951) и др. По мнению Ж.-Ж.Руссо, с „15-22 лет наступает очередь воспитания здравых чувств: долга, гражданской добродетели, патриотизма и сострадания к людям" (Russo, 2017). Главной идеей эпохи Возрождения становится гуманизм, в основе которого лежит признание необходимости воспитания человека-гражданина и патриота (Э Роттердамский (Rotterdamskij, 2018), Ф.Рабле (Rable, 1994), М.Монтень (Montenj, 1991) и др.) Формирование национального самосознания, начавшееся в эпоху Возрождения во многих государствах, актуализировало также проблему высоконравственного человека-гражданина. Основной целью воспитания в этот период становится формирование осознанной гражданской позиции. Нравственное воспитание в философских взглядах Ш.Фурье (Basov, Basova & Kravcenko, 2018), Т.Мора (Mor, 1978), А.Сен-Симона (Sen-Simon, 2007) и других также рассматривается во взаимодействии с формированием гражданских качеств личности, чувства долга для служения интересам общества.

В концепциях философов XVII-XVIII вв. развивается проблема общечеловеческого, патриотического и гражданского воспитания (Гегель (Gegelj, 1998), Ш.Монтескье (Montesquieu, 2008), Дж.Локк (Lokk, 1978) и др.), где патриотизм рассматривается как проявление гражданами чувства национальной гордости за страну. Так, Ш.Монтескье считал, что всеобщее благо основывается на любви к закону и Отечеству. „Лучшее средство привить детям любовь к Отечеству состоит в том, чтобы эта любовь была у отцов" (Montesquieu, 2008). В целом, понятие „патриот" практически до конца XVIII– начала XIX веков употреблялось в отношении тех, кто заботится о благе и безусловной преданности своему Отечеству, не имея при этом никаких индивидуальных выгод. Именно на данном этапе зарождается идея государственного патриотизма, поскольку в качестве объекта патриотических чувств мыслители рассматривают государство в целом. Так, по мнению английского поэта Дж. Г.Байрона, „тот, кто не любит свою страну, ничего любить не может" (Kurginjan, 1958).

В рассмотрении данного феномена в 20 веке уместно привести известное высказывание американского президента Теодора Рузвельда, которое не только публично высказывалось по поводу своего отношения к патриотизму, но и применялось на практике, принимая ответственные политические решения, способствующие формированию данного качества у населения США. Он говорил, что „важнее не готовность умереть за свою страну, а готовность прожить ради нее свою жизнь" (Tomas, 2013). Американский философ и психолог К.Изард также рассматривал „патриотизм" как высшее социально-нравственное чувство личности (Izard, 2013). Принцип ответственности граждан перед обществом был

закреплен во Всеобщей декларации прав человека, принятой Генеральной Ассамблеей ООН в 1948 году, где в 29 статье говорится, что „каждый человек имеет обязанности перед обществом, в котором возможно только свободное и полное развитие его личности" (Muaddi Darraj, 2010).

Следует отметить, что изучение проблемы патриотизма, заметно активизируется и в XXI веке. Во многих документах подчеркивается важность гражданского участия подрастающего поколения. Так, в Стратегии Европейского Союза „An EU Strategy for Youth – Investing and Empowering" (European Commission, 2009) особо подчеркивается важность гражданского участия молодежи: "Будущее Европы зависит от ее молодежи, молодежь является приоритетом в социальном видении Европейского Союза, и молодые люди должны максимально использовать свой потенциал", что подтверждает тот факт, что гражданская активность молодежи является основой устойчивого роста страны. Кроме того, согласно данным Международного детского фонда Организации Объединенных Наций (United Nations International Children's Fund), на молодых людей в возрасте от 15 до 25 лет приходится пятая часть населения мира (UNICEF, 2012:4).

Основной закон Латвийской Республики, преамбула к Конституции, подчеркивает аспект ответственности граждан: „каждый заботится о себе, своих близких и общем благе общества, ответственно относясь к другим, будущим поколениям, окружающей среде и природе" (Latvijas Republikas Satversmes ievads, 2016). В Руководстве по национальной идентичности, гражданскому обществу и интеграционной политике Латвии на 2012–2018 годы говорится, что необходимо укрепление национальной и гражданской идентичности и понимания совокупности ценностей общества Латвии, при этом определяя задачу: „продвигать индивидуальную ответственность за развитие страны и обучать каждого человека навыкам, знаниям, отношениям и ценностям гражданского участия" (Nacionālās identitātes, pilsoniskās sabiedrības un integrācijas politikas pamatnostādnes 2012. – 2018. gadam, 2011).

В свою очередь, в Национальном плане развития Латвии на 2014–2020 годы также подчеркивается важность воспитания гражданина для достижения одной из поставленных целей – „содействовать принадлежности жителей, формированию гражданское сознание и гордости за свою страну и нацию" (Latvijas Nacionālās attīstības plāns 2014. – 2020. gadam, 2012).

Актуальность данной проблемы была подчеркнута и в Руководстве по развитию образования на 2014-2020 годы в Латвии. Документ по планированию политики в области образования призван укреплять гражданское сознание учащихся, навыки участия общественности и патриотизм, обеспечивать вовлечение молодежи в общенациональные

мероприятия, содействовать улучшению культурного образования учащихся и развитию творчества, а также приобретению базовых требований, установленных в образовательном стандарте (LR IZM, 2013).

Таким образом, теоретический анализ позволяет сделать вывод о том, что главная идея данного феномена заключается в рассмотрении его, как одной из высших ценностей личности, способствующий формированию ответственности и чувства долга для служения интересам общества и развитию государства в целом. Основными подходами к рассмотрению понятия патриотизм можно выделить:

- *чувственно-эмоциональный*, определяющий патриотизм через чувство любви к родному краю, родительскому дому и Отчизне в целом;
- *деятельностный*, побуждающий личность к активным действиям на пользу своего Отечества и формирующий стремление быть ему полезным;
- *общественно-государственный*, где в качестве объекта патриотизма выступает государство, которое должно формировать патриотическое сознание в обществе.

Основываясь на вышесказанное, можно утверждать, что патриотизм, рассматриваемый как социально-нравственный феномен, является основой жизненных ориентаций, определяющий стратегию развития личности, гармонизации общества и государства.

Эмпирическое исследование
Empirical Research

Цель исследования: определить отношение и степень осмысления понятия „патриотизм” у подростков в Латвии.

Методы исследования:

Метод получения информации:

- анкетирование (анонимное);
- методы обработки и анализа данных:
- количественная обработка данных с использованием методов математического анализа статистических данных и прогнозирования аналитических методов в программном обеспечении обработки данных Microsoft Office Excel 2010;
- программные пакеты SPSS (Statistical Package for the Social Sciences 18.0 version);
- качественная обработка данных (анализ содержания, кодирование и обработка полученных данных);

- интерпретация.

База эмпирического исследования: школьники 8 и 9 классов различных общеобразовательных школ Латвии (всего 373 респондентов).

Исследование заключалось в организации, проведении, обработке и интерпретации полученных результатов.

Таблица 1. ***База исследования***
Table 1 ***Base of the Empirical Research***

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 8th grade	**197**	**52,8**	**52,8**	**52,8**
9th grade	**176**	**47,2**	**47,2**	**47,2**
Total	**373**	**100,0**	**100,0**	**100,0**

Для достижения цели исследования, была разработана анкета, включающая в себя три блока вопросов:

1. блок направлен на изучение частного и общего представления о патриотизме (*чувственно-эмоциональный подход*);
2. блок направлен на изучение патриотизма, где в качестве объекта выступает государство, а также деятельность государства для воспитания патриотических ценностей (*общественно-государственный подход)*;
3. блок направлен на изучение личностных качеств патриота/ антипатриота, а также деятельность, побуждающая личность к активным действиям на пользу своего Отечества и формирующая стремление быть ему полезным (*личностный и деятельностный подход)*.

Анкета включает в себя как закрытые вопросы с вариантами ответов, так и открытые вопросы, требующие развернутого и содержательного пояснения.

Результаты эмпирического исследования
Results of the Empirical Research

Первый блок вопросов анкеты выявляет частное и общее представление о понятии *патриотизм*. Для определения частного представления было предложено 13 коротких вариантов.

Чувство любви к своей Родине можно обозначить как чувственно-эмоциональный подход к данному понятию. При таком определении основу содержания патриотизма составляет эмоциональное отношение к родному краю, родительскому дому и Отчизне в целом. Под словом *Родина* респонденты понимают – „*место, где родился, дом, детство,*

семья, мать". Следует отметить, что такие определения патриотизма, как *„стремление к социальной справедливости"*, *„любовь ко всему человечеству, гуманизм"*, *„стремление к безопасному глобальному миру"*, *„коллективный образ жизни"* – не являются важными для подростков.

Таблица 2. ***Частное понимание патриотизма подростками в Латвии***
Table 2 ***Individual Understanding of Patriotism by Teenagers in Latvia***

Nr.	**Выберите наиболее частное, подходящее, по Вашему мнению, определение патриотизма:**	**%**
1	стремление к социальной справедливости;	**0**
2	любовь к национальной культуре;	**2**
3	любовь к своей семье и близким;	**19**
4	коллективный образ жизни;	**0**
5	стремление к безопасному глобальному миру;	**0**
6	любовь к Родине;	**41**
7	любовь к родному городу, деревне, дому;	**5**
8	религиозная вера, которую я исповедаю;	**1**
9	возрождение традиций моего государства;	**4**
10	любовь ко всему человечеству, гуманизм;	**0**
11	уважение к своей Родине, гордость за свою страну;	**9**
12	любовь к народу своего государства;	**6**
13	патриотизм в условиях глобализации теряет свое значение.	**13**

	Частное понимание патриотизма													**Total**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	
Frequency	0	7	71	0	0	153	19	4	15	0	34	22	48	**373**
Percent	0	2,1	18,9	0	0	41,4	4,6	1,3	4,3	0	9,2	5,6	12,6	**100**
Valid Percent	0	2,1	18,9	0	0	41,4	4,6	1,3	4,3	0	9,2	5,6	12,6	**100**
Cumulative Percent	0	2	21	0	0	62,4	67	68,3	72,6	0	81,8	87,4	100	**100**
Total														**373**

Среди развернутых определений данного понятия, доминирует (59%), высказывание, что *"Патриотизм – нравственный и политический принцип, социальное чувство, содержанием которого является любовь к Отечеству, гордость за его прошлое и настоящее, готовность подчинить свои интересы интересам страны*" (Kont-Sponvilj, 2012). Интересно, что для многих респондентов (14%) определение патриотизма выражается в *„отделении себя и своего государства от других государств и народов*", что противоречит процессу глобализации в современном мире. Следует также отметить, что подростки рассматривают патриотизм и *„в возможности высказать о государстве все, что он думает, не всегда только хорошее*" (17%). И совсем минимальный процент респондентов

выбирают понятие патриотизм как *„любовь к Отечеству, вытекающая из сознания солидарности интересов граждан данного государства*" (7%).

Таблица 3. ***Общее понимание патриотизма подростками в Латвии***
Table 3 ***General Understanding of Patriotism by Teenagers in Latvia***

Nr.	Выберите наиболее общее, подходящее, по Вашему мнению, определение патриотизма:	%
1	Патриотизм - это возможность высказать каждому о государстве все, что он думает, не всегда только хорошее;	***17***
2	Патриотизм - это любовь к отечеству, вытекающая из сознания солидарности интересов граждан данного государства;	***7***
3	Патриотизм - нравственный и политический принцип, социальное чувство, содержанием которого является любовь к отечеству, гордость за его прошлое и настоящее, готовность подчинить свои интересы интересам страны, стремление защищать интересы родины и своего народа;	**59**
4	Патриотизм, в котором главное - отделение себя и своего государства от других государств и народов;	***14***
5	Патриотизм - это преданность и любовь к своему отечеству, к своему народу;	***3***
6	другое	***0***

	Выберите наиболее общее, подходящее, по Вашему мнению, определение патриотизма:						Total
	1	2	3	4	5	6	
Frequency	**67**	**26**	**213**	**56**	**11**	**0**	**373**
Percent	**16,7**	**7,2**	**58,8**	**13,8**	**3,5**	**0**	**100**
Valid Percent	**16,7**	**7,2**	**58,8**	**13,8**	**3,5**	**0**	**100**
Cumulative Percent	**17,6**	**23,9**	**82,7**	**96,5**	**100**	**100**	**100**
Total							**373**

На вопрос *„В чем проявляется истинный патриотизм*?" респонденты ответили следующим образом:

Таблица 4. ***Проявления патриотизма подростками в Латвии***
Table 4 ***Manifestation of Patriotism by Teenagers in Latvia***

Nr.	Как Вы считаете, в чем проявляется истинный патриотизм?	%
1	в разговорах и беседах со знакомыми на патриотические темы;	**1**
2	в голосовании на выборах;	**35**
3	в участии в деятельности патриотических организаций;	**1**
4	в праздновании исторических событий и юбилеев;	**26**
5	в конструктивной критике недостатков в стране;	**21**
6	в ответственной учебе или в работе с полной отдачей сил по своей специальности;	**15**
7	в укреплении семьи и воспитании детей в духе патриотизма	**1**
8	другое.	**0**

	В чем проявляется истинный патриотизм?								Total
	1	2	3	4	5	6	7	8	
Frequency	4	131	4	97	78	56	4	0	373
Percent	1,4	34,7	1,3	26,3	20,9	14,6	0,8	0	100
Valid Percent	1,4	34,7	1,3	26,3	20,9	14,6	0,8	0	100
Cumulative Percent	1,4	36,1	37,4	63,7	84,6	99,2	100	100	100
Total									373

Проявление патриотизма – важный вопрос, заключающийся в желании подростка преобразовать свою страну, сделать что-то для того, чтобы всем жилось лучше, предпринимать какие-то действия для того, чтобы страна стала сильнее и т.д. Поэтому, казалось бы, что доминирующим ответом в этом возрастном периоде должно быть - *„ответственная учеба или работа с полной отдачей по своей специальности”*. Но данный показатель набрал только 15% от ответов респондентов, отдавая предпочтение политикам и политическим партиям государства, которым подростки и предоставляют возможность решение главных задач/проблем в государстве с помощью *голосования на выборах* (35%). При этом, подростки считают проявлением патриотизма *в конструктивной критике недостатков в стране* (21%).

В следующем блоке в качестве объекта патриотизма выступает государство. На вопрос *„Испытываете ли Вы чувство гордости за страну*” 57% респондентов ответили утвердительно. В качестве примера – *„праздники песни и танца*”; *„празднование 100-летнего юбилея Латвии*”; *„спортивные достижения - „выход латвийской сборной по хоккею в чемпионат мира*”, *„футбол*”, *„волейбол*”; *„интересные люди, которые живут в нашей стране*”, *„ветераны Великой Отечественной войны*”. Но 34% респондентов не испытывают чувства гордости за страну – это достаточно большой процент. В качестве причин – *„нет работы*”, *„маленькая пенсия у бабушки*”, *„отличия уровня жизни с другими странами*”, *„маленькие зарплаты*”, *„все дорого*”, *„когда смотрю новости*”, *„Латвия перестала производить что-либо*”, *„когда тратят на салют миллионы, а деньги можно было бы потратить на что-то более важное*” и др. Необходимо отметить, что был и такой ответ – *„Я не испытываю чувства стыда за свою страну, ведь страна не виновата в том, что правительство и депутаты не особо компетентны*”. При этом уехать из страны желают 29% от общего числа респондентов: из них 22% - на работу после окончания школы, 7% - на учебу. Но 9% - не уедут из Латвии ни при каких условиях.

Таблица 5. ***Испытываете ли Вы чувство гордости за страну?***
Table 5 ***Are You Proud of Your Country?***

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid да	**214**	**56,7**	**56,7**	**56,7**
нет	**127**	**33,9**	**33,9**	**90,6**
Сложно ответить	**14**	**4,3**	**4,3**	**94,9**
Не думал об этом	**18**	**5,1**	**5,1**	**100**
Total	**373**	**100**	**100**	

На вопрос „*Что необходимо делать государству для воспитания патриотических ценностей?*” респонденты ответили следующим образом:

Таблица 6. ***Что необходимо делать государству для воспитания патриотических ценностей?***
Table 6 ***What Must be Done by the State for Upbringing Patriotic Values?***

Nr.	***Что необходимо делать государству для воспитания патриотических ценностей?***	**%**
1	воспитание чувства патриотизма с детского сада;	**1**
2	воспитание чувства патриотизма с младших классов школы;	**3**
3	оказание содействия появлению большего числа тем патриотической направленности в СМИ;	**1**
4	создание патриотических кружков, организаций, клубов;	**7**
5	проведение военно-патриотических игр;	**4**
6	создание и показ большего числа патриотических фильмов, распространение художественной литературы на патриотические темы;	**0**
7	улучшение условий жизни населения (создание рабочих мест, повышение зарплаты, предоставление жилья);	**60**
8	поднятие престижа страны (повышение роли Латвии на международной арене);	**17**
9	организация досуга молодёжи;	**6**
10	личный пример	**1**
11	другое	**0**

	Что необходимо делать государству для воспитания патриотических ценностей?											**Total**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	
Frequency	4	11	4	26	15	0	224	63	22	4	0	**373**
Percent	0,8	3,1	1,2	7,3	4,2	0	60,3	16,7	5,8	0,6	0	**100**
Valid Percent	0,8	3,1	1,2	7,3	4,2	0	60,3	16,7	5,8	0,6	0	**100**
Cumulative Percent	0,8	3,9	5,1	12,4	16,6	16,6	76,9	93,6	99,4	100	100	**100**
Total												**373**

Наивысшим результатом данного исследования – 60% респондентов констатировали, что для воспитания патриотических ценностей необходимо „*улучшение условий жизни населения (создание рабочих мест, повышение зарплат)*", а также „*поднятие престижа страны (повышение роли Латвии на международной арене)*" – 17%.

В следующим блоке в качестве объекта выступает личность и личностные качества патриота/антипатриота, а также действия (деятельность), с помощью которых личность может принести пользу для своего Отечества. На главный вопрос „*Являешься ли ты патриотом Латвии*?" утвердительно ответили 64% респондентов, трудно ответить – 25%, отрицательный ответ – 5%, не думал об этом – 6% респондентов. Если обобщить ответы респондентов, то среди личностных качеств патриота подростки выделяют следующие: „*человек, который любит и уважает свою страну*", „*уважающий, почитающий, заботящийся о семье, природе, людях*", „*человек, который посещает выборы в своей стране*", „*человек, который имеет возможность критиковать недостатки своей страны, умение отстаивать свою точку зрения, не быть равнодушным*", „*человек, который горд за свою страну*", „*человек, который готов защитить родной дом, землю, отдать свою жизнь за свободу Отчизны*".

Личностные качества антипатриота – „*человек, ненавидящий свою страну*", „*человек, не уважающий народ своей страны, небрежно относящийся к традициям и истории*", „*человек, не знающий гимн страны*", „*человек, равнодушный к своей стране*".

Таблица 7. ***Являешься ли ты патриотом Латвии?***
Tabula 7 ***Are You a Patriot of Latvia?***

	Frequency	Percent	Valid Percent	Cumulative Percent
Да	**172**	**45,94**	**45,94**	**45,94**
Нет	**19**	**5,03**	**5,03**	**50,97**
Сложно ответить	**160**	**42,9**	**42,9**	**93,87**
Не думал об этом	**22**	**6,13**	**6,13**	**100**
Total	**373**	**100**	**100**	

На вопрос „*Что необходимо для побуждения личности к активным действиям на пользу своего Отечества*?", были получены следующие ответы: чуть больше половины респондентов (54%) главной своей деятельностью для пользы страны считают образование - „*хорошо учиться, чтобы потом принести пользу своему Отечеству*", 19% респондентов считают, что достаточно „*просто любить и уважать свою страну*". Интересен тот факт, что практически такое же количество респондентов (18%) считает, что для побуждения к активным действиям на пользу своего государства

необходимо *„материально стимулировать”*, что только подтверждает важность для подростков материальных ценностей.

Таблица 8. ***Деятельность для побуждения личности к активным действиям на пользу своей страны***
Table 8 ***Activities for Motivation a Person to Act for the Sake of his Motherland***

Nr.	**Какие действия необходимы для побуждения личности к активным действиям на пользу своего Отечества?**	**%**
1.	разговор и беседа со знакомыми на патриотические темы;	**0**
2.	хорошо учиться, чтобы потом принести пользу своему Отечеству;	**52**
3.	принимать участие в патриотических организаций;	**7**
4.	проводить различные мероприятия на патриотические темы;	**4**
5.	материально стимулировать;	**18**
6.	просмотр кинофильмов на патриотические темы;	**0**
7.	просто любить и уважать свою страну;	**19**
8.	другое.	**0**

	Какие действия необходимы для побуждения личности к активным действиям на пользу своего Отечества?								**Total**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
Frequency	0	194	26	15	67	0	71	0	**373**
Percent	0	52,1	6,7	4,3	18,1	0	18,8	0	**100**
Valid Percent	0	52,1	6,7	4,3	18,1	0	18,8	0	**100**
Cumulative Percent	0	52,1	58,8	63,1	81,2	81,2	100	100	**100**
Total									**373**

Выводы
Conclusions

- Теоретический анализ позволяет сделать вывод о том, что главная идея понятия *патриотизм* заключается в рассмотрении его, как одной из высших ценностей личности и является основой жизненных ориентаций, определяющий стратегию развития личности, гармонизации общества и государства. Основными подходами к рассмотрению понятия патриотизм являются: чувственно-эмоциональный, деятельностный и общественно-государственный;
- Эмпирическим путем было определено частное и общее представление латвийскими подростками о понятии *патриотизм*, в чем выражается проявление патриотизма, степень гордости за свою страну, способы воспитания патриотических ценностей, личностные качества патриота/ антипатриота и деятельность для побуждения к активным действиям на пользу своей страны;

- Так, подростки определяют данное понятие как: *любовь к Родине, любовь к своей семье и близким*. Доминирует следующая дефиниция: *„Патриотизм - нравственный и политический принцип, социальное чувство, содержанием которого является любовь к Отечеству, гордость за его прошлое и настоящее, готовность подчинить свои интересы интересам страны”*. Интересно, что в условиях глобализации, поликультурности и интеграционных процессов в современном мире, подростки не связывают данное понятие с *„коллективным образом жизни”*, *„стремлению к безопасному глобальному миру, отделяя себя и свое государство от других государств и народов”*. Также необходимо отметить, что достаточно большой процент реципиентов считают, что *патриотизм в условиях глобализации теряет свое значение*;
- Важно констатировать, что больше половины подростков в Латвии *гордятся своей страной*. Но настораживает тот факт, что достаточно большое количество респондентов *не испытывают чувства гордости за страну* и факт, что *уехать из страны* готовы почти треть респондентов, что постепенно и происходит в современной Латвии;
- Основными условиями для формирования патриотических ценностей больше половины респондентов отмечают *„улучшение условий жизни населения (создание рабочих мест, повышение зарплат, предоставление жилья)”* и *„поднятие престижа страны (повышение роли Латвии на международной арене”*;
- Больше половины респондентов констатируют свою принадлежность к стране и оппозицианируют себя патриотами и только небольшое количество респондентов не ощущают себя патриотами Латвии. Настораживает тот факт, что достаточно большое количество респондентов, почти половина, затрудняются ответить на этот важный вопрос;
- Основной деятельностью для пользы своей страны респонденты считают образование - *„хорошо учиться, чтобы потом принести пользу своему Отечеству*”. Необходимо отметить, что почти пятая часть респондентов считает, что для побуждения к активным действиям на пользу своего государства необходимо *„материально стимулировать*”, что подтверждает значимость для подростков материальных ценностей.

Summary

The theoretical analysis makes it possible to conclude that the main idea of the concept *patriotism* consists in considering it as one of the highest values of the individual and is the basis of life orientations, defining the strategy of the individual’s development, harmonisation

of the society and the state. The main approaches for investigation of the concept of patriotism are: sensitively emotional, active and publically national;

In the empirical way, the particular and the general understanding of the concept 'patriotism' by Latvian teenagers was defined, how patriotism is manifested, the level of pride for one's country, ways of upbringing of patriotic values, personal qualities of a patriot / an antipatriot and the activity directed towards motivation of active actions for sake of one's country;

The empirical research showed that the Latvian teenagers have rather a precise understanding of the concept of *patriotism.* Thus, the teenagers define the concept as *love to the Motherland, love to the family, relatives.* The following definition prevails: "*Patriotism is a moral and political principle, a social sense, consisting of love to the Motherland, pride for its past and present, readiness to subordinate own interests to interests of the state*". An interesting aspect should be mentioned: under conditions of globalisation, polyculture and integration processes in the modern society the teenagers do not relate this concept with "*communal way of life*", "*aspiration for safe global peace*", "*separating oneself and own state from other states and nations*". It should be noted that rather a large number of respondents believe that "*under conditions of globalisation patriotism is losing its meaning*";

It is important to state that more than a half of teenagers in Latvia are "*proud of their country*". But there is a hidden warning in the fact that there is rather a large amount of respondents who "*do not feel any pride for their country*" and the fact that almost one third of the respondents are ready "*to emigrate from the country"*, and it is gradually happening in Latvia today;

In the respondents' opinion, the main conditions for development of patriotic values are "*improvement of living conditions (creation of work places, salary increase, housing available)*" and "*improvement of the image of the country (increasing Latvia's role significance on the international level)*";

The largest part of the respondents states their belonging to the country and thinks that they are patriots, and only a few respondents do not feel as patriots of Latvia. The following fact is also worrying: rather a large number of the respondents – almost a half of them – could not answer that important question;

"*Study well in order to become useful for the Motherland*" is considered to be the principal activity for the benefit of the native country. It can be remarked that almost one fifth of the respondents believe that it is necessary "*to ensure material stimulation*" to motivate active behaviour for the sake of the country, thus proving the significance of material values for teenagers.

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ИСПОЛЬЗОВАНИЕ ПРОЕКТНОЙ ТЕХНОЛОГИИ ДЛЯ ЗНАКОМСТВА ШКОЛЬНИКОВ С ЭЛЕМЕНТАМИ ОБЩЕЙ ТОПОЛОГИИ

The Use of Project Technology to Introduce Schoolchildren to Elements of the General Topology

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Abstract. *Preparing a student with project skills is one of the urgent tasks facing education. At present, the general education school of Russia is moving to new educational standards, which provide for the mandatory formation of students' skills in using project activities. The article contains an analysis of the experience of involving students of different age groups in project activities during their acquaintance with the basic topological concepts within the framework of the author's elective discipline "Get to know topology".*
At the preparatory stage of teaching, the content of the modern section of mathematics was reasonably selected, different types of practical tasks were modeled, the topic of projects, possible options for the product of project activities, assessment criteria were selected, questionnaires were developed.
The article describes the results of experimental teaching, which was carried out for three years in educational institutions of different levels. The article is illustrated with examples of methods of organizing project activities in the course "Get to know topology" and approaches to evaluating project products; the analysis of questionnaires of different groups of students was carried out. The results of the study confirm that project-based learning increases the involvement and interest of schoolchildren in mathematics, allows them to understand a new problem, contributes to the development of communication and cooperation skills of students, creates conditions for the development of students' creativity.
Keywords: *4C-competence, continuity, elements of general topology, homeomorphism, mathematical modeling, project learning technology, school.*

Введение
Introduction

Образовательные системы различных стран постоянно ищут способы обучения школьников, эффективные для практического применения теоретических знаний. Чтобы такие знания были актуальны, обучающимся необходимо уметь их применять практически для решения задач

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реальности настоящего и будущего. Одним из эффективных способов получения «полезных», применимых знаний является использование проектной деятельности. Важно понимать, что проектная деятельность обучающихся должна быть нацелена, в первую очередь, на создание реально применимого конечного продукта.

Новые российские образовательные стандарты, на которые переходит российское общее образование, предполагают формирование у выпускника общеобразовательной школы способности осуществлять учебно-исследовательскую, проектную деятельности. Таким образом, необходимо активнее использовать проектные технологии в ходе преподавания как базовых предметов, так и элективных курсов. Проектное обучение ориентировано на школьников, при этом они активно участвуют в учебном процессе. Необходимо отметить высокую образовательную эффективность использования проектной технологии, позволяющей построить занятия, нацеленные на самостоятельное или групповое добывание знаний и применение этих знаний на практике. Вопросы организации проектно-ориентированного обучения рассматривали в своих работах многие исследователи (Blumenfeld et al., 1991; Helle, Tynjälä & Olkinuora, 2006; Bell, 2010; Dul'zon, 2010; Kokotsaki, Menzies, & Wiggins, 2016; Lang, 2018).

Целью проведенного исследования являлось изучение возможности знакомства школьников с основными понятиями и идеями общей топологии в ходе применения технологии проектного обучения. Топологические представления человека являются первичными и закладывают основу восприятия окружающих объектов (например, геометрических фигур), а метрические и проективные представления возникают и развиваются на уже сформированной базе из топологических представлений (Alexandrov, 2016). Изучение топологии способствует развитию пространственного мышления, топология прочно связана с наглядными пространственными представлениями, эффективно влияет на развитие творческих способностей школьников, показывает содержательную связь с историей развития науки. Элементы общей топологии в явном виде не изучаются в курсе школьной математики, но учащиеся, начиная с 5 класса, знакомятся с такими основными топологическими понятиями как внутренняя, внешняя, граничная точки, внутренность, внешность, граница, фигура, множество.

Материалы и методы
Materials and Methods

Для того, чтобы познакомить учащихся с современным развивающимся разделом математики и продемонстрировать его возможное практическое применение в различных сферах жизни человека, авторами

был разработан элективный курс «Познакомьтесь с топологией», предназначенный для учащихся основной школы. Курс включает в себя следующие темы: графы и их свойства; уникурсальные фигуры; топология и лабиринты; топология на шахматной доске; топологические фокусы; неориентируемый мир; математическое моделирование некоторых топологических объектов. В рамках курса рассматриваются простейшие топологические задачи и теоремы. Для его преподавания использовалась технология проектного обучения, где результатом деятельности выступал конечный продукт. Данная технология способствует формированию навыков проектной деятельности школьников и развитию 4К-компетенций: коммуникации, кооперации, креативности и критического мышления (Medvedeva, Martynyuk, Pan'kova, & Solovyova, 2018; Medvedeva et al., 2020).

Опытно-экспериментальное преподавание элективного курса «Познакомьтесь с топологией» проводилось в течение трех лет, в эксперименте участвовали различные возрастные группы учеников:

- 5–7 классы (32 человека, г.Псков, гуманитарный лицей);
- 9 класс (15 человек, г.Псков, гуманитарный лицей);
- 5–6 классы (6 человек, г.Сочи, Образовательный Центр Сириус).

К каждой возрастной группе учащихся применялся индивидуальный подход. Учащиеся 5–7 классов, в отличие от учащихся старших классов, менее самостоятельны. Для более эффективной и результативной работы учителю нужно предварительно отбирать и рекомендовать подходящие источники информации, так как в 5-7 классах ещё слабо развиты навыки отбора и анализа информации, из-за чего ученики могут «потеряться» в обилии найденного материала.

На первом этапе в эксперименте были задействованы обучающиеся пятых-седьмых классов, для которых было проведено интегративное обзорное занятие «Топологическая мозаика», включавшее все темы курса. Цель такого занятия – привлечь внимание школьников к топологии, а также продемонстрировать занимательную сторону математики.

На занятии учащиеся были вовлечены в проектную деятельность, направленную на создание конечного продукта: карты основных топологических понятий и моделей двумерных топологических многообразий. В конце занятия было проведено анкетирование школьников, результаты которого показали, что использование проектной деятельности является увлекательным, а выбранные темы топологии интересны школьникам.

На втором этапе опытно-экспериментального преподавания курса осуществлялось включение в проектную деятельность обучающихся девятых классов. Были предложены следующие темы проектов: «Задача о

псковских мостах»; «Уникурсальные фигуры в повседневной жизни»; «Топология на шахматной доске»; «Как выбраться из лабиринта?»; «Топологические фокусы»; «Магические свойства ленты Мёбиуса»; «Удивительный топологический объект – тор». Учащиеся разделились на три группы, выбрали темы проектов, ознакомились с критериями оценки работ, обсуждали и редактировали их.

В проекте «Задача о псковских мостах» школьникам предлагалось провести аналогию с задачей о 7 кёнигсбергских мостах, используя графы и их свойства. В рамках проекта «Топологические фокусы» группе учащихся предстояло выступить в роли фокусников: показать различные топологические фокусы, используя инвентарь; найти связь фокусов с топологией. Проекты, связанные с лентой Мёбиуса и тором, подразумевали процесс их математического моделирования для исследования основных топологических свойств и явлений, изучаемых в рамках курса.

Обучающиеся обсудили регламент представления результатов проектных работ, требования к оформлению, возможные продукты проектной деятельности: буклет по выбранной теме, модели неориентируемых многообразий. Продукт проектной деятельности учащиеся выбирали самостоятельно: они разработали красочные буклеты, содержащие теоретическую и практическую части.

Каждое следующее занятие курса строилось по схеме: изучение и закрепление нового материала, проектная работа (групповая или индивидуальная). На итоговом этапе ученики представляли результаты выполнения проекта. Каждая из трех групп разработала буклет по выбранной теме проекта и сформулировала задания для других групп учащихся. Школьники дискутировали по темам проектов, оценивали продукты деятельности, выполняли разработанные школьниками задания.

В авторской таблице 1 представлены результаты оценивания проектной деятельности в целом и по каждому критерию, выставленные в ходе рефлексии (максимально по каждому критерию выставлялось три балла).

Таблица 1. ***Оценка результатов проектной деятельности***
Table 1 ***Assessment of the Results of Project Activities***

Достижение цели	Глубина раскрытия темы	Использование разных источников	Творческий подход	Качество проектного продукта	Итого
1. Проект на тему «Магические свойства ленты Мёбиуса»					
3	2	3	2	3	13
2. Проект на тему «Как выбраться из лабиринта?»					
2	2	3	2	3	12
3. Проект на тему «Уникурсальные фигуры в повседневной жизни»					
3	2	2	3	3	13

Лента Мёбиуса

Если взять полоску бумаги и склеить её противоположные стороны перекрутив один раз, то получившийся объект и будет лентой Мёбиуса.

Самым известным свойством ленты Мёбиуса является то, что у неё только одна сторона. Это означает, что если идти по одной стороне ленты Мёбиуса, то в некоторый момент мы обязательно окажемся в той же точке, но с другой стороны. Проверьте это сами.

Разрезания ленты Мёбиуса и других лент с перекручиваниями

I. Сколько лент получится, если разрезать ленту Мёбиуса по половине ширины. Предположи тут: __
Теперь разрежь ленту и напиши, сколько кусков ленты получилось: __(1)

II. Теперь разрежем ленту Мёбиуса на расстоянии 1/3 ширины от края.
Предположи, что получится:_____
Теперь разрежь ленту и напиши, сколько что получилось:
_____(две, сцепленные друг с другом)

Рисунок 1. ***Проект на тему «Лента Мёбиуса»***
Figure 1 ***Möbius Strip Project***

Из вводной теоретической части, практических занятий и итоговых занятий по защите проектов состоял процесс знакомства школьников с элементами топологии в 5-6 классах в ОЦ Сириус, но разработанные ими карты топологических понятий включали уже теоретическую и практическую части (Ryabova, 2019). При создании продуктов проектной деятельности учащиеся осваивали основные топологические свойства, знакомились с непрерывностью, неориентируемостью, развивали наглядные пространственные представления в процессе моделирования объектов.

На рис.1 представлен один из продуктов проекта на тему «Лента Мёбиуса». Обучающиеся сформулировали инструкцию по созданию модели и основное свойство. В качестве практического материала ими были выбраны эксперименты по разрезанию модели. Наиболее интересным в данной работе оказался пример ленты с муравьями из работ М. Эшера, где демонстрируется «бесконечность» ленты Мёбиуса.

Результаты и их обсуждение
Results and Discussion

На протяжении всего исследования авторами проводилось анкетирование обучающихся для выявления их представления об основных топологических понятиях и отношения к проектной деятельности. Результаты показали, что данный элективный курс вызывает интерес у школьников, а работа над проектом является для них увлекательным процессом. В анкету была включена пара связанных вопросов: «Что такое непрерывная деформация?» и «Какая деформация непрерывная?». Оба вопроса содержали варианты ответов. Как показали результаты анкетирования, школьникам проще оперировать с примерами деформаций, чем с определением (рис. 2, 3).

Рисунок 2. ***Ответы на вопрос «Что такое непрерывная деформация?»***
Figure 2 ***Answers to the Question "What is continuous deformation?"***

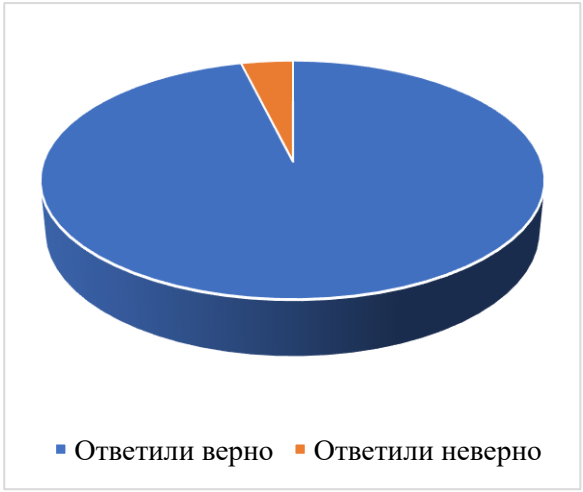

Рисунок 3. ***Ответы на вопрос «Какая из деформаций непрерывная?»***
Figure 3 ***Answers to the Question "Which deformation is continuous?"***

Анализ результатов анкетирования показал, что школьники успешно познакомились с новым разделом математики и освоили базовые принципы основ топологии, научились моделировать основные топологические объекты и выявили их основные особенности.

Ниже на рисунках представлены результаты сравнения ответов школьников разных групп на некоторые вопросы анкеты. Было выявлено, что обучающиеся ОЦ Сириус чаще других изучали дополнительные математические материалы (рис. 4), а учащиеся 5-7 классов школы Пскова знают о некоторых топологических объектах по мультфильмам.

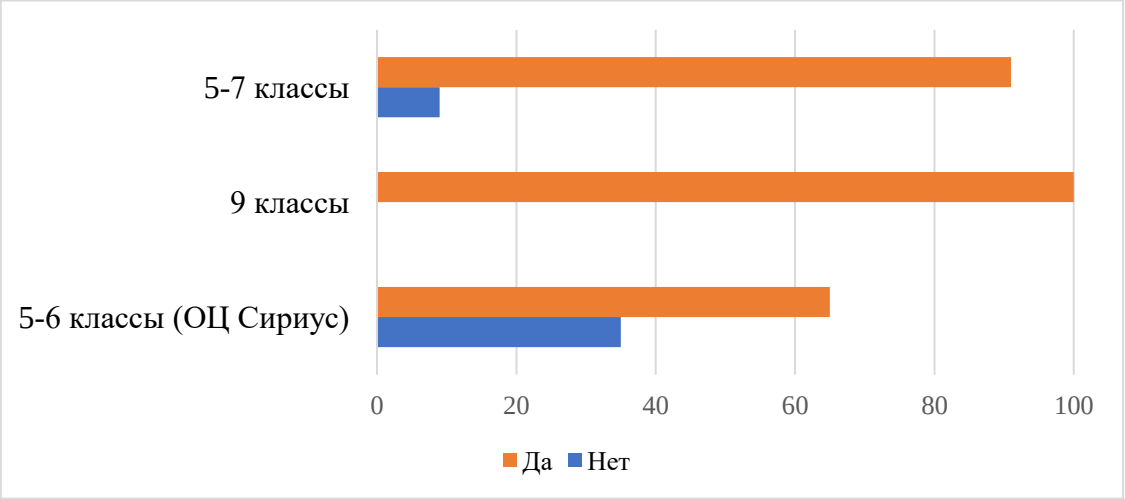

Рисунок 4. ***Ответы на вопрос «Узнал ли ты на занятиях что-то новое?»***
Figure 4 ***Answers to the Question "Did you learn something new on the lesson?"***

Школьники понимают на интуитивном уровне, что является предметом изучения топологии. Поэтому на вопрос о том, что такое топология, многие пытались приводить наглядные примеры, не выделяя ключевое свойство топологии. В связи с этим вопрос со свободным ответом при анкетировании в ОЦ Сириус был приведен к виду вопроса с выбором ответа (рис. 5)

В ходе исследования проводилась экспертная оценка целесообразности применения проектной технологии для знакомства школьников с топологией. Будущим учителям математики (студентам старшего курса) была представлена демоверсия элективного курса в виде интегративного занятия «Топологический треугольник», состоявшего из трех тем топологии: уникурсальные фигуры, математическое моделирование топологических многообразий, проблема раскраски карты.

Студенты отметили, что создание модели ленты Мёбиуса является наглядным средством изучения топологических свойств двумерного неориентируемого топологического многообразия. В результате обсуждения будущие учителя подчеркнули целесообразность использования технологии проектного обучения в рамках проведённого занятия по топологии; посчитали буклет и модель топологического многообразия удачным представлением результата проектной деятельности по данной тематике.

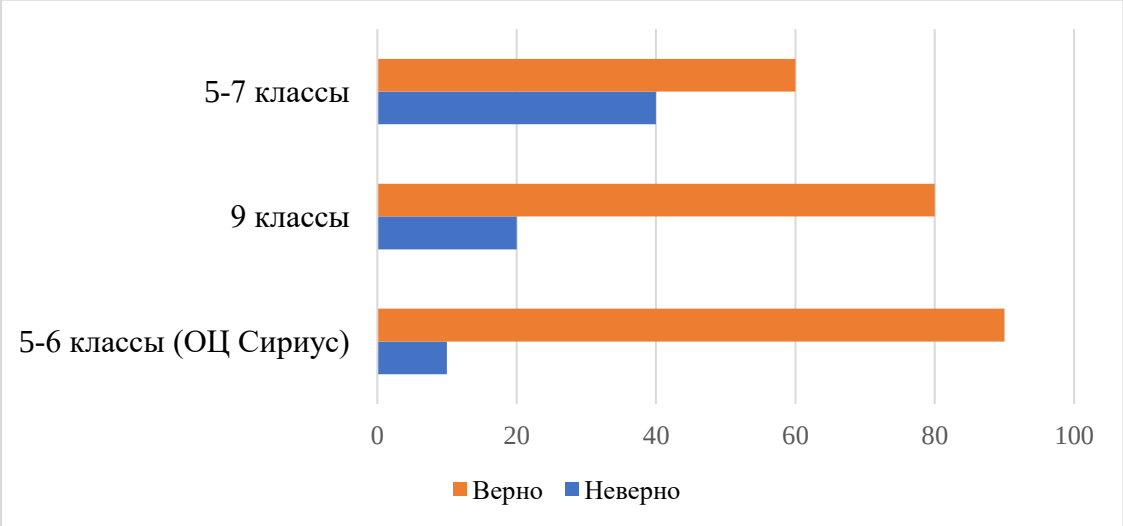

Рисунок 5. ***Ответы на вопрос «Что такое топология?»***
Figure 5 ***Answers to the Question "What is topology?"***

По их мнению, в большей мере у школьников в ходе знакомства с топологией путем вовлечения их в проектную деятельность развивается креативность мышления; далее — коммуникация, кооперация и критическое мышление (рис. 6).

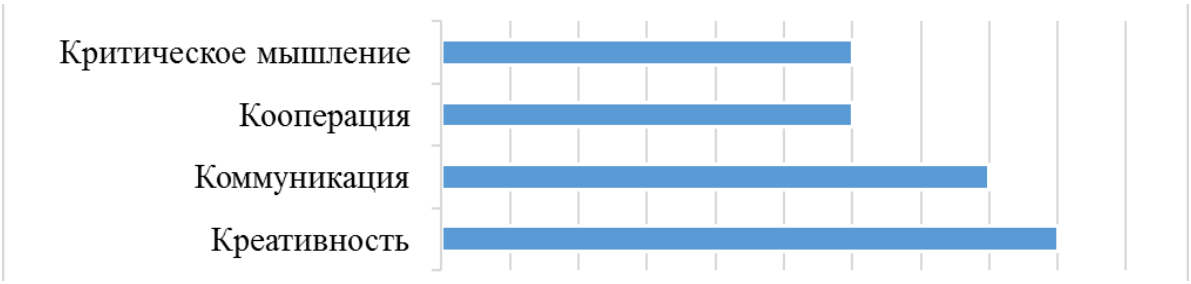

Рисунок 6. ***Ответы на вопрос «Что реальнее развивать на уроках в рамках технологии проектного обучения?»***
Figure 6 ***Answers to the Question "What is more real in the lessons of project learning technology?"***

Выводы
Conclusions

Таким образом, на основе анализа результатов преподавания курса «Познакомьтесь с топологией» было выявлено, что технология проектного обучения является эффективным инструментом знакомства школьников с топологией. Участие в проектной деятельности, создание конечного продукта позволяет школьникам закрепить теоретические знания и применить их на практике, смоделировать топологические объекты. Исследование показало, что целесообразно учитывать возрастные особенности при использовании технологии проектного обучения. Например, можно менять тип конечного продукта, процесс работы над ним, способ подачи информации для создания проекта и пр. Надо отметить, что изучение элементов общей топологии с применением технологии проектного обучения у всех категорий обучающихся вызывает интерес к топологическим вопросам и задачам, способствует формированию наглядных пространственных представлений.

Высокая образовательная эффективность использования проектной технологии позволяет построить занятия, нацеленные на самостоятельное или групповое добывание знаний и их применение на практике. При групповой работе подразумевается организация рабочего пространства для достижения единой цели, что создает условия для развития навыка кооперации, упрочняется процесс взаимодействия социально-ролевой структуры внутри одной группы и между другими группами. При поиске и отборе информации возникает проблемная ситуация, требующая решения, поиск которого подталкивает учащихся на дальнейшие размышления и рационализацию, активизирует критическое мышление. При оформлении результатов проектной работы школьники задействуют и развивают креативность мышления, при защите продукта проектной деятельности овладевают основами коммуникативных навыков. При работе над проектами для учащихся создаются необходимые условия для успешного развития системы важных компетенций 21 века, что позволяет школьникам получить необходимые навыки для эффективного взаимодействия в обществе.

Summary

The article contains theoretical information about the technology of project-based teaching and about the ways of its application in teaching elements of general topology at school. An elective course in mathematics "Get to know topology" was developed and which was taught to schoolchildren of different age groups. An integrative lesson "Topological mosaic" was held for students in grades 5-7 of a secondary school, where each student worked

on an individual project. When teaching in 9 grades of the school, students were divided into small groups and worked on the proposed topics of projects, presented the results in accordance with the regulations. At the Sirius educational center, students worked in groups on proposed projects and presented the results to a wide audience.

Before and after each teaching of the course, a survey of schoolchildren was carried out. The results of a survey in grades 5-7 of schools showed that the use of project activities is exciting, and the selected topics of topology are interesting for schoolchildren.

Analysis of the results of the questionnaire survey in grades 5-6 of the Sirius educational center showed that the students successfully got acquainted with the new section of mathematics and mastered the basic principles of topology, learned how to model the main topological objects and identified their main features.

It was found that students of the Sirius Educational Center more often than others studied additional mathematical materials, but students in grades 5-7 of the Pskov school knew about some topological objects from cartoons.

Schoolchildren intuitively understand the subject of topology, but explicitly formulating it is difficult for them. Therefore, when asked what topology is, many tried to give illustrative examples without highlighting the key property of topology.

The article contains the results of an expert assessment of the taught course, assumptions about the development of the 4c-competence system are given.

Thus, it was revealed that the technology of project-based teaching is an effective tool for acquainting schoolchildren with topology. Creating a real product allows you to consolidate theoretical knowledge and apply it in practice in order to trace the existence of basic topological phenomena in the surrounding world. When working on projects for students, the necessary conditions are created for the successful development of a system of important competencies of the 21st century, which allows students to acquire the necessary skills for effective interaction in society.

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THE DEVELOPMENT OF CONSTRUCTIVE INTERACTION SKILL AS A COMPONENT OF SOCIAL SUCCESS OF JUNIOR PUPIL

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Abstract. *The article proves that in order to achieve success in a person's society, it is important to be not only intellectually developed, but also to be able to work effectively in a team. The analysis of a scientific literature shows that there is a lack of research aimed at the purposeful development of students' ability to interact constructively with others. The purpose of the article is to reveal the theoretical and practical foundations for the development of the ability to constructively interact with others in primary school students. The following methods were used: theoretical analysis of a scientific literature on the problem of research, modeling, in order to describe the technique of constructing tasks for joint activities; empirical methods: diagnostic techniques, psychological and pedagogical experiment; methodology for building teaching as a holistic creative process.*

The article describes the essence of constructive interaction between the subjects of the educational process, presents the psychological and pedagogical conditions for the development of students of primary school age, the ability to constructively interact with others, namely: the introduction of the course "Logic" in the educational process of primary school in grades from 2 to4, tasks, related to the content of the course "Logic", in the lessons on the disciplines of the humanities and natural-mathematical cycles; the use of interactive teaching methods in the educational process; creation and implementation of tasks for joint educational activities, providing for the "I - inclusion" of everyone in joint work. A system of tasks related to the content of the course "Logic" is presented, examples of tasks of a combined nature are given and the process of working on them is described. The creation of tasks for joint educational activities in large and small groups by means of ICT is described, examples of such tasks are given, the process of working on such tasks is described.

With the help of the introduction of certain diagnostic techniques and the organization of experimental research at the all-Ukrainian level, the positive dynamics of the development of

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students' ability to interact constructively with others and, as a consequence, the effectiveness of the named psychological and pedagogical conditions for the development of the presented skill have been proved.
Keywords: *constructive interaction of individuals of educational process, joint educational activity, interactive method of training, logical knowledge, logical skills, ontos.xyz service, social success of the younger schoolchildren, teaching methods.*

Introduction

Changes in the modern world are brought about by the globalization of economic and socio-political processes that have led to a shift in the XXI century of educational paradigm. Based on the inseparable link between the quality of education and the quality of life in society, it is possible to consider education as one of the means expanding children and adults` opportunities as active reorganizers of their societies. Training covers all the values that enable people to learn to "live together" in the world characterized by pluralism and diversity.

For an individual to achieve social success, it is important to be not only intellectually developed, which is manifested in the ability to obtain and process information understanding what is critically important and what's merely a "detail"; be proactive in planning steps to be taken; to infer cause-and-effect relationships; to draw reasonable conclusions and, as a result, to prove his or hers point and the value of what has been created to professional community clearly, consistently and in a well-argued manner. In addition, we need to be able to work effectively in a team. We believe that this skill is mastered due to dialogic links in the thinking structure, namely: "thinking for oneself" (presentation of a certain idea), "thinking for another person" (the ability to put oneself in another person`s position and see a situation through their eyes) and "thinking together with another person "(taking the position of "we" on constructing a single draft decision).

Working together, it is important to respect the opinion of others, control one`s temper and understand the emotions of others – it will help to adhere to moral standards and rules in the interaction process. Based on the above, it is necessary, starting from the first grade, to develop schoolchildren's constructive interaction skills. These skills will help growing individuals to transform themselves and others for the better, to analyze and evaluate the consequences of these changes as well as to prove the value of what is created to other people. Thus, constructive interaction skills as an elementary schoolchild`s integral quality are the main component of social success.

The aim and objectives of the article are to provide insight into the theoretical and practical foundations underlying the development of constructive interaction skills in elementary schoolchildren, namely: to define the concept of

constructive interaction among the subjects of the educational process; to outline the psychological and pedagogical conditions for the development of elementary schoolchildren`s constructive interaction skills; to describe the all-Ukrainian experimental study on this skill development.

The article employs the following research methods and techniques: theoretical analysis of the scientific literature on the research subject; modeling to describe the technique for cooperation task composition; empirical methods: diagnostic methods, psychological and pedagogical experiment; methods of learning design as a holistic creative process.

Literature Analysis

So many scientists associate the organization of interaction in learning with the development of such moral qualities as respect for the opinion of others, sympathy and tolerance. Philosopher W.James believes that the quality of interaction is influenced by its participants` temperament. The scientists note that it "has an influence similar to facts or principles affecting the choice of a softer or tougher view of life" (James, 1995, 8). We support G.Kostiuk`s position claiming that in the learning process, the intellect should become verbal, and speech should be intellectualized, i.e. be clear, brief and argumentative (Kostiuk, 1969). In our opinion, the ability of interaction participants to prove their points significantly affects interaction constructiveness. A. Savenkov's research reveals the mission of social intelligence in constructive interaction with others. The scientist noted that the presence of social intelligence helps to understand the motives of another person's behavior, to predict their behavioral reactions in certain situations underlying success in social adaptation and integration (Savenkov, 2018). In our opinion, the main social intelligence criterion is the ability to put oneself in another person`s position and see a situation through their eyes and, as a consequence, either accept another person`s viewpoint or tactfully disagree by proving the proposed opinion to be wrong. For success in communication in general and, in particular, in constructive interaction with others, it is important to understand and be able to control one`s temper, which serves as a criterion indicating the presence of emotional intelligence. This means that emotional intelligence is a component of social intelligence. According to Peter Salovey and John Mayer, emotional intelligence is the ability to perceive and understand the manifestations of personality expressed in emotions as well as to control emotions based on intellectual processes. In other words, emotional intelligence, in their opinion, is comprised of the following 4 parts: 1) the ability to perceive or feel emotions (both one`s own and other people`s ones); 2) the ability to use

emotions to support rational thinking; 3) the ability to understand what is expressed by an emotion; 4) the ability to control emotions (Mayer & Salovey, 2005).

Based on the above, we may conclude that the intentional development of schoolchildren's constructive interaction skills in the educational process will help a teacher to develop in them a personalized way of talking, that is, not only the expression of objective ideas but also their attitude to what is said as well as certain emotional and volitional qualities.

Theoretical and Applied Bases of Research

The XXI century is characterized by the deepening and acceleration of comprehensive socio-economic, socio-cultural, and political processes determining the development of mankind at the present stage. In these conditions, as emphasized in the conception of the New Ukrainian School (Kabinet Ministriv Ukrayiny, 2016), the role of education as a social institution, where the formation and development of each individual takes place, is the most responsible and important.

Among the education development trends of the XXI century, we should emphasize the main ones affecting elementary schoolchildren`s social success (Matviienko, Tutova, 2019), namely:

The first trend is humanization, which is based on the recognition of man as the highest social value. The trend requires the creation of a new type of education with the priority of training focused on the personality of "Z" and "Google" generation students; orientation towards the development of their strengths and capabilities; meeting their various educational needs, and cultivating a sense of self-worth, tolerance, empathy and independence;

The *second trend* is education humanitarisation aimed at forming personal and corporate culture, "multidimensional" thinking, digital literacy, "smart" tolerance and a holistic view of the world.

The *third trend* is the national orientation of education consisting in the inseparability of education from national and patriotic orientations, the preservation and enrichment of the Ukrainians, other nationalities and nations` national values as well as the formation of cultural pluralism and respect for cultural diversity;

The *fourth trend* is educators' competence in working in the modern educational environment, their ability to organize successful cooperation, create comfortable conditions for subject-subject relations and cooperation effectively building partnership with different students in the classroom in such a way.

The transition from authoritarian and directive pedagogy to personality-oriented teaching and education largely depends on the development of subject-

subject relations between a teacher and students in the educational environment, their interpersonal interaction on the basis of a dialogue, cooperation and partnership. The problem of relations between the subjects of the educational process has always been relevant. Its solution directly affects the efficiency of the introduction of new educational technologies in student teaching as well as the level of the individual`s spiritual growth (Matvienko, 2009).

Interaction consists of actions. Each action is a system that contains the following complex formations: an active individual, objects of action or an individual who the action is directed at; action means or instruments; an action method or a method of using means, the affected individual`s reaction or the action result.

Each of the subsystems is characterized by certain mechanisms for constructive interaction development:

- relationships (a teacher and a student as the subjects of interaction are capable of self-organization and self-realization, and therefore, influencing each other they change qualitatively);
- connections (they characterize the nature of changes, the activity level of each pedagogical interaction subject);
- pedagogical influence (involves teachers` active actions; seeking to achieve their goals in the learning process, they use encouragement, persuasion, the creation of a situation of success and other methods);
- mutual understanding (contributes to the formation of a single conceptual field for interaction subjects);
- coordination (this mechanism of interaction is associated with the search for tools that ensure action coordination and consistency in operations);
- cooperation (interaction subjects participate in the preparation of joint projects or different but related tasks) (Matviienko, 2009).

Thus, we consider constructive interaction as a process aimed at development and self-development penetrating the "core" of personal relationships in all activities.

In the humanitarian sphere, the use of constructive interaction as a basis, a method of cognition of processes taking place all-around, leads to the traditional interpretation of human interaction but only through their influence on each other. At the same time, understanding interaction as an interrelation process between subject and objects implies not only directed activity but also a focused influence and coexistence of subjects and objects (Matviienko, 2016).

To organize favorable conditions aimed at developing constructive interaction skills in elementary schoolchildren, a modern teacher should be prepared to ensure constructive interaction in the elementary school educational

environment.

Thus, constructive interaction between a teacher and students should be at the core of the educational process in elementary school. The specificity of constructive interaction in "teacher-students in the classroom" and "teacher-student" subsystems lies in the fact that a teacher`s main focus is not on the result of certain knowledge acquisition but on the process of its mastering. The content of scientific concepts in constructive interaction with a teacher does not takes hold in each student`s mind – rather, it is consistent with the content that a student is able to read into it at the time of learning. Its subjective content may or may not be the same, but it is always in a teacher`s focus. In this sense, learning becomes a holistic creative process, where creativity is the formation by schoolchildren of their personal opinion or position and then – the emergence of author's creative products, a variety of them. Psychological comfort in the process of interaction with a teacher removes students' fear of making a mistake significantly improving their self-believe, it creates a basis for free self-expression: children forget about being afraid to express their thoughts, make mistakes, become unreserved in manner and, as a result, they are willing to think.

Let us consider the psychological and pedagogical conditions, the presence of which contributes to the development of the investigated skills in students:

1. The introduction of the "Logic" course in the elementary school educational process in grades 2 – 4. First and foremost, taking this course will help to develop in the younger generation all the mental operations and qualities of thinking, as well as the ability to express their thoughts clearly and convincingly; ability to think beyond the specific content and focus on the structure of their opinion; ability to independently obtain new information; create their own products (new tasks in logic, mathematics and other disciplines); ability to think and plan their steps proactively. The ability to think is related to the ability to identify a problem and be aware of it; the ability to apply previously learned (known) ways to solve the problem in a new educational or life situation (extrapolation, selection and analysis of facts, finding connections of the new with what was previously learned, etc.); make assumptions about solving the problem; substantiate and prove the assumptions.

The information support for the "Logic" course in grades 2 - 4 is a syllabus and textbooks – for each grade their own ones (Mytnyk, 2007; Mytnyk, 2008; Mytnyk, 2009).

2. The introduction of tasks according to the "Logic" course syllabus in the lessons on the disciplines of the humanities, natural and mathematical sciences. The tasks are as follows:

The first block. To find specific concepts according to the given generic notion or vice versa; to find among the given concepts an odd one out and to

give reasons for such an opinion.

The second block. To give a definition of the concept or to find a mistake in the proposed definition.

The third block. To construct a "chain" narrowing down or broadening the concept meaning. In the narrowing "chain", each subsequent concept must be narrower in scope than the previous one. In the "chain" of generalization, each subsequent concept has to be broader in meaning than the previous one.

*The fourth block***.** To express relationships between the scope of these concepts using Euler circles.

The fifth block. To determine the truth of the given simple or complex assertion.

The sixth block. To make a simple assertion using the given concepts or according to a picture, starting with a certain generic word: *all (each, any*), *some (at least one), none, always, sometimes, never*.

Some blocks can be combined into one task. For example, in a math lesson in the process of generalization and systematization of what has been learned during the elementary school course, children can be offered the following task: “To express the relationships between the scope of concepts using Euler circles.

A - natural numbers

B - even natural numbers

C - odd natural numbers

D - four-digit numbers

E - five-digit number

F - numbers in the tens of thousands` place consisting of 3 digits

Then we can ask students to make simple true assertions starting each of them with a certain generic word ("all", "some", "none") using these concepts. The students explore that when making assertions with the word "all" they use concepts the scope of which include each other; with the word "some" the scope of used concepts intersect; with the word "none" the scope of concepts is independent. There are many such assertions. For example, "all even natural numbers are natural numbers", "some five-digit numbers are numbers in the tens of thousands` place consisting of 3 digits", "no even natural number is an odd natural number".

3. The use of interactive teaching methods in the educational process**.** As interactive we consider methods, the use of which facilitates the simultaneous development of both hemispheres of the child's brain. The introduction of interactive teaching methods in lessons will help a teacher to enrich the educational process with the elements of research, search, the comparison of various facts, phenomena, positions, and conclusions. Thus, *at the level of gaining new knowledge*, the following methods can be used: problem- based

search dialogue (propels the development of mainly the left hemisphere of the brain) in combination with the method of figurative perception (promotes the development of predominately the right hemisphere of the brain). *At the level of the formation of intellectual and creative skills* the following methods can be of use: brainstorming, a problem- based search dialogue, the methods of inversion, empathy and incident, a didactic game and synectics (Mytnyk, 2006).

4. The creation of collaborative learning activity tasks that imply the use of ICT, providing "I - involvement" of everyone in collaborative work. Working on these tasks will help a teacher to activate students` creative thinking, develop its flexibility, dialogic links in the intelligence structure as well as emotional and volitional qualities.

The general task performance algorithm is as follows: each member of the group works on a subtask. Then, in collaboration, students combine subtask solutions into a single whole forming a new product. The use of ICT tools helps to involve all students in collaborative activities.

To date, a large number of free online resources have been created to support the educational process, some of which are quite easy to use in elementary school. One of them, for example, is LearningApps.org (2021) - a Web 2.0 application to support the learning and the teaching process through interactive modules.

LearningApps.org (2021) service is designed to develop interactive tasks that can be used working individually and in groups. To create an author’s resource at a high quality level, it is required to have minimal ICT skills. Today, hundreds of exercises for elementary school are publicly available.

Here are some examples of exercises that can be used for group work. In order for each and every student to participate in group work, each student should get their own task, albeit typical, the result of which has to be significant for the whole group and there has to be no opportunity to copy it from classmates.

Let us consider an exercise for a nature study lesson on wildlife on our planet, which can be delivered in the 4th grade while studying the topic: "The nature of continents and oceans." Students are divided into groups according to the number of continents (the figure does not show Antarctica). The students are asked to choose animals that can be found on "their" continent. The winners are the group that has "inhabited" it’s part of the map with more "correct" inhabitants and fewer animals living on other continents. Fig. 1.a. illustrates the task for one of such groups.

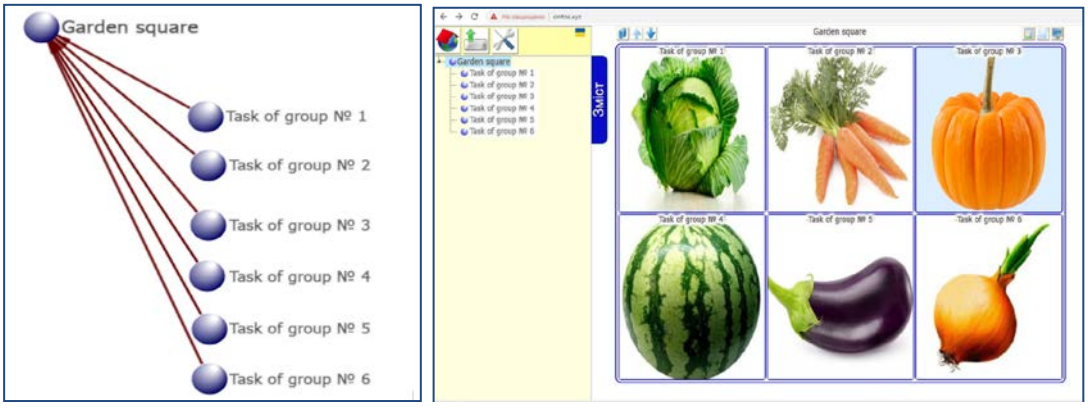
a) b)

Figure 1 ***Wildlife in Different Parts of the World***

Then each group makes up a story about wildlife on "their" continent. The members of the groups ask each other questions and learn the names of the continents.

The development of training exercises using the LearningApps.org service is so simple that they can be developed by students (Fig. 1b). To organize this type of activity, a teacher needs to choose an exercise type (preferably a ready-made exercise and use the option "create a similar task"). Choose a topic and establish conditions.

To make it easier for teachers to organize cooperative learning activities, we have developed the service Ontos.xyz (2021) designed to create the new integrations of existing electronic resources (Guraliuk et al., 2020). The built-in tools of this service make it possible to easily build a task structure both in the form of an ontograph (Fig. 2.a), where each node contains some information and in the "usual" form of an electronic textbook (Fig. 2.b.)



a) b)

Figure 2 ***Interface of an Ontos.xyz Service Interactive Textbook***

When selecting a textbook page, its content appears with a task and the means of its solution (Fig. 3). Text, graphics, audio and video files, documents in pdf, doc, docx and xls formats, presentations, web 2.0 applications, etc. can be used to fill the page.

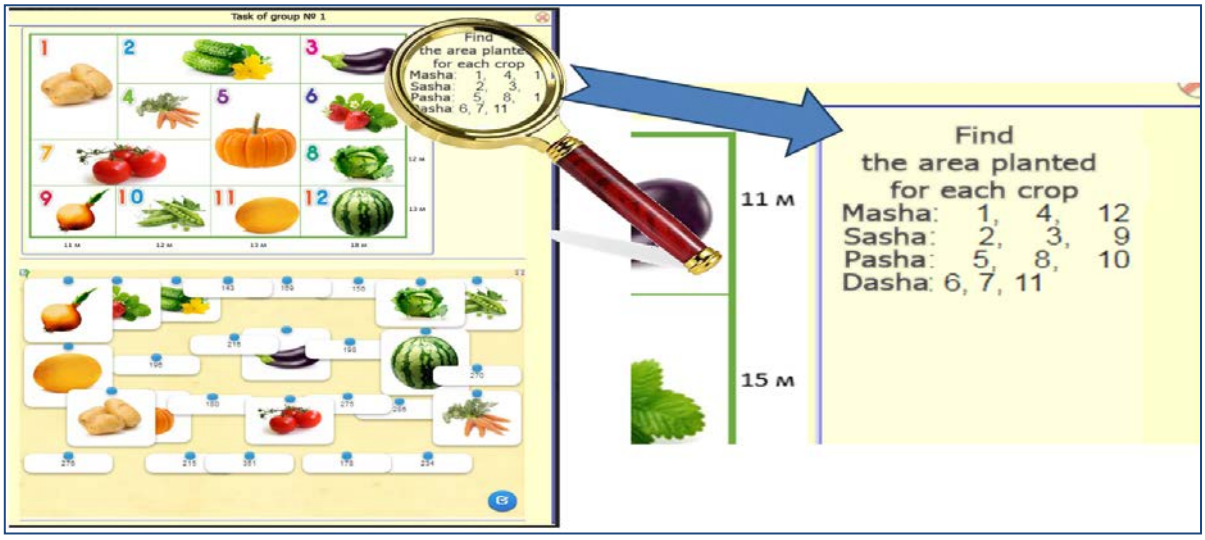


Figure 3 ***Example of Using the LearningApps.org Service Application as the Ontograph Node Content (electronic textbook page content)***

Thus, applications created using the LearningApps.org service can be included in interactive textbooks. In a math lesson in the fourth grade studying the topic "The area of a rectangle and a square", students can be offered a task illustrated in Fig. 3. In Fig.3, the task is a picture that shows the size of the rectangular areas and the text directly specifying what plot area each student needs to determine. At the bottom of the page, there is an interactive game where students have to combine images of a crop growing in a plot with a number equal to the plot area (there are three times as many numbers on the screen as the plots).

Then the new task is formulated as follows: three crops were sown in a large field: sunflower, corn and wheat. It is known that the area of the field where the sunflower was sown is such as the sum of the areas of the smallest plots; the area of the field in which the corn was sown is such as the sum of the areas of the middle plots; the sum of the areas of the largest plots corresponds to the area where the wheat was sown. In each group, during the discussion, the smallest plots and their sum are found, and similar calculations are performed with the medium and largest ones.

The next step is intergroup work (work in large groups) The representatives of each small group add together the values of the areas of the smallest plots, similar work is carried out on calculating the sums of the areas of the middle and

largest plots. Finally, the students calculate the area of the whole field where the sunflower, the corn and the wheat were sown, i.e. the sum of the areas occupied by these crops. The work described above involves all students, where each of them performs both an individual and group task together with others.

Thus, the use of modern information technology can help teachers make the educational process joyful, exciting and emotionally rich (Guraliuk et al., 2018).

In elementary school reading lessons, we recommend organizing work in a large group. In this case, all students are a group working on the same problem. For example, "Is it right to say that a fairy tale teaches how to live in the world?", "What is happiness?" etc. A teacher prepares students for such a lesson in advance, offers to familiarize themselves with certain literary works suggesting a solution to the given problem. During the lesson, first the discussion of the outlined problem is carried out in "small" groups (4 - 6 students in each), then each "small" group presents the results of the discussion to the teacher and classmates. Children substantiate their ideas using excerpts from certain literary works (selective reading). Finally, within the "large" group, the results of the search for a solution to the problem carried out in "small" groups, are discussed to identify the only correct solution or an original, a rational one, etc. At the end of the lesson, students can make up a single story or an argumentative essay on the problem outlined at the beginning.

In this case, it is advisable to use the method of the incident, namely: in a chain order (one by one) students create a story, making up one sentence within a time limit– each student has one minute.

Research Results

The presented psychological and pedagogical conditions were introduced into the educational process in terms of the all-Ukrainian experimental study on the didactic and methodological system of children's creativity development in preschool and general education institutions in 2012 - 2017. The experimental study took place in such Ukrainian cities as Kyiv, Mykolayiv, Ivano-Frankivsk, Ternopil.

The study involved 683 experimental grade students. Constructive interaction skills are based on cognitive interest, the desire for continuous self-development, developed conceptual and divergent thinking as well as intellectualized speech. Based on the above, we used the following diagnostic techniques: "What I like at school" (Luskanova, 1993), the Alternate Uses Task (Guilford, 1967) and the Inkblot Test (Rorschach, 1921) with the fourth-graders at the ascertaining stage (2012) and the control stage (2016) of the experiment

The results of the "What I like at school" projective method application showed that at the ascertaining stage in most experimental grade students, external motivation for learning and neutral attitude dominated (67% - 457 students) while at the control stage, cognitive motivation and pragmatic attitude became dominant (78% -533 students). The interpretation of the results is given in Table 1.

Table 1 ***Interpretation of the Results of the "What I like at school" Projective Methodology***

at the ascertaining stage	at the control stage
Most of the pictures illustrated such learning situations, where a teacher was working only with one student at the blackboard as well as various game situations: children playing in the school corridor during a break; they portrayed themselves as performing in the school assembly hall on the stage or simply pictured the assembly hall with festive attributes. The children in such pictures had cheerful facial expressions.	The pictures mostly illustrated different learning situations related to such subjects as Math, Logic, Ukrainian Language and Art Work; in the pictures, there were depicted children in the classroom (at the blackboard or sitting at their desks in groups) and a teacher; the pictures could be characterized by bright colors and the children and teachers` cheerful facial expressions.

The analysis of the Alternate Uses Task application results (Guilford, 1967) revealed that while at the ascertaining stage most students showed fluency only in the alternative uses of objects – the same type of proposals (62%: - 423 students), at the control stage, most elementary school graduates were characterized by high divergent productivity – the students showed fluency, flexibility and originality in the ways of using the proposed objects (81% – 553 students).

The analysis of the results of the Rorschach test application (the Inkblot Test) showed that describing how the inkblot looked like, the children at the ascertaining stage produced mostly one-word statements (59% - 402 students); at the control stage, they used everyday images or artistic descriptive associations (for example, "a black cloud is floating among the white ones", "the enemy force has surrounded the Cossacks", "old Shapoklyak`s rat", etc.) – 77%: or 525 students.

Logic knowledge and skills that students mastered in the corresponding lessons helped in giving arguments in favour of their own opinion, the analysis and assessment of the validity of their own and others' opinions as well as in the process of formulating and making informed decisions during educational discussions in the disciplines of the humanities and, natural and mathematical sciences.

The development level of the studied skills was assessed by calculating the

arithmetic mean of the results obtained in relation to the above methods. We illustrated the dynamics of the development of the students' constructive interaction skills on the pie charts (Fig. 1).

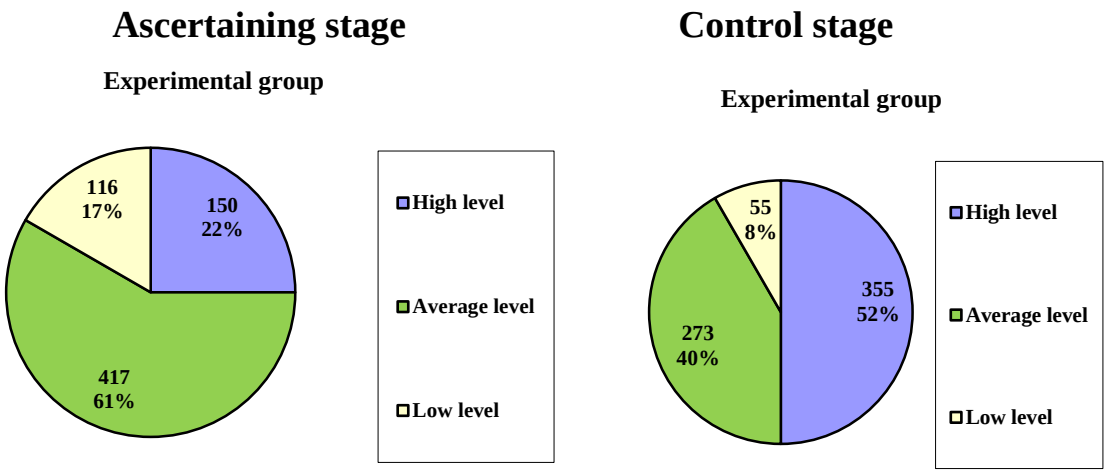


Figure 4 ***Dynamics of the Development of the Students' Constructive Interaction Skills***

The positive dynamics of the described results indicated that the proposed psychological and pedagogical conditions for the development of elementary school students' constructive interaction skills were proved to be effective. The experimental research revealed that most students were characterized by predominantly cognitive motivation, developed divergent thinking and intellectualized speech which was clear, brief and argumentative

Constructive interaction skills were manifested by all the experimental grade students, namely: tolerance towards other, even completely opposite, points of view and means (ways) of solving creative tasks and, at the same time, the ability to hold their ground; ability to provide a factual basis for their views; ability to work in a team and, more specifically, to contrast personal statements (opinions and positions) with other students and teachers` statements, their analysis, synthesis in order to develop a correct (constructive and rational) teamwork strategy.

Conclusions

The introduction of the described conditions into the educational process will help a teacher to make each student an active participant in the educational process. In such conditions, students have a desire to get their voice heard, to express their own opinion on the topic they are studying, to offer their options for solving the problem, because they feel that their position is valuable to a teacher. This means that children have a desire to think, which is a factor

contributing to the formation of constructive interaction skills.

Further research will be aimed at creating psychological and pedagogical support for the formation of a socially successful personality of students studying in general secondary education institutions. The present study started in September 2018 is a continuation of the previous one and is carried out within the framework of the all-Ukrainian experiment and will last until June 2023 (order of the Ministry of Education and Science of Ukraine №887 of 08.08.2018)

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TEORĒTISKAIS IETVARS SKOLOTĀJU PAŠNOVĒRTĒJUMAM 21. GS. PRASMJU MĀCĪŠANAI

Theoretical Framework for Teachers Self- assessment to Teach 21st Century Skills

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Abstract. *The context of educational reforms taking place in many countries gives special relevance, as the curriculum enters the 21st century skills or so-called transversal skills. It is necessary to ascertain how successful the teaching of these skills is already so that the school management together with teachers develop evidence-based or data-driven professional development solutions. The aim of the research is to create a theoretical framework and corresponding self-assessment tools, how the teacher can assess for himself to what extent he has succeeded in achieving the competence to teach students in the 21st century skills required to achieve the goals set by the school in the context of the ongoing education reform in the country. For the self-assessment of teachers' competencies, performance appraisal is used, comparing to what extent does teaching in a particular case correspond to good practice using performance level descriptors as tools - a set of teachers' learning progressions and tests. The developed set of teachers' professional learning progressions is based on data-based and field-tested analytical descriptions of performance levels from expert work. It includes 17 progressions developed within the framework of categories and criteria, the practical testing of which in school practice is planned in the authors' further research.*
Keywords: *21st century teaching skills, teachers' self-assessment.*

Ievads
Introduction

Īpašu aktualitāti pētījumam piešķir daudzās valstīs (Hitt, Pamela, & Tucker, 2016) notiekošo izglītības reformu konteksts, mācību saturā ienākot 21.gs. prasmēm jeb tā sauktajām caurviju prasmēm (*transversal skills* - Kegan, 2002; NRC, 2012).

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Lai ieviestu plānotās izglītības reformas skolu praksē mācību procesā, skolas izvirza attīstības mērķus jaunu zināšanu un prasmju apguvei, skolēnu snieguma uzlabošanai u. c. Reformu ieviešanas atslēga ir skolotāja veiktais darbs klasē mācību stundā. Izglītības politikas veidotāju vēlmes ne vienmēr atbilst reālajai situācijai skolu praksē. Šos mērķus būs iespējams realizēt, ja visiem iesaistītajiem (prioritāri skolotājiem) būs pietiekama kompetence, lai veiktu nepieciešamos pasākumus šos mērķu sasniegšanai vai nepieciešamības gadījumā realizētu nepieciešamo profesionālo pilnveidi.

Normatīvie akti, kas regulē uzsāktās reformas (Skola 2030, 2017; LR Ministru kabineta noteikumi, 2019) ieviešanu, nosaka, ka skolēns veido un **nostiprina lietpratību** (kompetenci), integrēti praktiskajā darbībā mērķtiecīgi **apgūstot zināšanas, izpratni un prasmes mācību jomās, attīstot caurviju prasmes**, veidojot ieradumus, izkopjot tikumus un apliecinot vērtības (LR Ministru kabineta noteikumi Nr. 416, 2019, punkts 14.1.), un pedagogs plāno un vada skolēna mācīšanos, izvirzot skaidrus sasniedzamos rezultātus, izvēloties atbilstošus un daudzveidīgus uzdevumus, sniedzot atbalstošu un attīstošu atgriezenisko saiti un iespēju skolēnam skaidrot darbību gaitu, domāt par savu mācīšanos un sasniegto rezultātu (LR Ministru kabineta noteikumi Nr. 416, 2019, punkts 14.3.).

Kā caurviju prasmes mācību saturā skolēnam noteiktas kritiskā domāšana un problēmrisināšana, jaunrade un uzņēmējspēja, pašvadīta mācīšanās, sadarbība, pilsoniskā līdzdalība, digitālā pratība (LR Ministru kabineta noteikumi Nr. 416, 2019, 5.2. MK). Tas lielā mērā atbilst literatūrā aplūkotajam par caurviju jeb 21. gs. prasmēm (WEF, 2015; OECD, 2018; NRC, 2012).

Praksē skolotāja kompetence mācīšanās vadīšanai (mācīt 21.gs. prasmes) tiek vērtēta kompetenču pārvaldības procesa ietvaros skolā, skolai kā organizācijai izvirzot attīstības mērķus 21.gs. prasmju mācīšanai skolēniem vai datos balstītiem skolēnu snieguma uzlabojumiem. Lai tos efektīvi realizētu (Saleniece & Namsone, 2021), skola plāno attīstības ciklu (Hattie, 2012), kura daļa ir kompetenču vērtēšana. Skolai izvirzot attīstības mērķi – skolēniem apgūt, piemēram, vienu no aplūkotajām caurviju prasmju grupām -pašvadītās mācīšanās prasmes, ir svarīgi identificēt, kādā mērā skolotājiem izdodas realizēt atbilstošu mācību procesu. Ja tiek konstatēta to nepietiekamība, tad skolas vadībai ir iespēja plānot un veidot datos balstītus profesionālās pilnveides risinājumus, kas ir nepieciešami, lai skola sasniegtu izvirzītos mērķus. Kompetenču vērtēšanu autori aplūko kā lielāka modeļa daļu skolā kā organizācijā skolēnu snieguma uzlabošanai, lai perspektīvā būtu iespējams realizēt profesionālās pilnveides (PP) risinājumus ar augstu ietekmi uz praksi, perspektīvā – skolēnu sniegumu.

Vērtējot mācīšanas kvalitāti, literatūrā (Baumert et al., 2010; Hatty, 2009; Goe, 2007; Nilsen & Gustafsson, 2016) un autoru iepriekšējos pētījumos (Dudareva et al., 2019; Namsone, Čakāne, & Butkēviča, 2021; Namsone et al.,

2018b, Namsone et al., 2017, Namsone et al., 2016, Dudareva et al., 2015, France et al., 2015) identificētas atšķirības starp skolotāju un skolēnu viedokļiem starp to, kā notiek klasē mācību process (Dudareva et al., 2019). Pētījumos tiek aplūkots, ka skolotāji aptaujās, piemēram, TALIS (*Teaching and Learning International Survey*) (Schleicher, 2015; OECD, 2018) nereti uzrāda sociāli vēlamās atbildes. Izmaiņas skolotāju praksē būs iespējamas, ja šīs un citas plaisas tiks pārvarētas, veidojot datos balstītus profesionālās pilnveides risinājumus ar ietekmi uz skolotāju praksi (mācību stundā).

Viens no ceļiem kā to var panākt, ir skolu praksē identificēt, cik veiksmīgi jau norisinās 21. gadsimta prasmju mācīšana. Autoru līdzšinējie pētījumi aptver situācijas, kurās ārējais eksperts identificē skolotāju profesionālās pilnveides vajadzības. Autoru grupa veic ilgtermiņa pētījumu, kā veidot teorētisko ietvaru un rīku komplektu, lai identificētu skolotāju profesionālās pilnveides vajadzības 21.gs prasmju mācīšanai un veidotu personalizētus to risinājumus. Tas dod iespēju skolas vadībai kopā ar skolotājiem veidot datos balstītus profesionālās pilnveides risinājumus.

Pētījuma mērķis ir radīt skolotāju pašnovērtējuma SLA komplektus, pamatojoties uz radīto teorētisko ietvaru. Sniedzot skolotājam iespēju novērtēt, cik lielā mērā praksē (mācību stundā) izdodas mācīt skolēniem 21.gs. prasmes (caurviju prasmes), kādi uzlabojumi mācību procesā klasē ir nepieciešami. Pētījums ir aktuāls katras skolas izvirzīto mērķu sasniegšanai valstī notiekošās izglītības reformas kontekstā.

Literatūras apskats
Literature Review

Pētījuma vajadzībām iekļaušanai teorētiskajā ietvarā kā kategorijas, kas saistītas ar pilnveidotā mācību satura apguvi skolēnam, izvēlētas pašvadīta mācīšanās, sadarbība, digitālā pratība un, apvienojot caurviju prasmes izziņas darbības jomā, izveidota kategorija izziņas darbības aktivitāte.

Caurviju prasmju apguve ir iespējama mācoties iedziļinoties. Tas nozīmē skaidri, izmērāmi mērķi - sasniedzami rezultāti, noderīga personalizēta atgriezeniskā saite saistībā ar mērķi, par rezultātu un procesu, kognitīvo un metakognitīvo stratēģiju darbināšana, mācību uzdevumi ir kompleksi, tiem ir daudzveidīgi konteksti, saistība ar reālo dzīvi, notiek mācīšanās mācīties un sevis izzināšana, mācīšanās kopā ar citiem - komunikācija un sadarbība (Namsone & Oliņa, 2018).

Lai skolēna mācīšanās rezultāts būtu kompetence, aktualizējas skolotāja prasmes vadīt atbilstošu mācīšanos, analizēt un reflektēt, sadarboties. Mācīšanās vadīšanu raksturo tādas pazīmes kā sasniedzamā rezultāta komunicēšana, skolēnu pieredzes aktualizēšana, produktīvu uzdevumu izvēle, atbalsts mācībām, skolēnu

iesaistīšana produktīvā sarunā, mācīšanās stratēģiju darbināšana, savas mācīšanās uzraudzīšana, sadarbība, informācijas tehnoloģiju jēgpilna lietošana u.c. (Namsone & Oliņa, 2018), kas raksturo daļu no tālāk izveidotajā ietvarā iekļautajiem kritērijiem.

Skolotāja kompetence ir komplekss un daudzdimensionāls (Kunter et al., 2013; Kaiser et al., 2017) jēdziens. Skolotāja kompetenci veido zināšanas, prasmes un uzskati, kas rezultējas darbībā (Helmke, 2009; Oser, 2001; Taconis et al., 2004). Skolotāja kompetence izpaužas daudzās jomās. Skolotāja kompetences struktūru veido jomas, kas tieši attiecas uz mācīšanu, plānošanu, vērtēšanu (procesā), kā arī paša skolotāja kvalitāti raksturojoši kritēriji, kas tieši ietekmē mācīšanu vai ir ar to saistīti. Šī pētījuma fokusā ir skolotāja kompetence mācīt 21. gs. prasmes. Šīs prasmes ir skolotāja kompetences mācīt subjektu (mērķis skolēnam).

Novērtēšanas ietvars veidots atsaucoties uz divām lietām, t.i. skolotāju kvalitāti un skolotāju efektivitāti (Hatty, 2009; Goe, 2007; Nilsen & Gustafsson, 2016). Skolotāja kvalitāti raksturo kvalifikācija (izglītība, specializācija, sagatavotība, darba pieredze, profesionālā pilnveide) un raksturojums (pārliecība, uzskati, *self-efficacy*) (Nilsen & Gustafsson, 2016). Šo autoru redzējumā mācīšanas kvalitāti raksturo atbalstoša vide, mācīšanas skaidrība, kognitīva aktivēšana, klases pārvaldība.

Skolotāju kompetenci vērtē kompleksi, izmantojot vairāku instrumentu kombinācijas. Tā ir vērtējama kā novērojama praksē, darba situācijās (Helmke, 2009; Taconis et al., 2004) analizējot dažādas situācijas, kuru analīze kvantiatīvi vai kvalitatīvi var reflektēt par kompetenci, kuru gribam vērtēt (Roelofs & Sanders, 2007) u.c.

Šī pētījuma kontekstā autori interpretē kompetences mācīt vērtēšanu kā novērojamu sniegumu darbībā t.i. mācīšanā (klasē, stundā) (Namsone et al., 2018), saistot to ar instrumentiem, kas tiek izmantoti mācīšanas kvalitātes vērtēšanai skolas efektivitātes pētījumos. Pārskats par mācīšanas kvalitātes vērtēšanu apkopots 1.tabulā.

Vērtējot skolotāju kompetenci kā sniegumu darbībā, izmantojot kvalitatīvu pētījumu metodi stundu vērošanu, kas tiek veikta, ievērojot noteiktu procedūru un atbilstoši pētījuma ietvaram. Šādā gadījumā tiek izmantoti snieguma līmeņu apraksti pret katru no kritērijiem (*rubrics*), sniegumu vērtē salīdzinājumā ar labo praksi t.i. reālo sniegumu salīdzina ar vēlamo pēc validēta snieguma apraksta līmeņos. Vērtējumu izsaka aprakstoši pret indivīdu, aprakstoši un kvantitatīvi pret kopu, ko apstiprina 1. tabulā minētie pētījumi.

1.tabula. ***Pārskats par mācīšanas kvalitātes vērtēšanu***
Table 1 ***Overview of Teaching Quality Assessment***

Ko vērtē	**Instruments vērtēšanai**	**Prakse, kas aprakstīta ārzemju literatūrā**	**Prakse Latvijā un konteksts pētījumam**
Zināšanas	Testi	Izmanto skolotāju sagatavošanā augstskolās (Cauglan & Jiang, 2014)	Pieredzējis skolotājs nosacīti nonāk jauna skolotāja situācijā, ņemot vērā, novitāšu apjomu reformas griezumā
Prasmes kā sniegums darbībā	Snieguma vērtēšana, izmantojot SLA	Izmanto kvalitatīvos pētījumos vai normatīvos dokumentos (skolotāju profesionālajos standartos -Austrālija), novērtējuma procedūrām (ASV, Šveice u.c.,) vērotājam izmantojot dažādus SLA (*rubrics*) (AITSL, 2011)	Latvijā šāda prakse ir tikai pētniecisku procesu līmenī (Bērtule et al., 2019; Namsone & Čakāne, 2018, Namsone et al., 2017, Namsone et al., 2016, Dudareva et al., 2015, France et al., 2015)
	Skolotāju/ skolēnu aptaujas	Skolotāji atbild uz jautājumiem, piemēram, cik bieži veic konkrētas aktivitātes mācību procesā; izmanto kvantitatīvos pētījumos (PISA, TIMSS, TALIS) (OECD, 2015)	Latvijā TALIS (OECD, 2018), arī PISA (OECD, 2015) uzrāda sociāli vēlamas atbildes, identificē plaisas skolotāju atbildēs
Uzskati, pārliecība, self-efficacy u.c.	Aptaujas	Skolotāji atbild uz jautājumiem, izmanto pašnovērtējumam vai citādi (Hatty, 2009; Goe, 2007; Nilsen & Gustavson, 2016)	Latvijā maz pētīta joma (Butkēviča et al., 2019; Dudareva et al., 2021)

Lai radītu metodi kā novērtēt skolotāju kompetenci mācīt, atbilstoši teorētiskajam ietvaram, tiek kombinēti vairāki instrumenti, papildinot stundu vērošanas datus ar datiem, skolotājiem veicot testu un izpildot pašnovērtējuma anketu. Latvijā arī citi pētnieki atzinuši, ka ir nepieciešamība ieviest gan topošajiem, gan esošajiem skolotājiem pašnovērtējuma praksi ikdienā (Lāce, 2014).

Autoru veidotais teorētiskais ietvars operacionalizē kategorijās un kritērijos izteiktus prioritāros mērķus reformas īstenošanai skolotāju praksē. Autoru veidotajā teorētiskajā ietvarā iekļautas kategorijas un kritēriji, kas tradicionāli ir skolotāju kompetenču vērtēšanas ietvaru sastāvdaļa (mācīšanās plānošana un veidošana, klases pārvaldība u.c.), gan kritēriji, kas detalizēti atsedz tieši 21.gs. prasmju (skolēnu pašvadīta mācīšanās, kognitīva aktivizēšana, sadarbība, digitāla pratība) mācīšanu. Teorētiskais ietvars (*framework*), pamatojas literatūras analīzē par mācīšanu (Marzano & Kendall, 2007), ietvariem tās vērtēšanai (Danielson,

2013) un autoru praktiskajā pieredzē (Bērtule et al., 2019; Namsone & Čakāne, 2018; Namsone et al., 2017; Namsone et al., 2016; Dudareva et al., 2015; France et al., 2015).

Dž. Vilkinsa efektīvas mācīšanas modelis ietver izglītību, pieredzi, vidi, mācību satura zināšanas, attieksmes, uzskatus par mācīšanos un mācīšanas praksi un attiecības starp tiem (Wilkins, 2008). Pamatojoties uz literatūrā aprakstīto un iepriekšējiem pētījumiem ietvara izveidei mācīšanas analīzei autori izvēlas kategorijas plānošana, vērtēšana, vide un attiecīgi izvirza kritērijus (skat. 2.tabulā). Pētījumam izvēlētās A kategorijas tiek atlasītas, pamatojoties uz iepriekš aplūkoto par 21.gs. prasmēm un normatīvo regulējumu par caurviju prasmēm (Skola 2030, 2017), kas jāapgūst skolēnam. B kategorijas tiek atlasītas, pamatojoties uz mācīšanas (mācīšanās vadīšanas) kompetences jomu un mācīšanās kvalitātes vērtēšanai iekļautajām kategorijām. Piemēram, B kategorijas kritēriji 5.1. Mācīšanās plānošana un veidošana un 5.2. klases un metožu, paņēmienu pārvaldība tradicionāli tiek iekļauta šādos ietvaros (Danielson, 2013; AITSL, 2011 u.c.).

2. tabula. ***Kategoriju –kritēriju ietvars 21.gs. prasmju mācīšanai atbilstoši skolas mērķim*** *(adaptēts no Bērtule et al., 2019)*
Table 2 ***Selected Category - criteria Framework for Teaching Performance to Develop 21st Century Skills*** *(adapted from Bērtule et al., 2019)*

Kategorijas		II 1	II 2	II 3
		Plānošana	Mācīšana	Klases vide
IA 1	Skolēna pašvadītās mācīšanās veicināšana	1.1. Mācīšanās mērķu skaidrība	1.2. Metakognitīva darbība	6.2. Formatīvā vērtēšana 6.3.Personalizācija
IA 2	Skolēnu izziņas darbības veicināšana	2.1. Mācību uzdevumi, lai notiktu mācīšanās iedziļinoties	2.2. Saruna	
IA 3	Skolēnu sadarbības veicināšana	3.1. Mācību uzdevumi sadarbībai	3.2. Skolēnu sadarbības organizēšana	
IA 4	Jēgpilns IT lietojums	4.1. IT rīki	4.2. Jēgpilns IT lietojums	
IB 5	Skolotāja pamatprasmes un tehnika	5.1. Stundas veidošana, vadīšana 6.1. Mācību saturs	5.2. Klases un metožu pārvaldība	5.3. Atbalsts skolēna mācībām

Katrai kategorijai un apakškategorijai izstrādāti kritēriji un to dimensijas, kas ir pamatā vēlamā snieguma līmeņa apraksta izveidei. Sniegumu katram kritērijam atbilstoši līmenim apraksta deskriptors. Deskriptoru izveidei izmantota zinātniskās literatūras analīze (Danielson, 2013, Kunter et al., 2013, Cauglan &

Jiang, 2014), labās prakses analīze vairākās valstīs (Farr, 2010; Takahashi, 2011; Jayaram et al., 2012; MPIL, 2015; CEL, 2017; Helmke, 2009; AITSL, 2011; Microsoft Partners in Learning, 2012; Prensky, 2010; Stronge, 2012; Huber, & Skedsmo, 2016; Danielson, & McGreal, 2000).

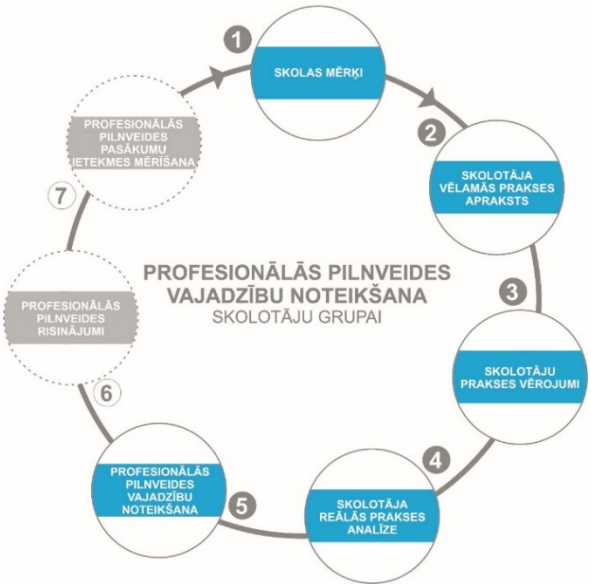
Izstrādātais ietvars un atbilstošie SLA iepriekš aprobēti un validēti praksē Latvijas skolās (Bērtule *et al*., 2019). SLA komplekts ekspertu darbam veidots tā, lai būtu novērojams skolotāju sniegums mācību stundā. Pamatojoties uz ietvaru, autori izveidojuši arī testu zināšanu pārbaudei un aptauju pašnovērtējumam (Butkēviča et al., 2021).

Pētījumam tiek izvirzīti jautājumi:

1. Ko rāda dati par skolotāju profesionālās pilnveides vajadzībām skolai izvēloties mērķi 21.gs prasmju mācīšanai?
2. Kā izveidot skolotāju profilus un tiem atbilstošus instrumentus skolotāju pašnovērtējumam 21.gs. prasmju mācīšanai?

Metodoloģija
Research Methodology

Pētījuma teorētiskais ietvars un tam atbilstoši instrumenti skolotāju pašnovērtējumam radīti datos balstītas pētnieciskās izstrādes procesā, autoriem veicot padziļinātu dažādu ietvaru un citu datu analīzi, kartēšanu, veidojot vairākkārtējas ekspertu, pētnieku, skolu vadītāju un skolotāju konsultācijas, lai izstrādātu, bagātinātu un validētu izstrādāto modeli. Lai validētu izstrādāto modeli, veikta profesionālās pilnveides vajadzību noteikšana skolotāju grupai. Procesa posmi sadalīti daļās, šajā pētījumā aprakstīti pirmie pieci posmi (skat. 1. attēlu).



1.attēls. ***Procesa posmi skolotāju profesionālās pilnveides vajadzību noteikšanai***
Figure 1 ***Stages of the Process for Identifying Teachers' Professional Development Needs***

Pētījuma izlasi veido divas apakškopas. Katru apakškopu veido vienas pašvaldības skolas, kuras ir dažāda izmēra, pārstāv dažādus mācību priekšmetus un iekļauj visas mācību klases (1.-12.kl.): X apakškopa (11 skolas, 188 skolotāji); Y apakškopa (7 skolas, 84 skolotāji). Iekļauti dati par 386 vērotām mācību stundām un 272 veiktiem testiem un aptaujām. Pētījums veikts laika posmā no 2017. gada septembra līdz 2020. gada novembrim.

Pētījuma dati iegūti lauka pētījumā, 8 iepriekš apmācītiem ekspertiem vērojot un transkribējot mācību stundas pētījumam izvēlētajās skolās, pēc tam atbilstoši veicot analīzi pēc noteiktas formas, aizpildot veidlapu un novērtējot sniegumu līmeņos atbilstoši izstrādātajam ietvaram (skat. 2. tabulu) un sniegumu līmeņu aprakstiem (SLA). Analīzei tiek izmantota snieguma vērtēšana, salīdzinot, cik lielā mērā praksē vērotais konkrētā gadījumā atbilst labai praksei, kā rīkus izmantojot konkrētā kritērija līmeņa aprakstus - deskriptorus. Katram līmenim piešķiram skaitlisko vērtību ārējā eksperta vērtējumā, lai būtu iespējams analizēt tendences dažādās pētījumu kopās (skat. 2. attēlu). Veidojot SLA pašnovērtējumam, netiek norādīti skaitliski snieguma līmeņi. Dati apkopoti datu bāzē analīzes vajadzībām. Izveidotais teorētiskais ietvars un snieguma līmeņu apraksti iepriekš validēti (Bērtule et al., 2019).

Līmeņi

Kritēriji	Sāk	Turpina iesākto	Tuvu rezultātam	Prasmīgs, lietpratīgs	Eksperts
IA1 Pašvadītas mācīšanās veicināšana					
1.1.Mācīšanās mērķu (SR) skaidrība Mērķa formulējums *Saprotamība skolēniem*	**Pasaka tēmu**, par ko būs stunda, bet ne kā mērķi - ko iemācīsies. Nepasaka skolēniem neko. *Skolēns nezina, kas stundā jāiemācās.*	**Formāli pasaka** stundas mērķi (SR)skolēnam vai/un snieguma kritērijus. vai Kā stundas mērķi **nosauc visu, kas stundā tiks darīts** (ir daudz "mērķu"), neizceļ būtisko. vai SR **formulējums neatbilst visiem kritērijiem**. *Skolēns dzird/redz stundas mērķi, bet nav precīzi skaidrs, kas īsti jāiemācās, svarīgi.*	**SR ir formulēts atbilstoši laba mērķa kritērijiem** (skaidrs, izmērāms, būtisks, atbilstošs, sasniedzams laikā), bet **nepārliecinās**/nepievērš uzmanību tam, **vai skolēniem** mērķis un/vai snieguma kritēriji ir **saprotami**. *Skolēns dzird precīzu mērķi, bet var būt atsevišķas neskaidrības.*	Izvirza **labi** (atbilstoši visiem kritērijiem) **noformulētu SR** un/ vai snieguma kritērijus **skolēniem saprotamā valodā** un **pārliecinās**, vai **skolēniem tas ir saprotams**. *Skolēni saprot, kas jāiemācās.*	**+ Iesaista skolēnus** SR un/vai snieguma kritēriju formulēšanā, precizēšanā, koriģēšanā. *Skolēni piedalās mērķa formulēšanā.*

2.attēls. ***Snieguma līmeņa apraksta piemērs*** *(adaptēts no Bērtule et al., 2019)*
Figure 2 ***Example of Framework*** *(adapted from Bērtule et al., 2019)*

Pētījumā iesaistītie skolotāji izpildījuši testu un aptaujas anketu, kurā iekļautais jautājumu komplekts atbilst kategorijām, kas izvēlētas atbilstoši skolas mērķim. Testi un aptaujas izmēģinātas iepriekšējos pētījumos, jautājuma bloki veidoti atbilstoši teorētiskajam ietvaram 2. tabulā (Butkēviča et al., 2019; Dudareva et al., 2021).

Pētnieki veikuši iegūto datu triangulāciju un padziļinātu analīzi, lai, izmantojot vēlamo un reālo skolotāju profilus, noteiktu skolotāju profesionālās pilnveides vajadzības. Skolotāju vēlamo profilu veido kritēriji no A kategorijas, kas izvēlēti atbilstoši skolas mērķim un B kategorijas kritēriji, kas raksturo mācīšanu kopumā. Profilā tiek iekļauts vēlamais vai pietiekamais snieguma līmenis, ko nosaka eksperimentāli. Reālo profilu veido eksperts pēc vēroto stundu analīzes. Izmantojot skolotāju kompetences profilus, eksperts nosaka, vai ir kompetenču nepietiekamība un profesionālās pilnveides vajadzības skolotājiem skolā, izmantojot SLA atbilstoši profilā iekļautajiem kritērijiem.

Skolotāju pašnovērtējumam radīti skolotāju profilu, vēlamā snieguma deskriptoru un pašnovērtējuma SLA komplekts, pamatojoties uz radīto teorētisko ietvaru.

Pētījuma rezultāti
Results

1. Ko rāda dati par skolotāju profesionālās pilnveides vajadzībām skolai izvēloties mērķi 21.gs prasmju mācīšanai?

Praksē vērotais sniegums pētījuma kopā B kategorijas kritērijos tuvojas vēlamajam (ir ar atsevišķām nepilnībām), tas atspoguļots 3. tabulas redzamajos datos. A kategorijas kritērijos tas rāda, ka sniegums ir 1.līmenī, izņemot kritērijus par metakognitīvu darbību un informācijas tehnoloģiju jēgpilnu lietojumu skolēnam, kas novērots nelielā stundu skaitā. Vienlaikus konstatētas ievērojamas atšķirības individuālu skolotāju sniegumā kategoriju A un B kritērijos (skat. 3. tabulu). B kategorijas kritērijos (5.1. un 5.2.) lielākā skaitā stundu konstatēts sniegums līmenī 3 un 3+, A kategorijas kritērijos skaits ir daudz mazāks.

3. tabula. ***Iegūtie dati par praksē novēroto kā mācīt 21. gadsimta prasmes***
Table 3 ***Obtained Performance Level of Teachers to Teach 21st Century Skills***

Kategorija		Nr.	Praksē novērotais snieguma līmenis	Stundu skaits ar minimālo novēroto līmeni	Stundu skaits ar maksimālo novēroto līmeni
A	IA1 Pašvadītā mācīšanās	1.1.	1	0 N=95	3+ N=35
		1.2.	0	0 N=260	3+ N=3
		6.2.	1	0 N=54	3+ N=10
		6.3.	0	0 N=257	3+ N=5
	IA2 Skolēnu izziņas darbības veicināšana	2.1.	1	0 N=100	3+ N=24
		2.2.	1	0 N=28	3+ N=25
	1A3 Sadarbība	3.1.	1	0 N=38	3+ N=20
		3.2.	1	0 N=133	3+ N=5

	1A4 Jēgpilns IT lietojums	4.1.	1	0 N=105	3+ N=4
		4.2.	0	0 N=318	3+ N=2
B	IB5 Mācīšana un mācību saturs	5.1.	2	0 N=32	3+ N=96
		5.2.	2	0 N=20	3+ N=76
		6.1.	2	0 N=32	3+ N=109

Skolu praksē profesionālās pilnveides vajadzības tiek konkretizētas atbilstoši skolas izvirzītajam mērķim. Detalizētāk piemērā aplūkota kategorija IA1 pašvadītā mācīšanās (skat. 4. tabulu). kurā papildus iekļauti dati, kas iegūti izmantojot testu un pašnovērtējuma aptauju, kā arī noteiktie vēlamais un reālais kompetences profili un kompetences nepietiekamība, kas ir profesionālās pilnveides vajadzību diagnosticēšanas pamatā.

4. tabula. ***Piemērs datiem skolotāju profesionālās pilnveides vajadzību noteikšanai kategorijā pašvadīta mācīšanās***
Table 4 ***An Example of Data to Identify Teachers' Professional Development Needs in the Category of Self-directed Learning***

Kritēriji	**IA1 Pašvadītā mācīšanās**				**IB Skolotāja pamatprasmes un tehnika**	
	1.1.	1.2.	6.2.	6.3.	5.1.	5.2.
Vēlamais skolotāju kompetences profils	3	3	3	3	3	3
Reālais skolotāju kompetences profils	1	0	1	0	2	2
Kompetences nepietiekamība	2	3	2	3	1	1
Vidējais sniegums testā	-	2	-	1	2	-
Vidējais uzrādītais līmenis aptaujā	3	3	3	-	-	2
Minimālais praksē novērotais snieguma līmenis	0 N=95	0 N=260	0 N=54	0 N=257	0 N=32	0 N=20
Maksimālais praksē novērotais snieguma līmenis	3+ N=35	3+ N=3	3+ N=10	3+ N=5	3+ N=96	3+ N=76

Datu triangulācijas vajadzībām analizējot skolotāju atbildes testā un pašnovērtējuma aptaujā (skat. 4. tabulu), konstatējams, ka B kategorijas kritērijā 5.1. skolotāju vidējais vērtējums par savu tipiskāko rīcību atbilst ekspertu vērotajam stundā, bet A kategorijas kritērijos konstatēta plaisa divu līmeņu apjomā t.i. skolotāji kā sev tipisku atzīmējuši sniegumu profesionālajā līmenī, ko eksperts vērojot stundā nav konstatējis. Tas norāda uz kompetences nepietiekamību un aktualizē problēmu par izpratnes dziļumu par pašvadītu mācīšanos vai vēlamo atbilžu atzīmēšanu. Testa dati uzrāda, ka vidēji skolotāju zināšanas ir tuvāk novērotajam sniegumam nekā pašnovērtējums. Tas atbilst

literatūrā uzrādītajam (Cauglan & Jiang, 2014; Dudareva et al., 2019; Butkēviča et al., 2019) par kompetences nepietiekamību skolotāju pašnovērtējumā un apstiprina nepieciešamību radīt rīku, kas skolotājiem praksē varētu palīdzēt saskatīt, kādas konkrētas izmaiņas ir nepieciešamas savā praksē un formulēt datos balstītas profesionālās pilnveides vajadzības.

Skolotāju profilā iekļautais vēlamais sniegums 3. un 3+ līmenī kalpo kā orientieris izvirzāmajiem mērķiem. Pētījums parāda, ka īpaši A kategorijas kritērijos (saistībā ar 21.gs. prasmju mācīšanu), lai panāktu pieejas maiņu praksē Skola 2030 kontekstā, darbs ir tikai iesākts, ar datiem vēlreiz apstiprinot autoru iepriekšējos pētījumos konstatēto (Bērtule et al., 2019; Namsone & Čakāne, 2018, Namsone et al., 2017, Namsone et al., 2016). Praksē vērotā snieguma raksturojums kategorijas A kritērijos ir skaidrojams ar skolotāju atšķirīgu izpratni par 21.gs. prasmju (caurviju prasmju) mācīšanas nepieciešamību Skola 2030 kontekstā, ar atšķirīgām prasmēm to darīt; atšķirīgām profesionālās pilnveides iespējām dažādās skolās u.c.

Pētījuma dati apstiprina, ka reāli citu pētījumu vajadzībām profilā iekļaujamais praksē sagaidāmais pietiekamais sniegums B kategorijas kritērijos ir 2.līmenī, ne vēlamajā profesionālajā līmenī (3.), lai arī B kategorijā iekļauti kritēriji, kas apraksta darbības, kuras skolotāji regulāri praktizē. Tas skaidrojams ar reālo skolotāju kvalifikāciju (izglītības pakāpe, tās atbilstība nozarei, kurā mācību priekšmets, stāžs, īstenotās PP atbilstība u.c.) skolotāju deficīta situācijā (LIZDA, 2016 u.c.) un pēdējos gados atvieglotajām prasībām skolotāju kvalifikācijai (MK noteikumi Nr. 569, 2018).

5. tabula. ***Piemērs salīdzinājums starp novēroto un vēlamo sniegumu atbilstoši kritērijiem***
Table 5 ***An Example of a Comparison Between Observed and Desired Performance According to Criteria***

Nr.	**Novērotā snieguma apraksts**	**Vēlamā snieguma deskriptori**
1.1.	*Formāli pasaka sasniedzamo rezultātu*	*Izvirza* ***labi*** *(atbilstoši visiem kritērijiem)* ***noformulētu SR*** *un/ vai snieguma kritērijus* ***skolēniem saprotamā valodā*** *Un* ***pārliecinās****, vai* ***skolēniem tas ir saprotams, iesaista skolēnus tā formulēšanā.***
6.2.	*Skolotājs pārliecinās par rezultātu, bet skolēns atgriezenisko saiti nesaņem*	*Skolotājs* ***pārliecinās par*** *stundā* ***sasniegto pret plānoto SR,*** *+ Dod* ***AS*** *skolēniem* ***par sasniegto pret plānoto SR*** *gan par rezultātu, gan procesu, lai skolēns saņemtu atbildi uz jautājumiem –* ***ko zinu/protu, ko vēl nē, ko darīt*** *- no skolotāja, klases biedriem vai sevis*

Lai tālāk plānotu profesionālās pilnveides risinājumus, ir nepieciešams, izmantojot izveidotos deskriptorus, atsegt kāds ir reālais sniegums un uz kādu sniegumu vajadzētu tiekties, kas ir pamatā iecerei veidot instrumentus

pašnovērtējumam. Dati 5. tabulā rāda mācību stundās novērotās tipiskās rīcības (vidējais raksturojums, izmantojot SLA) aprakstu, kas iegūts izmantojot SLA un parādīts sniegums profesionālajā līmenī uz kuru skolotājam vajadzētu virzīties tālāk, pilnveidojot savu praksi. Aplūkotajā piemērā tas nozīmē, ka reālajā mācību procesā ir tikai novēroti atsevišķi elementi skolēnu pašvadītās mācīšanās prasmju veidošanai un, lai tā būtu pilnvērtīga, nepieciešami profesionālās pilnveides risinājumi, lai pārvarētu plaisu viena vai vairāku līmeņu apjomā līdz vēlamajam sniegumam.

Pētījumā iegūtie dati apstiprina kompetences nepietiekamības esamību un profesionālās pilnveides nepieciešamību. Atšķirības, kas identificētas individuālu skolotāju sniegumā, apstiprina personalizētas profesionālās pilnveides nepieciešamību. Lai skolotājs varētu proaktīvāk iesaistīties datos balstītu risinājumu veidošanā savas profesionālās izaugsmes vajadzībām, autori veido ietvaru un instrumentus skolotāju pašnovērtējuma vajadzībām.

2. Kā izveidot skolotāju profilus un tiem atbilstošus instrumentus skolotāju pašnovērtējumam 21.gs. prasmju mācīšanai?

Veidojot skolotāju profilus skolotāju pašnovērtējuma SLA izveidei, autori tos grupē atbilstoši iepriekš aplūkotā teorētiskā ietvara kategorijām (skat. 2. tabulu), kas ir prioritāri svarīgi reformas Skola 2030 ieviešanai - pašvadītā mācīšanās, izziņas darbības aktivēšana, sadarbība un digitālā pratība, ietverot tajos kritērijus, dimensijas un vēlamā snieguma deskriptorus. Tas paaugstina pētījuma praktisko izmantojamību, skolai izvirzot mērķi kādā no šīm kategorijām vai skolotājam pašam vēloties pilnveidot savu praksi. Piemēram, izvirzot mērķi skolēniem apgūt pašvadītas mācīšanās prasmes, tiek izveidots skolotāja profils, iekļaujot tajā kritērijus, dimensijas un vēlamā snieguma deskriptorus, kuri ir prioritāri svarīgi šāda mācību procesa īstenošanai. Profila izveidē ir praktiski apsvērumi, kuriem pievēršama uzmanība, lai to praktiski būtu iespējams realizēt, ja grib panākt reālas izmaiņas skolotāju praksē.

Metodoloģiskā konstrukcija SLA izveidei ietver vairākus principus:

1. Analītiskus pašnovērtējuma SLA veido katrai dimensijai, parādot skolotāja darbību virkni skolēna mācīšanās vadīšanai (mācīšanai) augšupejošā secībā.
2. Tiek izmantoti iepriekš definēti un validēti snieguma līmeņi un deskriptori profesionālā (3.) līmenī, kas atbilst snieguma progresijas posmiem.
3. Pašnovērtējuma SLA tiek veidots kā secīgu darbību virkne, nenorādot skaitliski līmeņus un to sadalījuma apzīmējumus.

6. tabulā parādīts piemērs autoru izveidotajam analītiskajam skolotāja snieguma līmeņa aprakstam skolotāja pašnovērtējumam (pašnovērtējuma rubrikai).

Pašnovērtējuma SLA ir paredzēti skolotāju personīgām profesionālās pilnveides vajadzībām (ne iesniegšanai pārskatos), lai dotu iespēju profesionālāk analizēt savu praksi, noteikt un prioritarizēt profesionālās pilnveides vajadzības un plānot datos balstītus profesionālās pilnveides risinājumus. Tās izmantojamas arī profesionālās sarunās ar ekspertu, vienojoties par datos balstītiem profesionālās pilnveides risinājumiem.

Šajā pētījumā aprakstīti procesa pirmie 5 posmi, tālākajos pētījumos tiks strādāts ar profesionālās pilnveides risinājumiem un profesionālās pilnveides pasākumu ietekmes mērīšanu (skat. 1. attēla 6. un 7. procesa posmus). Turpmākajos pētījumos autori plāno izveidoto pašnovērtējuma rīku izmēģināt skolotāju profesionālās pilnveides grupās gan vienas skolas ietvaros, gan starp skolām, iekļaujot profesionālās pilnveides programmās darbu ar šiem pašnovērtējuma SLA, kā arī aprobēt ietvarus skolās atbilstoši to izvirzītajiem attīstības mērķiem 21.gs. prasmju apguvei skolēniem. Autori plāno ne tikai papildināt izstrādātos testus un pašnovērtējuma anketas, bet arī tās adaptēt pašnovērtējuma vajadzībām.

6. tabula. ***Skolotāja pašnovērtējuma snieguma līmeņa apraksti***
Table 6 ***Rubrics for Teacher Self-assesment***

Kritērijs	**Dimensija**	**Snieguma progresa deskriptori**			
Pašvadītās mācīšanās veicināšana					
IA1 1.1. Mācīšanās mērķu skaidrība	Mērķa formulējums	Zinu laba sasniedzamā rezultāta formulējuma kritērijus (skaidrs, izmērāms, būtisks, atbilstošs, sasniedzams laikā, skolēniem saprotamā valodā). Stundā formulēju sasniedzamo rezultātu, kas atbilst 1-2 kritērijiem.	Formulēju sasniedzamo rezultātu atbilstoši laba mērķa kritērijiem. Ja nepieciešams, dodu snieguma kritērijus.	Izvirzu atbilstoši visiem kritērijiem noformulētu sasniedzamo rezultātu un snieguma kritērijus skolēniem saprotamā valodā.	Mācu skolēnus formulēt visiem kritērijiem atbilstošus mērķus (sasniedzamos rezultātus), izveidot snieguma kritērijus.
	Komunicēšana Saprotamība skolēniem	Nosaucu, dažreiz parādu uz tāfeles/ekrāna.	Izmantoju skolēnu vecumam un pieredzei piemērotu sasniedzamā rezultāta komunicēšanas veidu (skolēni dzird, redz pilnu formulējumu vai atslēgas vārdus uz tāfeles/ekrāna, saņem rakstiski). Jautāju dažiem skolēniem par mērķu un snieguma kritēriju saprotamību, skaidrību.	Uzdodu konkrētus jautājumus, lai pārliecinātos par sasniedzamā rezultāta saprotamību.	Iesaistu skolēnus sasniedzamā rezultāta formulēšanā, precizēšanā.
IA1	Rezultāta konstatēšana	Izdaru secinājumus par rezultātu no frontāliem	Izmantoju atbilstošus uzdevumus, lai konstatētu	Stundā objektīvi, precīzi pārliecinos par stundā sasniegto tieši pret	Izmantoju atbilstošus uzdevumus, sarunu ar skolēnu, lai precizētu

6.2. Formatīvā vērtēšana		vērojumiem un dažu skolēnu atbildēm.	konkrēta stundā plānotā rezultāta sasniegšanu.	plānoto SR un snieguma kritērijiem.	viņa risinājumu, domāšanu.
	Atgriezeniskā saite skolēnam	Nodrošinu atsevišķiem skolēniem iespēju saņem atbildi par to, cik pareizi izpildīts uzdevums (no manis, klasesbiedriem vai pašam konstatēt).	Veidoju mācību procesu tā, lai katrs skolēns par paveikto tūlīt saņemtu atbildi uz jautājumiem – ko zinu/protu, ko vēl nē, ko darīt tālāk.	Veidoju mācību procesu tā, lai katrs skolēns saņem atgriezenisko saiti par sasniegto pret plānoto rezultātu: atbildi uz jautājumiem – ko zinu/protu, ko vēl nē, ko darīt tālāk, gan par rezultātu, gan mācīšanās procesu. Atbilstoši situācijai izmantoju atgriezeniskās saites došanai piemērotāko formu (individuāla saruna ar skolēnu, sk. grupu; frontāla saruna; skolēnu savstarpēja atgriezeniska saite). Dodu skolēniem iespēju AS uzreiz izmantot snieguma uzlabošanai.	Skolēni saņem konstruktīvus ieteikumus arī par to, kā pašam sekot savām darbībām un rezultātam - vadīt savu mācīšanos.
IA1 1.2. Metakognitīva darbība	Mācīšanās stratēģijas	Iesaistu skolēnus sarunā par mācību aktivitātes/uzdevuma jēgu (ko ar to mācījās),	Veidoju sarunu par to, kādā veidā mācās, kā lasa, kā domā, kā atceras u.tml., un kurā tiek	Dodu uzdevumus, lai skolēni izvērtē dažādas stratēģijas, to efektivitāti un izvēlas sev un situācijai atbilstošāko.	Dodu uzdevumu, ~~kā~~ kura izpildei skolēnam nepieciešams pamatot stratēģiju izvēli.

		par zināšanu, prasmju, stratēģiju izmantošanas iespējām.	pārrunātas, salīdzinātas skolēnu izmantotās stratēģijas.		
	Mācīšanās monitorēšana	Iesaistu skolēnus mērķu, snieguma kritēriju, rezultātu apspriešanā.	Rosinu skolēnus koriģēt, personalizēt mērķus. Rosinu plānot darbības mērķa sasniegšanai. Rosinu, izmantojot kritērijus, dot atgriezenisko saiti klasesbiedram vai sev; izmantot saņemto atgriezenisko saiti.	Rosinu skolēnus izvirzīt individuālus mērķus, formulēt produkta, procesa kritērijus; izvēlēties mērķa sasniegšanai atbilstošus uzdevumus; prasīt un dot kvalitatīvu atgriezenisko saiti, izmantojot kritērijus un snieguma līmeņu aprakstus.	Ir kopīgi ar skolēniem izstrādātā mērķu un sasniegumu monitorēšanas stratēģija, lai skolēni virza, koriģē, plāno savu darbību celā uz kopīgo vai individuālo mērķi gan sākotnēji, gan pēc sasniegtā konstatēšanas.
IA1 6.3. Personalizācija	Personalizācija	Radu situāciju, kurā daži skolēni var izvēlēties atšķirīgu uzdevumu vai atbalsta struktūru. Izvēļu skaits ierobežots (1-2 skolotāja piedāvātas iespējas).	Lielai daļai skolēnu ir iespēja izvēlēties dažādas grūtības pakāpes uzdevumus vai atbalsta struktūras, vai veikt uzdevumu atšķirīgos veidos. Iespēju varianti ir limitēta, nelielā skaitā.	Katrs skolēns var izvēlēties atbilstošu uzdevumu un veikt to atbilstoši spējām, vajadzībām. Ir sarunas ar skolēniem par izvēles atbilstību.	Skolēni īsteno individuālos mācīšanās mērķus.
Skolēnu izziņas darbības veicināšana					
IB5 6.1. Mācību saturs	Mācību satura reprezentācija, valodas (terminu, simbolu u.c.) lietojums	Satura skaidrojumā izmantoju mācību jomas standartam un skolēnu vecumam atbilstošus korektus terminus.	Izvēlos mācību satura skaidrojumam atbilstošu reprezentāciju (teksti, piemēri, modeļi); lietojot korektu mācību priekšmeta valodu.	Izvēlos mācību satura skaidrojumam vairākas vispiemērotākās reprezentācijas. Pārliecinos, vai izvēlētā mācību satura reprezentēšana un	Saturu atsedzu, izmantojot daudzveidīgas skolēnu vecumam un saturam atbilstošas reprezentācijas.

					valodas lietojums, skolēnam ir saprotams.	
	Kopsakarību veidošana	Izvēlos būtisku, standartam atbilstošu saturu. Skaidroju atsevišķos jēdzienus.	Atsedzu kopsakarības, jaunā satura ietvaros.		Satura apguvi virzu uz būtisko, saistot jaunos jēdzienus esošajā jēdzienu sistēmā, atsedzot kopsakarības.	Atsedzu kopsakarības ar citu mācību priekšmetu jēdzieniem.
	Darbs ar skolēnu priekšstatiem (idejām, ziņām), tostarp maldīgiem	Ziņu/prognozēju iespējamos skolēnu maldīgos priekšstatus. Pagaidām ir grūtības to pārveidē par zinātniskiem.	Noskaidroju skolēnu priekšstatus. Reaģēju uz tiem, tos paplašinot, lai skolēni atsevišķus maldīgos priekšstatus pārveidotu par zinātniskiem. Vairumā gadījumu tas izdodas.		Veidoju procesu, kurā notiek maldīgo priekšstatu pārveide par zinātniskiem viena mācību priekšmeta ietvaros.	Priekšstatu pārveidei iesaistu skolēnus starpdisciplinārā zinātnisko priekšstatu veidošanā.
	Perspektīvu saskatīšana/ situāciju aplūkošana no dažādiem skatu punktiem	Dodu uzdevumu ieraudzīt situāciju no diviem dažādiem skatu punktiem/perspektīvām.	Rosinu skolēnus formulēt būtiskākās atšķirības starp diviem dažādiem skatu punktiem/perspektīvam, izmantojot piemērus, iepriekšējās zināšanas, pieredzi pamatošanai.		Rosinu skolēnus analizēt situāciju no vairākām atšķirīgām perspektīvām, salīdzināt tās (kopīgais/līdzīgais un atšķirīgais), raksturot katras perspektīvas vērtību, izmantojot analīzei un pamatošanai iepriekšējās zināšanas, jauno saturu, piemērus, tekstus.	Rosinu skolēnus novērtēt dažādās perspektīvas (to vērtības, ierobežojumus, kultūras un sociālos faktorus, kas tās var ietekmēt), kultūrvēsturiskā kontekstā.
IA2 2.1. Mācību uzdevumi, lai notiktu	Konteksts, situācijas jaunums	Izmantoju uzdevumus, kuru konteksts bieži lietots, risinājums iegūstams lietojot	Izmantoju uzdevumus, kuru konteksts atbilst skolēna pieredzei, tas saistīts ar mācību priekšmeta saturu;		Izmantoju uzdevumus, kur skolēnam jālieto savas zināšanas un prasmes iepriekš	Izmantoju uzdevumu, lai skolēns lietotu savas zināšanas un prasmes nepazīstamā

mācīšanās iedziļinoties		zināšanas, prasmes, zināmas procedūras tipveida situācijās; uzdevumi reproduktīvi.	situācija skolēniem pazīstama, prasa tiešu pārnesumu.	nepieredzētā kontekstā; tie prasa pārnesumu uz jaunu situāciju, viena mācību priekšmeta ietvaros.	starpdisciplinārā kontekstā; situācija autentiska.
	Kompleksums	Izmantoju uzdevumus, kas neprasa konstruēt jaunas zināšanas. Uzdevuma veikšanai nepieciešama kāda atsevišķa izziņas prasme. Izmantoju vairākus neliela apjoma īslaicīgus uzdevumus.	Izmantoju uzdevumu, kas prasa zināšanu konstruēšanu, balstoties uz iepriekš apgūtām priekšmeta zināšanām un prasmēm, atsevišķām izziņas prasmēm. Uzdevuma veikšana aizņem vismaz pusi stundas.	Izmantoju kompleksu uzdevumu – tas prasa, lai skolēns pats konstruētu zināšanas liekot kopā gan priekšmeta specifiskās zināšanas un prasmes, augsta līmeņa izziņas prasmes. Uzdevuma veikšana aizņem lielāko daļu stundas.	Izmantoju kompleksu uzdevumu – tas prasa, lai skolēns pats konstruētu zināšanas liekot kopā vairāku priekšmetu specifiskās zināšanas un prasmes, augsta līmeņa izziņas prasmes, gan arī citas caurviju prasmes. Uzdevuma veikšana aizņem visu stundu.
IA2 2.2. Saruna	Sarunas tehnika, skolēnu iesaistīšanai	Zinu labas sarunas kritērijus, atšķiru jautāšanu atprasīšanai no sarunas. Praksē visbiežāk jautāju pats. Ja skolēni ātri nedod vajadzīgo atbildi, skaidroju pats; ļauju atbildēt tiem skolēniem, kuri vēlas.	Rosinu skolēnus uzdot jautājumus citiem skolēniem. Sagaidu vairāku skolēnu atbildes, izmantoju tās sarunas tālākai virzībai. Sekoju, lai atsevišķi skolēni nedominē.	Veidoju situāciju, lai skolēni jautātu par mācīšanās saturu; izmantoju jautājumus un dažādās skolēnu atbildes, nepieciešamības gadījumā tās pārfrāzējot, lai panāktu sarunas precīzāku virzību, padziļināšanu. Vienojos ar skolēniem par noteikumiem, kā katrs var iesaistīties sarunā.	Veidoju stundu, lai skolēni paši uzdod daudzveidīgus jautājumus par mācību saturu, iniciē, vada diskusijas, ir aktīvi, pilnībā iesaistīti domāšanas procesā.

	Izmantotie jautājumi un atbildes.	Uzdodu jautājumus par atsevišķiem mācību satura elementiem, lai pārliecinātos par skolēnu zināšanām. Uz jautājumu ir viena pareizā atbilde.	Uzdodu jautājumus par būtiskiem mācību satura elementiem, idejām lai skolēni izteiktu savas domas. Jautājumam iespējamas atbilžu variācijas.	Uzdodu jautājumus par būtisko mācību saturā kopumā, lai, skolēni pamatotu savas izteiktās domas. Jautājumam nav viennozīmīgi pareizas atbildes.	Uzdodu jautājumus, par būtisko strapdisciplinārā mācību saturā, kas panāk skolēna argumentētus, izvērtējošus spriedumus, satura padziļinājumu, paplašinājumu.
Skolēnu sadarbības veicināšana						
IA3 3.1. Mācību uzdevumi sadarbībai	Uzdevums jēgpilnai sadarbībai	Dodu uzdevumu darbam grupā, bet bieži to var veikt gan individuāli, gan grupā -sadarbība, lai iegūtu rezultātu nav nepieciešams nosacījums uzdevuma veikšanai.	Izmantoju uzdevumu/-s, kuri prasa skolēniem sadarboties, dalot atbildību vai kopīgi pieņemot lēmumu.	Izmantoju tādus uzdevumus, kuri prasa, lai skolēniem jādala atbildība, un viņiem jāpieņem kopīgs lēmums par saturu, procesu vai produktu.	Izmantoju tādus uzdevumus, kas prasa, lai skolēniem jādala atbildība, viņiem jāpieņem kopīgs lēmums par saturu, procesu vai produktu, un viņu darbs ir savstarpēji atkarīgs.
IA3 3.2. Sadarbības organizācija	Sadarbības norise	Parasti skolēnus dalu grupās pēc nejaušības principa, vai grupas sadalās skolēni paši. Skolēnu skaits grupā atkarīgs no ārējiem apstākļiem (pieejamo materiālu skaits, telpas iekārtojums u.tml.).	Esmu atradis vairākus veidus, kā veiksmīgi dalīt skolēnus grupās. Iesaku skolēniem, kā iekārtot fizisko vidi; kā rīkoties ar pieejamajiem materiāliem.	Veidojot skolēnu grupas, nosaku to sastāvu un lielumu, izsverot katra grupas dalībnieka stiprās un vājās puses, ka arī grupas kopējo potenciālo mikroklimatu. Nodrošinu atbilstošu fizisko vidi, materiālu pieejamību ērtam darbam grupā.	

		Nepievēršu uzmanību grupas darba vietas iekārtojumam. Grupa saņem rakstiski formulēto uzdevumu un nepieciešamos materiālus vienā eksemplārā.			
	Sadarbības vadīšana grupā	Vēroju grupu darbu, sekoju skolēnu sarunām grupas iekšienē. Ja skolēni jautā, palīdzu.	Sekoju skolēnu komunikācijai grupas iekšienē, dalībnieku iesaistei. Ja nepieciešams, iekļauju uzdevumā norādījumus sadarbības īstenošanai, dodu atsevišķus ieteikumus, kā rīkoties.	Iedziļinos skolēnu sarunās, virzu tās uz būtiskāko jautājumu apspriešanu. Ja nepieciešams, sarunājos ar grupu par nepieciešamajiem uzlabojumiem sadarbības plānošanai un īstenošanai darba veikšanai.	Esmu panācis, ka skolēni patstāvīgi, apzināti plāno, kā notiks sadarbība, pēc mācību aktivitātes notiek refleksija arī par sadarbības procesu. Dodu personalizētu atbalstu atbilstoši skolēnu vajadzībām.
	Skolotāja – skolēnu partnerība	Uzmundrinu, veidoju pozitīvu, atbalstošu vidi.	Veidoju pozitīvas sadarbības attiecības - iesaistu skolēnus mācīšanās plānošanā, vērtēšanā u.tml.	Dalu savu atbildību ar skolēniem, iesaistot skolēnus atsevišķu lēmumu pieņemšanā par mācīšanās norisi vai kopīgi izstrādājot uzdevumu pie kura strādās.	Mācīšanās notiek partnerībā - es un skolēni ir kā līdzvērtīgi partneri ar mācīšanos saistītajos jautājumos. Kopīgi izvērtē sadarbību, vienojas par kopīgiem uzlabojumiem, izvirza nākamā grupu darba mērķus sadarbības attīstīšanā, utt.

Jēgpils IT lietojums (jāpārlasa viss IT)					
IA4 4.1. IT rīki	IT rīku izvēle (skolotājs)	Izvēlos/piedāvāju IT rīku, ar kuru var daļēji sasniegt izvirzīto mērķi, lietojot atsevišķas IT rīka funkcijas.	Izvēlos/piedāvāju lietot IT rīku, ar kuru var sasniegt izvirzīto mērķi, ņemot vērā IT rīka pamatfunkcijas.	Izvērtēju vairāku IT rīkus paredzētā mērķa sasniegšanai un izvēlos atbilstošāko, ņemot vērā IT rīka pamatfunkcijas, lietojamību un citas priekšrocības.	+ izvēlos vai piedāvāju izvēlēties IT rīku, ar kuru izmantojot rīka priekšrocības, var radīt jaunas metodes un jaunus produktus. Palīdzu kolēģiem un skolēniem apgūt IT rīkus produktīvākai darbībai klasē un ārpus tās.
IA4 4.2. Jēgpilns IT lietojums	IT rīku lietojums uzdevumu veikšanai (skolēns)	Veic reproduktīvus uzdevumus ar IT.	+ veic vienkāršus un produktīvus uzdevumus ar IT.	+ veic kompleksus produktīvus uzdevumus ar IT (piem., krāj pierādījumus, reģistrē progresu, veido digitālos portfolio).	+ rada jaunus risinājumus un jaunus produktus ar IT (piem., programmē, veido mācību video, podraides, infografikas u.c.).
	IT rīku lietojums attālinātā mācību procesā (skolotājs)	Ievietoju skolēniem veicamos uzdevumus saziņas un mācību e-platformās (piem., e-klase, mykoob, u.c.).	+ vadu tiešsaistes stundas, konsultācijas videokonferenču platformā (piem., Zoom, MS Teams, u.c.).	+ izmantoju IT rīkus, kas ļauj iesaistīt skolēnus mācību procesā, nodrošināt skolēnu sadarbību, zināšanu konstruēšanu (piem., balsošana, kopdokumenti, virtuālās sienas, simulācijas utml.).	+ izmantoju IT rīkus, kas ļauj redzēt skolēnu darbību stundā un sniegt personalizētu atgriezenisko saiti (piem., classkick, classDojo utml.).

Skolotāja pamatprasmes un tehnika					
IB5 5.2. Klases un metožu pārvaldība	Uzdevumu skaidrība, to izpildes panākšana	Uzdevumus formulēju skaidri. Panāku, ka skolēni pilda uzdevumu.	Uzdevumus dodu gan rakstiski, gan mutiski skaidri un saprotami. Jautāju, vai skolēniem skaidrs. Panāku, ka skolēni precīzi pilda uzdevumu.	Uzdevumus dodu precīzi, skaidri un saprotami. Sekoju, vai katram skolēnam skaidrs uzdevums. Panāku, ka visi skolēni precīzi izpilda uzdevumu.	
	Metožu un paņēmienu izmantošanas atbilstība pedagoģiskajam nolūkam	Izmantoju metodes un paņēmienus, kuri man patīk, liekas interesanti.	Izvēlos un izmantoju metodes un paņēmienus, kas virza skolēnu uz plānoto sasniedzamo rezultātu.	Mērķtiecīgi izmantoju pedagoģiskajam nolūkam, un skolēna sasniedzamajam rezultātam atbilstošas metodes un paņēmienus.	Meistarīgi, oriģināli lietoju sasniedzamajam rezultātam vispiemērotākās metodes, paņēmienus.
IB5 5.3. Atbalsts skolēna mācībām	Nepieciešamā atbalsta nodrošināšana	Dodu īslaicīgus uzdevumus, lai skolēni darbotos manā stingrā vadībā, ierobežotā laikā.	Palielinu uzdevuma apjomu, lai skolēni darbotos iespējami patstāvīgi. Sekoju skolēnu darbībām, nepieciešamības gadījumā sniedzot konkrētu atbalstu (atgādnes, norādes, pārrunāju rīcības plānu, iespējamos risinājumu ceļus u.c.), tostarp atvēlot vairāk laika.	Veidoju mācību procesu tā, lai skolēniem ir iespēja pašiem patstāvīgi risināt lielāka apjoma atvērtus uzdevumus (t.sk. veidot projektus), skolotāja atbalstu saņemot nepieciešamības gadījumā. Dodu skolēniem pietiekami lielu laiku domāšanai un darīšanai.	Esmu panācis, ka skolēni patstāvīgi risina atbilstošus liela apjoma atvērtus uzdevumus (atbalsts vairs nav nepieciešams). Skolēniem iespējas pašiem plānot laiku.
	Diferenciācija	Dodu atšķirīgus uzdevumus atsevišķiem skolēniem.	Dodu iespēju lielai daļai skolēnu saņemt atbilstošu uzdevumu un iespēju virzīties uz priekšu pa	Nodrošinu katram skolēnam rīcības variantu izvēles iespējas, piedāvājot izvēlēties	Nodrošinu skolēniem iespēju sasniegt atbilstoši spējām diferencētu SR, saņemt

IB5 5.1. Stundas veidošana, vadīšana	Skolēnu pieredzes aktualizācija, ieinteresēšana	Veidoju stundā "iesildīšanos" - ierosināšanu, tā ne vienmēr ir tieši saistīta ar konkrētajā stundā nepieciešamajam zināšanām un prasmēm.	dažādiem ceļiem (risinājumu veidu).	uzdevumu un tā izpildes veidu, saņemt atšķirīgu atgriezenisko saiti.	atbilstošu, diferencētu atgriezenisko saiti.
		Cenšos ieinteresēt skolēnus. Aktualizēju skolēnu pieredzi, prasmes – iepriekš mācīto, bet reizēm aktualizācija precīzi neatbilst konkrētās stundas plānotajam rezultātam.	Stundas ievadaktivitātes ir skolēnam personiski nozīmīgas, motivējošas, atbilstošas plānotajam sasniedzamajam rezultātam. Precīzi aktualizēju skolēnu pieredzi, kas nepieciešama plānotā rezultāta sasniegšanai.	Veicu mērķtiecīgu, efektīvu ieinteresēšanu, skolēnu pieredzes aktualizēšanu plānotā rezultāta jēgpilnai sasniegšanai.	
	Mācību aktivitāšu secība, to savstarpējā saistība	Izvēlos uzdevumus, mācību aktivitātes, kas noder ceļā uz plānoto rezultātu, dažreiz šaubos par aktivitātēm, kuras sniegs būtiskākos ieguvumus.	Izvēlos tādus uzdevumus, mācību aktivitātes, kas vajadzīgas plānotā rezultāta sasniegšanai. Mēģinu aktivitātes savstarpēji saistīt.	Izvēlos tikai tādus uzdevumus, mācību aktivitātes, kas būtiskas rezultāta sasniegšanai, secīgas, savstarpēji saistītas.	Koriģēju plānoto uzdevumu, mācību aktivitāšu izmantošanu atkarībā no stundas situācijas.

Secinājumi
Conlcusions

Analītisks s**kolotāju snieguma līmeņu aprakstu komplekts pašnovērtējumam 21.gs. prasmju mācīšanai** ietver skolotāju profilus atbilstoši kategorijām 21.gs. prasmju mācīšanai skolēnam – pašvadītā mācīšanās, izziņas darbības aktivēšana (kritiskās domāšanas apguvei, problēmrisināšanai u.c.), sadarbībai, digitālajai pratībai, kas atsegtas izmantojot kritērijus, dimensijas un snieguma deskriptorus. Autoru izveidotais ietvars pašnovērtējuma SLA izveidei balstās uz iepriekš validētu teorētisko ietvaru un rīkiem tā mērīšanai.

Autoru izveidotie pašnovērtējuma SLA rāda caur kādiem soļiem jāiziet skolotājam konkrētas prasmes pilnveidei, lai ieviestu izmaiņas savā praksē. Tā ir skolotāja darbību virkne, kas operacionalizē kategorijās un kritērijos izteiktus prioritāros mērķus pieejas maiņai skolotāju praksē atbilstoši Skola 2030 pamatnostādnēm. Tās paredzētas skolotāju personīgās profesionālās izaugsmes vajadzībām. Iespējams veidot dažādus pašnovērtējuma SLA komplektus atbilstoši skolas izvēlētajam mērķim vai prioritarizējot citādi profesionālās pilnveides vajadzības. Izstrādātais **skolotāju pašnovētējuma SLA komplekts 21.gs. prasmju mācīšanai** veidots, par pamatu izmantojot datos balstītus un praksē aprobētus analītiskus snieguma līmeņu aprakstus, kas paredzēti ekspertu darbam. Tā praktiskā izmēģināšana skolu praksē plānota autoru turpmākajos pētījumos.

Summary

The research aims to create a theoretical framework and corresponding self-assessment tools, how the teacher can assess for himself to what extent he has succeeded in achieving the competence to teach students in the 21st century skills required to achieve the goals set by the school in the context of the ongoing education reform in the country.

The theoretical framework of the research and corresponding tools for teacher self-assessment processes are based on research products (design), the authors perform an in-depth analysis of different frameworks and other data, mapping, consulting various experts, researchers, school leaders, and teachers to develop, expand and validate the developed model.

The research set consists of two subgroups, which form two municipal schools. Includes data of 386 observed lessons in various subjects, in all class groups, and 272 tests and surveys conducted. The study was conducted in the period from September 2017 to November 2020.

The study creates an analytical set of descriptions of teachers' performance levels for self-assessment in the 21st century, which includes sets of teacher profiles according to categories for the 21st century skills (student self-directed learning, cognitive activity (acquisition of critical thinking, problem solving, etc.), cooperation, digital literacy). These skills are described with criteria, dimensions and performance descriptions. Authors made also rubrics for teacher self-asessment which are proven and based on the pre-validation of the theoretical framework and the tools to measure it.

The self-assessment rubrics created by the authors show what steps a teacher needs to take to develop a specific skill in order to implement changes in their practice. It is a series of

teacher activities that operationalize the priority objectives expressed in categories and criteria for changing the approach to teacher practice in line with the School 2030 guidelines. They are designed for teachers' personal professional development. It is possible to create different sets of self-assessment rubrics according to the goal chosen by the school or otherwise prioritizing professional development needs.

Developed teacher self-assessment rubrics set to teach 21st century skills are data-based and field-tested analytical descriptions of performance levels for expert work. It's practical testing in school practice is planned in the authors' further research.

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VALIDATION OF MEDIATION COMPETENCE IN SCHOOL ENVIRONMENT

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Abstract. *We are living in uneasy and unusual times of sharp changes. The situation that arouse due to the spread of COVID-19 is causing serious stress for most of us, which implies emotional tension and hypersensitivity reaction to the information we hear or read. As a result, it leads to even more conflict situations than at any times. School is a part of society. The school environment is exposed to conflict situations both coming from outside and arising inside the school activity (internal conflicts). The ability to find a solution to a conflict implies the mediation competence of a school environment personnel and the students (other scientists call it conflict resolution competence). The aim of the research is to validate the necessity of mediation in school environment and to characterise the mediation competence. The methods of research used: 1) the analysis of theoretical insights and regulatory documents; 2) questionnaire survey; 3) reflection of personal experience. The theoretical research includes the assessment of the opinions of various authors in relation to the mediation competence and the necessity to promote it within the school environment. The empirical research analyses the data acquired by polling of school students (181), teachers (191) and parents (148). In total, 520 respondents participated in the survey. The article validates the necessity of mediation in school environment and the mediation competence. The assessment of the theoretical and empirical research testifies that the promotion of the mediation competence within a school environment is of high importance for all the parties involved in the educational process.*
Keywords: *conflict, mediation, mediation competence, school environment.*

Introduction

We are living in uneasy and unusual times of sharp changes. An individual cannot live without communication and cooperation with the surrounding people. Not always it happens in a constructive way. There are cases when disputes, conflict situations appear. The situation that arouse due to the spread of COVID 19 is causing stress for most of people, which implies emotional tension and hypersensitivity reaction to the information we hear or read. As a result, it leads to even more conflict situations than at any times, including the school environment, as the school is not separated from the society, it is a part of it. The

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school environment is exposed to conflict situations both coming from outside and arising inside the school activity (internal conflicts) (Nikulina & Gangur, 2018). That is why it is important to create the environment, which could help in solving these conflicts in a constructive way. This way is mediation. The origins of mediation should be identified in the Ancient China and Japan, and only later it came to Europe. The basics of contemporary mediation formed in the 60s of the 20th century. Nowadays mediation is widely used in legal and other spheres. Settling of a dispute among the parties involved in the mediation process is carried out with the participation of a third person – a mediator. A mediator is a neutral intermediary helping the parties to reach the agreement by creating a new environment for the dialogue (Karnozova, 2013).

The intermediary must be independent from the organisation and/or the parties involved in the dispute. In the beginning of the 21st century, many scientists (Grebenkin, 2017; Horoshevskaya, 2019; Karnozova, 2013; Lűk & Kahn, 2019; Makshanceva & Ovcharenko, 2015; Nikulina & Gangur, 2018, etc.) observed the wide applicability of mediation in the school environment. The authors expressed the opinion that the introduction of mediation could reduce the number of conflicts by improving the psychological climate of a school, promoting the observance of the rights of children and increasing the competence in solving conflicts among teachers and students, which forms a part of the communicative competence. The mediation allows for more freedom in action, it creates the sense of responsibility and more constructive relationships in the school environment. To implement mediation in the school environment, the mediation competence is required for its participants.

The aim of the article is to validate the necessity of mediation in school environment and to characterise the mediation competence.

To achieve the aim of the research, the following methods were chosen: 1) theoretical analysis and synthesis; 2) questionnaire survey; 3) reflection of personal experience; 4) mathematical processing of data (tables, figures).

The theoretical research is analysing the insights of scientists form various countries and regulatory enactments related to mediation, its role in the school environment and the characterisation of the mediation competence. The empirical research, in its turn, is analysing the data acquired through the questionnaire survey.

Validation of Mediation Competence in School Environment and the Vision of the Mediation Competence by Various Authors: *a Literature* R*eview*

A person cannot live without communication, but not always it happens in a constructive way. There are cases of conflict situations and disputes, which require resolution and must be resolved by observing the interests and the needs

of the parties. A German mediator P. Krepper (2012) summarized the possibilities of solving conflicts (See Table 1).

Conflicts can be resolved individually, looking for a common solution or delegating the decision making to third persons. Mediation is a way of conflict solving, when both parties search for the solution together with the agency of a mediator.

Table 1 ***Conflict Resolution Possibilities*** (Krepper, 2012)

Searching for individual solutions	***Searching for a common solution***	***Delegating to third persons***
• self-directed violence or violence against other people • psychoanalysis and therapy • consulting / coaching • legal adviser	• directive or moderated conversation • **mediation** • the cooperation law • the Ombudsman's procedure	• the arbitration court (with the right of decision making) • the arbitration notifications / arbitration processes • court proceedings with a judgement
Independent actions ⟷ **External control**		

Russian scientist J. Grebenkin defines the mediation as a conversation under certain rules (Grebenkin, 2017).

The classical theories of mediation were connected with a notion of the need, yet the post-modern theories are focusing on the aspect of creation of a purpose (Karnozova, 2013). It is also reflected in the methodological approaches to mediation – transformative mediation, narrative mediation, ecosystem approach, mediation based on understanding, theory of technological mediation etc. (Kurganskaya, 2019; Spangler, 2003/2013; Verbeek, 2015). It is significant that mediation ensures a personalized approach to conflict solving (Kurganskaya, 2019). Mediation is based on certain principles that must be observed by the participants of the mediation process. These are the principle of confidentiality, voluntary involvement, neutrality, equality of rights, flexibility, awareness (Mediacija, 2017).

As already mentioned, initially mediation as a way of conflict solving was widely used in legal and other spheres, and it is gradually entering also the sphere of education. In USA and European countries, mediation in school environment is being implemented since the 80s of the 20th century (including the agemates mediation). Speaking about Latvia, the interest about mediation in the school environment arose in 2007, after the presentation of the material "Mediation in school" prepared with the financing of the Ministry of Welfare of the Republic of

Latvia. Therefore, we can speak about forming of the basics of mediation in Latvian school environment. This is also evidenced by the experience of the article authors, one of which is a practising mediator who also provides the mediation studies for teachers, students, parents, social teachers and workers, orphan's court officials for many years. The school mediation is the mediation within the school context (Lűk, Kahn, 2019). It is important to solve conflicts arising in school environment. The following table summarizes the opinions of various authors in relation to school conflicts, their reasons and types (See Table 2).

Table 2 ***Types and Reasons of School Conflicts***

Author(s)	Conflict types	Conflict reasons
Makshanceva & Ovcharenko, 2015	Learning organisation, motivation, various type of cooperation. ***Cooperation conflicts*** are separated in a large group of – mutual conflicts among students, teachers, ***intrapersonal*** conflicts teachers and school administration, students and teachers.	Transitional stages in school, lack of unified requirements, teachers failing to obey the applicable requirements. Motivation conflicts are determined by the slackening of interest for studies among the students, low learning motivation. Conflicts are based on a subjective nature and personality factors of the conflicting parties, their aims and values.
(Lűk & Kahn, 2019).	Potential conflicts created by certain people around them (school employees of various levels). ***Intrapersonal*** conflicts.	Conflicts related with a school environment accompanied by individual traits of the participants.

Solving of conflicts of teachers and students are affected by: a) the situation and personality factors of its participants, inequality of rights in terms of the status and age, the fear of teachers related to the loss of reputation and students being afraid of teachers (Kurganskaya, 2019); b) different status, age, life experience, level of consciousness and perception affecting the behaviour of the conflict participants and different levels of responsibility for mistakes (Makshanceva & Ovcharenko, 2015).

Until now, the dominating tendency in the educational system was to assign the mediator functions to a psychologist or a social teacher, who are the members of a certain pedagogical team and cannot perform the role of an independent intermediary, and who not always has sufficient competence in this field (Chupris, 2018). The same is confirmed by the experience of the article authors.

Therefore, involving of a mediator in solving conflicts can change the situation in a school environment significantly. For this purpose, a school administration and

team must accept the philosophy forming the basis of mediation (Chupris, 2018). Analysing the theoretical insights, we can highlight the aspects where mediation can change the situation in a school environment: a) reduction of violence (Karnozova, 2013); b) promotion of cooperation (Mediacija, 2017); c) obeying the rights and obligations of students and teachers (Makshanceva & Ovcharenko, 2015); d) involvement of students in solving of agemates conflicts (Lűk, Kahn, 2019; Nikulina & Gangur, 2018); e) acquisition and improvement of mediation competencies by teachers (Horoshevskaya, 2019).

I. Horoshevskaya provides the important insight speaking about a competent teacher, as for a teacher it is essential to implement his professional knowledge, skills and abilities in his activity. That is why a teacher must continue self-improvement, be able to go beyond his or her profession and to appraise and value his profession. Based on his competence, a teacher can perform various professional tasks, including the task of being a mediator in solving conflicts (Horoshevskaya, 2019). Creation of favourable atmosphere, rendering support to students and cooperation are also underlined in the teacher's profession standard (Skolotāja profesijas standarts, 2020).

To implement mediation in school environment, a ***mediation*** or ***conflictological*** competence is required. The conflictological competence of a teacher in the educational process is one of characteristic features of the communicative culture, which includes the aggregate of knowledge, skills and communicative personal traits, which ensures the teaching and educational process, the influence over the students and the regulation of the communicative activity (Makshanceva & Ovcharenko, 2015).

The authors can agree with the opinion of I. Horoshevskaya, stating that the essence of the mediation competence is linked with the conflict (Horoshevskaya, 2019). As we can call mediation the communication organised in a special way, the communicative competence is a core competence of a mediator, which is defined by L. Karnozova as the ability to create a conscious communication process (Karnozova, 2013). She believes that the communicative competence of a mediator can underline the three aspects: basic communicative skills or communicative literacy; b) mediation tasks and respective techniques; c) specific nature of a mediator's communicative position (Karnozova, 2013). Along with the communicative competence, the following competencies are also required: 1) ***informational and analytical competence*** (defining of the essence and the reasons of the problem; acquisition and structuring of information about the conflict; information reliability, evaluation of facts, etc.); 2) ***mnemic competence*** (remembering of the peoples' names, large amount of information, non-structured information); 3) ***emotional competence*** (maintaining of a positive atmosphere, controlling and reflecting of feelings and emotions, maintaining of proper conduct in the relationships among the parties, etc.; 4) ***management competence***

(motivation of the mediation participants towards the resolution of the conflict, planning and implementation of the mediation process, ensuring of the decision taking, etc.) (Bojko, 2011).

Competencies mutually complement one another and work in aggregate. Therefore, the mediation competence is a part of the professional competence of a teacher.

Methodology

The empirical research was carried out in various Latvian cities and counties (Aluksne, Daugavpils, Gulbene, Jelgava, Jekabpils, Liepaja) during the mediation studies within a social integration project "Improving of Social Life Quality – Alternative Dispute Resolution through Mediation". This, previously unpublished study, involved school students (181), teachers (191) and parents (148). 6-11 form students participated in the questionnaire survey, made by author of this article), while parents were engaged based on voluntary principle. In total, 520 respondents participated in the research. The aim of the questionnaire is to figure out the opinion of the respondents about their involvement in conflict solving and the practicability of such involvement, observing the principles of mediation and implementation of the mediation methods. Each group of the respondents was offered to evaluate the statements related to the obeying of regulations, solving of their own or other people's conflicts, meeting the mediation principles and using the mediation methods. Each target group was offered to consider a number of specially elaborated statements (11 statements for students, 9 statements for teachers and parents) related to conflict solving. Each statement was to be evaluated by one of the possible answers – "*yes"; "rather yes than no"; "rather no than yes";" no"*. Processing the data, the answers "*yes*" and "*rather yes than no"* were summarized as positive answers, while "*rather no than yes"* and "*no"* – as negative answers. The answers acquired were summarized in tables and figures.

Validation of Mediation in School Environment: Empirical Research

Having analysed the data acquired, questions were divided into groups according to the following types: meeting the requirements, obeying the school regulations, solving of personal conflicts and the conflicts of other people, compliance with the mediation principles in conflict solving and implementation of mediation methods.

One of the reasons for conflicts is meeting requirements. Based on this, each group of respondents was asked to evaluate the following statements: students – "*Students in a classroom behave the way a teacher wants them to*

behave"; teachers – "*Students in a classroom behave the way I want them to behave"*; parents – "*Children in everyday life behave the way I want them to behave"*. The data acquired show that 88% of teachers believe that students in a classroom behave the way a teacher wants them to behave, yet the answers of the students differ from the teachers' opinion, as only 62% of respondents believe that students in a classroom behave the way a teacher wants them to behave. Meanwhile, this statement was affirmed by 72% of parents (See Table 3). Statements made by students and teachers are more connected with a school environment, while parents also evaluate behaviour outside of school. Still there is a tendency that mastering the mediation would be useful for all the three parties, because the situations requiring solution either by mutual negotiations or with a support of a neutral person will arise all the time while there is communication.

Table 3 ***Children Meeting the Adults' Behaviour Requirements***

Respondents / possible answers	**Yes**	**Rather yes than no**	**Rather no than yes**	**No**
	Positive answers		**Negative answers**	
Students	24	88	53	16
	112 (62%)		**69 (38%)**	
Teachers	14	154	21	2
	168 (88%)		**23 (12%)**	
Parents	11	96	37	4
	107 (72%)		**41 (28%)**	

To avoid conflict situations, the aspects of behaviour requirements must be jointly discussed. When the requirements are clear, there are less disputes both within each group and among various groups.

Meeting the school's rules of conduct. Students and teachers spend a part of their lives at school, where the activity is based on the internal rules of conduct. Students evaluated the statement *"I comply with the school's rules of conduct"*, teachers – "*Students comply with the school's rules of conduct"*, parents – "*Children comply with the defined rules of conduct"* (See Table 4). In students' opinion, they comply with the school's rules of conduct (96%). 106 respondents (58.5%) answered *yes.* Only 4% of students answered *rather no than yes*. It can be determined by the fact that the students who participated in the process of studies complied with the rules of conduct defined for them by the school, and also with special aspects of self-assessment by teenagers and youngsters (6-11 form students). The opinion of teachers differed from the students' point of view. Only 8 teachers (4%) believed that students comply with the school's defined rules of conduct, whilst 10.5% of teachers polled gave a negative answer. 16% of parents also think that children do not comply with the requirements defined for them. But the general tendency is that both parents (72%) and teachers

(89.5%) believe that students and children comply with the school's rules of conduct and requirements defined for them. Despite the fact that the majority of answers are positive, there is still something to strive for so that more answers would be *yes.* It means that changes are necessary – both in people and in the environment, they are living.

Table 4 ***Complying with the Requirements Defined by the Adults***

Respondents / possible answers	**Yes**	**Rather yes than no**	**Rather no than yes**	**No**
	Positive answers		**Negative answers**	
Students	106	68	4	3
	174 (96%)		**7 (4%)**	
Teachers	8	163	20	0
	171 (89.5%)		**20 (10.5%)**	
Parents	16	108	22	2
	124 (84%)		**24 (16%)**	

Solving their own disputes. It is important to promote the agemate mediation in school environment. That is why students were asked to evaluate the statement *"I can solve my own disputes"*. Positively answered 93 respondents (51%). In general, 91% of students believe that they can solve their disputes (See Table 5). To continue, it is important to clarify that the level students solve their disputes corresponds to P. Krepper (Krepper, 2012) figure for conflict resolving (individually, with participation of a mediator or third persons). The ideal variant is when the parties can resolve the conflict by themselves, but it is important to make sure that emotions resulting from an unsatisfactory solution are not suppressed and the interests of both parties are met.

Table 5 ***Solving Their Own Disputes (Students)***

Respondents / possible answers	**Yes**	**Rather yes than no**	**Rather no than yes**	**No**
	Positive answers		**Negative answers**	
Students	93	72	16	0
	165 (91%)		**16 (9%)**	

Solving the disputes of the others. As conflicts are a relatively often situation in school environment, it is important not only to look for a solution of your disputes, but also to help the others in resolving their disputes. All the three groups were offered to evaluate the statement in relation to their participation in resolving conflicts of the others. According to the data acquired, 61% of students can solve the disputes arising among their classmates, while 39% of students believe they are not successful in doing that (See Table 6). The data acquired show that students need a support in order to learn resolving both their own conflicts and the conflicts arising among their agemates. Because one thing is to know how

to do it and another thing is to actually do it. Therefore, students need a practical experience in resolving conflicts, which can be acquired during the mediation studies.

Table 6 ***Solving Disputes among the Classmates***

Statements / possible answers (students - 181)	**Yes**	**Rather yes than no**	**Rather no than yes**	**No**
	Positive answers		**Negative answers**	
I can solve the disputes arising among my classmates	39	72	53	17
	111 (61%)		**70 (39%)**	

A teacher's work is connected with conflict solving and a conflictological competence is also the one of a teacher's professional competences, constituting a part of the communicative competence. As it follows from the data acquired, teachers more often participate in conflict solving among the students (88.4%) (See Table 7).

Only 48% of teachers participate in resolving of disputes among other teachers and students and among teachers and parents. The contribution of teachers in resolving of disputes can be very significant, which is also underlined by the teachers themselves (94%), stating that their involvement in resolving of disputes was useful. In its turn, only 48% of teachers participate in resolving of disputes among other teachers and students and among teachers and parents. It can be explained by a number of reasons. During the process of dispute resolution, a number of principles must be obeyed, such as the principle of objectivity, confidentiality etc., which not always can be met in relation to colleagues, parents and students. An important role in conflict solving within school environment and within families belongs to parents. Parents' evaluations of their contribution in resolving of disputes differ as well.

Table 7 ***Teachers' Contribution to Resolving Disputes***

Statements / possible answers (teachers - 191)	**Yes**	**Rather yes than no**	**Rather no than yes**	**No**
	Positive answers		**Negative answers**	
I involve into solving of disputes among students	82	87	21	1
	169 (88.4%)		**22 (11.6%)**	
I involve into solving of disputes among other teachers and students	36	55	77	23
	91 (48%)		**100 (52%)**	
I involve into solving of disputes among teachers and parents	30	61	67	33
	91 (48%)		**100 (52%)**	
My involvement in solving of disputes was useful	49	130	11	1
	179 (94%)		**12 (6%)**	

74% of respondents involve in resolving of disputes among children, and 78% of parents are aware of how disputes arise (See Table 8).

Table 8 ***Parents' Contribution to Resolving of Disputes***

Statements/possible answers (Parents - 148)	**Yes**	**Rather yes than no**	**Rather no than yes**	**No**
	Positive answers		**Negative answers**	
I involve into solving of disputes among children	40	70	34	4
	110 (74%)		**38 (26%)**	
I involve into solving of disputes among other people	9	30	92	17
	39 (26%)		**109 (74%)**	
I know how the disputes arise	44	72	23	9
	116 (78%)		**32 (22%)**	
My involvement in solving of disputes was useful	30	103	13	2
	133 (90%)		**15 (10%)**	

Parents also understand their contribution to resolving of disputes, stating that their participation in resolving of disputes was useful (90%). Parents rarely involve in resolution of disputes among other people (26%). Therefore, the mediation studies are helpful also for parents in order to promote favourable atmosphere at school and in a family.

As it has been already mentioned, mediation is based on a number of principles – the principle of voluntary participation, the principle of objectivity, confidentiality, neutrality, equal rights, cooperation (See Table 9). Confidentiality is non-disclosure of information. In its turn, the voluntary principle means that the parties participate in resolving of conflict of their own free will. Resolving disputes, teachers try to obey the principle of confidentiality and voluntary participation (72%).

Table 9 ***Obeying the Mediation Principles (Teachers)***

Statements / possible answers (teachers - 191)	**Yes**	**Rather yes than no**	**Rather no than yes**	**No**
	Positive answers		**Negative answers**	
I obey a confidentiality principle in resolving of disputes	149	41	1	0
	190 (99.4%)		**1 (0.6%)**	
I stick to a voluntary principle in resolving of disputes	42	96	31	22
	138 (72%)		**53 (28%)**	

As experience show, teachers and agemates try to resolve conflicts arising around them. There are teachers who are experts in resolving conflicts and there are teachers who are experts in creating conflicts. Studies are necessary for both

types of teachers. The observance of these principles in school environment has many "but", such as the responsibility for the observance of the principles, how the confidentiality principle is obeyed (how many people know about the conflict), whether a student wants to resolve the conflict (is it always a conflict from the student's point of view), whether a conflict between the administration and a teacher can be resolved in school environment without an intermediary. As it follows from the experience of the authors of the article, in such case it is better to use the assistance of a mediator, as a representative of a supporting personnel or another teacher is subordinated to the head of the educational institution. In this case, a number of principles are not met. A mediator could be a good solution in this case.

In its turn, parents in resolving of disputes try to comply with the principle of neutrality (74%) and objectivity (94%) (See Table 10). It is a very hard task for parents. If parents manage to learn meeting these principles, it can be called the top class of cooperation.

Table 10 ***Obeying the Mediation Principles (Parents)***

Statements / possible answers (Parents - 148)	**Yes**	**Rather yes than no**	**Rather no than yes**	**No**
	Positive answers		**Negative answers**	
I obey a neutrality principle in resolving of disputes	31	79	31	7
	110 (74%)		**38 (26%)**	
I stick to a principle of objectivity in resolving of disputes	47	92	5	4
	139 (94%)		**9 (6%)**	

Application of the mediation methods. The participants of the questionnaire survey were asked about the application of the mediation methods in resolving of disputes (See Table 11).

Table 11 ***Application of the Mediation Methods in Resolving of Disputes***

Respondents / possible answers	**Yes**	**Rather yes than no**	**Rather no than yes**	**No**
	Positive answers		**Negative answers**	
Teachers	23	66	18	84
	89 (46.6%)		**102 (53.4%)**	
Parents	15	47	29	57
	62 (42%)		**86 (58%)**	

46.6% of teachers and 42% of parents have used the mediation methods in resolving of conflicts. It means that the studies in this field are necessary for all

the three target groups so that they could acquire the concept of non-violent communication and learn forming a space for a dialogue in searching for a solution.

Conclusions

Mediation is resolving of conflicts by forming a space for a dialogue among the conflicting parties based on the principles of voluntary participation, neutrality, cooperation, confidentiality, objectivity and other principles. Medication can be deemed a new facilitator of communicative culture based on mutual understanding in cooperation among people. It is evidenced by the methodological approaches of mediation – transformative mediation, narrative mediation, understanding-based mediation.

Initially, mediation was used in legal sphere, in business activities, in resolving labour disputes etc. Mediation in USA and European countries is being used from the 80s of the twentieth century. In these countries, the school mediation, including the agemates mediation, has also started to develop. The interest about the mediation started to appear in Latvian education system approximately after 2010, as there were no specialists who could not only provide the techniques (in many schools, psychology was used), but also the theoretical justification and the results of studies, the approaches. In school environment, resolving of conflicts were the responsibility of a social teacher, a psychologist, teachers, curriculum directors, deputy headmasters for curriculum and discipline, head teachers of the form. Now, when the mediation studies for teachers, students, parents and other target groups are organised in our country, our society starts to understand the role of mediation in school environment.

Having summarized the theoretical insights of various scientists, the personal experience of the authors of the article and the results of the empirical research, it can be stated that mediation in school environment promotes forming of favourable psychological atmosphere, obeying of the rights of children, minimisation of mobbing, resolving of conflicts (teachers-teachers, teachers-school administration, student-student, student-teacher, parent-teacher etc.) contributes to the culture of mutual relationships, social skills, changing of habitual conflict solving strategies, forming of critical thinking, enrichment of the study subjects content, respecting of other people etc.

To implement the mediation in school environment, the concept of mediation must be understood. Here we can speak about the mediation or conflictological competence (students, teachers, parents, support personnel, school administration). The mediation competence is a part of the communicative competence and one of the professional competences of a teacher. The mediation competence is an aggregate of knowledge, skills, abilities, psychological aspects

of a personality and personal experience, which is aimed at a constructive resolution of a conflict.

One of the ways of promoting the mediation competence is the mediation studies allowing teachers, students and parents to improve their conflict resolving competence, as only 46.6% of teachers and 42% of parents mentioned them being using the methods of mediation in resolving conflicts. The practicability of such studies is evidenced by the participants' feedback. Students emphasised that every student in the class must have this knowledge, not only two of them. They underlined the knowledge and skills in understanding what a conflict is, how to solve a conflict and how to avoid being involved in a conflict. They stated that this competence is a long-term benefit. The teachers pointed out that it will be useful in both professional activity and in life in general. They mentioned that it is important to create positive communication, to find goods words for students and colleagues. Parents believe that everything they have heard and experienced will improve communication with their children and change the way they used to solve conflicts.

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ФОРМИРОВАНИЕ ЭСТЕТИЧЕСКОГО ОТНОШЕНИЯ МЛАДШИХ ШКОЛЬНИКОВ К ФОЛЬКЛОРУ СРЕДСТВАМИ ИНТЕГРАЦИИ ИСКУССТВ

The Formation of the Aesthetic Attitude of Junior Schoolchildren to Folklore Means the Integration of the Arts

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Abstract*. The need to form the artistic and aesthetic attitude of children to folklore and to cultivate a love of popular culture actualizes the topic of the article.*
The purpose of the article is a theoretical justification for the possibility of integrating the arts as a means of forming the aesthetic attitude of junior schoolchildren to folklore; the development of a diagnostic apparatus (criteria, diagnostic techniques and levels) of the formation of the aesthetic attitude of children to folklore, the definition of the arts used in the training and their integration links.
The authors propose the structure of the aesthetic attitude of children to folklore, the criteria of its formation (motives and needs of children to study folklore, imagery, verbalization, abstraction, symbolism, metophorization describe the results of empirical research of the original level, the exact knowledge of which will contribute to an effective change in the aesthetic attitude of junior schoolchildren to folklore.
The study is based on an analysis of philosophical and psychological-educational sources; empirical methods (pedagogical experiment, questionnaire, testing) and Methods of diagnosis of figurative and verbal development personality theory.
The article provides examples of the judgments of junior schoolchildren, which led to the conclusion that, that children of experimental (EG) and control groups (KG) in general, show interest in the integration of arts and are at an average (61.5% EG, and 69.2% -KG) (23.1% -

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EG and 19.2% (KG) or low levels of the formation of aesthetic attitude to folklore. The findings suggest that further work is needed to develop this phenomenon.
***Keywords**: aesthetic attitude, art, criteria, folklore, integration, junior schoolboy, levels.*

Введение
Introduction

Одной из приоритетных задач современного образования является формирование эстетического отношения к фольклору у младших школьников. Данная задача приобретает значимость в современных условиях утраты национальных культурных ценностей, снижения уровня художественно-эстетического и духовно-нравственного воспитания личности. Историко-культурное значение фольклора огромно. В нём находят отражение своеобразные черты времени, активного бытования, художественное идеалы, воспитывается любовь к родной земле, гордость за её богатство, могущество и красоту, происходит становление национального самосознания. Именно через фольклор, многообразие его жанров, которые условно объединяются в эпические, лирические и драматические, у детей возникают выразительные поэтические и музыкальные образы. Чтобы проследить их эволюцию в процессе художественного освоения мира и преемственность творческих позиций в фольклоре, необходимо рассмотрение различных видов искусства в их интеграции. Это требует поисков новых форм художественной выразительности, позволяющих воссоздать в представлениях младших школьников общую картину конкретной эпохи, конкретного народа, находить общие смысловые точки соприкосновения в художественном образе, стиле, выразительных средствах различных видов искусств.

Однако предметная разобщённость не способствует созданию целостной картины, не всегда вызывает яркое эмоциональное отношение к образам фольклора. Не определён в должной мере характер взаимосвязи между процессами формирования эстетического отношения младших школьников к фольклору и интеграцией искусств. Не полностью разработан и диагностический аппарат эстетического отношения младших школьников к фольклору средствами интеграции искусств и программа формирования данного феномена, что не позволяет в должной мере использовать его возможности.

Выше сказанное выступает обоснованием актуальности настоящей статьи, *целью* которой является теоретическое обоснование особенностей формирования эстетического отношения младших школьников к фольклору средствами интеграции искусств; разработка диагностического аппарата (критериев, диагностических методик и уровней)

сформированности эстетического отношения детей к фольклору и программы, обеспечивающей эффективность данного процесса.

Проведённое исследование основывается на анализе философских, эстетических, психолого-педагогических положениях, а также эмпирических методах исследования: педагогическом эксперименте и диагностических методиках: «Образного и вербального развития личности» О.М.Потемкиной (Potemkina, 2000), включающей пиктограммы, тесты и творческие задания и «Диагностики читательской деятельности» Г.Н.Кудиной (Kudina, 1996).

Базой экспериментального исследования являются обучающиеся 4 классов МБОУ СОШ №24 им. М.Б.Раковского г.Липецка и МБОУ «Средняя общеобразовательная школа №23 с углубленным изучением английского языка» г.Пскова (104 респондента: 52 человека – экспериментальная группа (ЭГ) и 52 человека – контрольная группа КГ).

Теоретическая основа темы
The Theoretical Background

Теоретико-методологической основой исследования является интегрированный подход к формированию эстетического отношения к фольклору у младших школьников: С.Р.Кляйн (Klein, 2018), Л.Лаевич (Lajevic, 2013), Б.П.Лазарев, М.В.Лазарева, А.Ж.Овчинникова, (Lazarev, Lazareva & Ovchinnikova, 2019), Л.Лей (Lee, 2019), Л.П.Печко, (Pechko, 2020), Л.Г.Савенкова (Savenkova, 2018). В данном подходе определяются типы, виды связи интеграции искусств; выделяются структурные компоненты данного феномена.

Достижение поставленной цели исследования и логика изложения его результатов потребовали определение основных понятий.

Опираясь на исследования С.Р.Клайна (Klein, 2018), Л.П.Печко (Pechko, 2020), мы определили понятие «эстетическое отношение к фольклору младших школьников» как сложную систему понимания образов фольклора, проявляющуюся в эмоционально-образной, оценочно-познавательной и творческой деятельности детей и способствующую развитию художественно-эстетического мышления и творческой деятельности учащихся.

Обращение к фольклору (folklore в переводе с англ. − народная мудрость, термин, введённый в обиход Уильямом Томсом) не случайно, так как он представляет собой устное народное творчество, которое опирается на материальную и духовную культуру народа, по мнению В.Проппа (Propp, 1927). Фольклор включает в себя: а) жанры устного народного творчества (сказки, былины, предания, загадки, скороговорки,

потешки); б) народной музыки (детские, календарные, обрядовые песни, частушки, страдания, народные инструменты: балалайка, гусли, рожок, гармонь); в) элементы театрализации и народного танца. В отличие от западно-европейского понимания фольклора, как устной литературы и как народной культуры, то есть носящей синкретический характер, в российской традиции выделяются вербальные тексты и этнография, опирающаяся на народные верования, обычаи, народное искусство. Синкретический характер фольклора, основанный на устных традициях (словесный текст – музыкальная форма – обрядовый или ритуальный бытовой контекст), определяется синтезом словесного, музыкального, театрального народного творчества как основы народной культуры. Поэтому с позиций интеграции фольклор может рассматриваться как синтетическое искусство, в котором сочетаются, взаимодействуют и сливаются словесное, музыкальное, театральное и танцевальное виды искусств, созданные народом, то есть неизвестными авторами. Каждый носитель фольклора, опираясь на традиции, изменяет и дополняет текст, который носит импровизационный характер, и выступает в качестве исполнителя или слушателя.

Понятие «интеграция искусств» характеризуется как воздействие одного вида искусства на другие или их глубокое взаимопроникновение, способствующее созданию целостных фольклорных образов. Его сущность определяют теоретические положения о единой природе образного, эмоционального, абстрактно-логического постижения действительности и создания выразительных целостностей (Л.Лаевич (Lajevic, 2013), Б.П.Лазарев, М.В.Лазарева, А.Ж.Овчинникова (Lazarev, Lazareva & Ovchinnikova, 2019), Л.Лей (Lee, 2019), Л.Г.Савенкова (Savenkova, 2018)).

Основными принципами интеграции при изучении фольклора являются взаимодополнительность и общность, а основаниями для неё служат идея, жанр, ритм, интонация, настроение произведений. Таким образом интеграция искусств дополняет образы фольклора, раскрывает его самобытность и целостность, создавая художественно-эстетическую выразительность.

Осмысление данных понятий определило содержание основных структурных компонентов эстетического отношения младших школьников к фольклору средствами интеграции искусств: 1) мотивационно-потребностный (мотивы, потребности, установки к интеграции искусств); 2) образный (образы народного искусства, метафоизация); 3) эмоциональный (внешние чувства, и эмоционально-оценочные свойства); 4) рациональный (выделение существенных признаков, абстрагирование, символизация); 5) творческий (ассоциативность, оригинальность, гибкость мышления).

В соответствие с основными структурными компонентами эстетического отношения младших школьников к фольклору нами были определены следующие критерии: мотивация, образность, вербализация, символизация, метафоризация, абстрагирование.

Мотивация – мотивы, потребности, интересы.

Образность – способность к яркому выразительному описанию образов, их выразительных средств.

Вербализация – способность рассказчика легко, без напряжения передавать словами сведения о тех или иных событиях, отражённых в произведениях, в фольклоре, описывать детали.

Метафоризация – способность определять и придумывать метафору в речи, в образах фольклора (сказках, былинах, загадках, песенках).

Символизация – способность к обозначению объектов и явлений знаками и символами.

Абстрагирование – способность обобщать и конкретизировать имеющиеся факты, опираясь на абстрактные слова и образы.

Основные методы исследования: анкетирование, тестирование, педагогический эксперимент, с использованием модифицированных нами «Методики образного и вербального развития личности» О.Ф. Потемкиной (Potemkina, 2000), включающей пиктограммы, тесты и творческие задания и «Диагностики читательской деятельности» Г.Н. Кудиной (Kudina, 1996). Шкала оценок: 7-10 баллов – высокий уровень, 4-6 баллов – средний уровень, 0-3 балла – низкий уровень.

Определение уровней мотивации к изучению фольклора и интеграции искусств было связано со следующими вопросами анкеты: 1. Как вы относитесь к взаимодействию искусств при изучении видов фольклора? (A) положительно; B) отрицательно; C) нейтрально).

2. Для чего используется взаимодействие искусств на уроках при изучении фольклора? (A) чтобы было интересно, B) получить более глубокие знания о народном искусстве; C) воспитывать любовь к прекрасному; D) понимать фольклор; E) получать удовольствие).

С целью диагностики результатов сформированности эстетического отношения младших школьников к фольклору в качестве эпического текста была предложена былина «Садко» и рисунки детей. Четвероклассникам предлагалось следующие тесты, вопросы анкеты и задания:

- Основная идея былины: A) сохранение исторической памяти о событиях прошлого; B) прославление славной истории русского народа; C) прославление Садко; D) раскрытие красоты подводного мира.
- Опишите главного героя былины? Почему ты так думаешь?

- Как меняется настроение Садко?
- Какие средства выразительности используются в былине (метафоры, сравнения, олицетворения, символы). Придумайте свои средства выразительности в описании образа и рисунке.
- Какие символы используются в былине?
- Опишите царство Морского царя, используя сравнения, метафоры, символику.

В процессе слушания былины четвероклассникам на основе ассоциации «слово-образ» предлагалось нарисовать наиболее яркие сюжетные моменты былины, героев, их настроения, передать основную идею с использованием метафор и символов, в которых отражались яркие сюжетные моменты былины.

В ходе исследования были выделены три уровня сформированности эстетического отношения детей к фольклору средствами интеграции искусств: высокий (творческий), средний (репродуктивный) и низкий (адаптивный).

Высокий (творческий) уровень характеризуется глубоким интересом к различным видам и жанрам фольклора, их разнообразию; мотивированностью в получении более глубоких знаний о фольклоре средствами интеграции искусств; преобладанием метафорических и образных изображений при описании героев, их настроений; абстрагированием, связанным с обобщением и определением основной идеи былины; вербализацией, представленной ярким описанием и изображением деталей в слове и рисунке.

Средний (репродуктивный) уровень определяется фрагментарным интересом к определённым видам и жанрам фольклора, однотипностью их выбора, положительным отношением к интеграции искусства в процессе изучения фольклора. В ответах четвероклассников преобладают абстрактные изображения в слове и рисунке, стремление к обобщению и типизации. Средства выразительности (метафоры и символы) проявляются в небольшом количестве в слове и рисунке, дети затрудняются придумать их самостоятельно.

Низкий (адаптивный) уровень определяется слабо выраженным интересом к фольклору, однотипностью выбора его видов и жанров, интерес к интеграции искусств не проявляется, преобладает вербализация образов на основе конкретного описания. Метафоры и символы в слове и рисунке не употребляются, дети не могут выделить основную идею, описать изменение характеров героев.

Организация и результаты эмпирического исследования
Organization and Results of an Empirical Study

Опытно-экспериментальное исследование осуществлялось на трёх этапах педагогического эксперимента: констатирующем, формирующем и контрольном.

Цель эмпирического исследования на констатирующем этапе: определить и апробировать диагностический аппарат исследования уровней сформированности эстетического отношения младших школьников к фольклору средствами интеграции искусств.

Эксперимент проходил в средней общеобразовательной школе № 24 им. М.Б.Раковского г.Липецка и средней общеобразовательной школы №23 с углубленным изучением английского языка г.Пскова в 4.А и Б классах, работающих по одной программе «Школа России» Экспериментальная группа (ЭГ) 4.А класс, 52 респондента; контрольная группа (КГ) – 4.Б класс, 52 респондента.

Анализ результатов исследования (см. таблицу 1) свидетельствует о том, что младшие школьники находятся, в основном, на среднем уровне сформированности эстетического отношения к фольклору. Им нравится изучать фольклорные произведения, используя интеграцию искусств, потому, что: A) интересно (70% экспериментальная группа, ЭГ и 73% контрольная группа, КГ); B) чтобы воспитать любовь к прекрасному (51% экспериментальная группа, ЭГ и 49% контрольная группа, КГ); C) получать удовольствие (42% экспериментальная группа, ЭГ и 46% контрольная группа, КГ); D) получить более глубокие знания о фольклоре (32% экспериментальная группа, ЭГ и 34 % контрольная группа КГ); E) лучше усвоить виды и жанры фольклора (22 % экспериментальная группа, ЭГ и 24% контрольная группа, КГ).

У младших школьников преобладает вербализация, то есть описание основных событий (48% экспериментальная группа, ЭГ и 52% контрольная группа, КГ), и абстрагирование, проявляющее в выделении общих, типичных характеристик героев, которые не носят личностный смысл (42% экспериментальная группа, ЭГ и 46% контрольная группа, КГ). Образность, проявляющаяся в описании ярко выраженных средств выразительности, наблюдается у 24% респондентов экспериментальной группы, ЭГ и 22% контрольной группы, КГ. Способность замечать метафору в былине «Садко», придумывать метафоричные выражения и образы при описании и изображении героев наблюдалось у 18% учащихся ЭГ и 22% учащихся контрольной группы, КГ, оперирование символами в описании героев было замечено у 17% детей экспериментальной группы, ЭГ и 18% контрольной группы, КГ.

В ходе исследования были получены следующие результаты: высокий (творческий) уровень − 16,3% экспериментальная группа (ЭГ) и 20,2% контрольная группа (КГ); средний (репродуктивный) уровень − 60,9% экспериментальная группа (ЭГ) и 62,5% контрольная группа (КГ); низкий (адаптивный) уровень − 22,8% экспериментальная группа (ЭГ) и 17,3% контрольная группа (КГ).

Уровни сформированности эстетического отношения к фольклору средствами интеграции искусств по всем критериям показаны в таблице 1.

Таблица 1. ***Уровни сформированности эстетического отношения младших школьников к фольклору до эксперимента***
Table 1 ***Levels of Formation of the Aesthetic Attitude of Junior Schoolchildren to Folklore before the Experiment***

Уровни (%)	Критерии											
	Мотивация		Образность		Вербализация		Метафоризация		Символизация		Абстрагирование	
	ЭГ	КГ	ЭГ	КГ	ЭГ	КГ	ЭГ	КГ	ЭГ	КГ	ЭГ	КГ
Высокий	25,0	23,1	15,4	17,3	26,9	23,1	13,5	15,4	9,6	13,5	5,8	5,8
Средний	63,4	67,3	65,4	59,6	51,9	59,6	63,4	65,4	61,6	59,6	59,6	63,4
Низкий	11,6	9,6	19,2	23,1	21,2	17,3	23,1	19,2	28,8	26,9	34,6	30,8

В этой связи возникла необходимость в проведении формирующего этапа эксперимента, целью которого была разработка программы «Образы русского фольклора», включающая следующие направления: 1) знакомство с малыми фольклорными лирическими жанрами (детский фольклор: колыбельные песни, пестушки, потешки, считалки, загадки, скороговорки пословицы); 2) знакомство с эпическим фольклором (былины, сказки, предания); 3) знакомство с лирическим фольклором (обрядовые песни, календарные, трудовые, свадебные, солдатские); 3) знакомство с драматическим фольклором (игры, обряды); 4) знакомство с региональным фольклором (елецкая рояльная гармонь, частушки, протяжная песня). Программа предусматривала интеграцию искусств разных типов взаимодействия *коррелятивный (*одновременное воздействие искусств на создание эмоционального фона); *интегративный (*последовательное воздействие искусств по тематическому сходству); *коррелятивно-интегративный* (взаимодействие искусств по степени их воздействия). Например, при прохождении былины «Садко» детям предлагалось описать одновременно или последовательно образы Садко и моря в былине, в картине И.Е.Репина «Садко» и соответствующем фрагменте из оперы Н.А.Римского-Корсакова «Садко», используя общие точки соприкосновения: жанр, основную идею, настроение, средства выразительности. Подобрать к этим образам и придумать свои сравнения,

метафоры, символы. Образ Ильи Муромца также конкретизировался, сравнивался и сопоставлялся в былине «Илья Муромец», картине В.Васнецова «Богатыри», фрагменте Второй симфонии А. Бородина «Богатырская». Затем дети знакомились с синтетическими видами фольклора, которые характеризовались одновременным взаимодействием слова, музыки, движения, игры на простейших инструментах, народными костюмами. К ним относились календарные песни ранневесеннего периода и обряды, связанные с природой, Крещением, Рождеством, Масленицей.

Реализация авторской программы предусматривала следующие формы: интегрированный урок или интегрированное занятие, творческие и исследовательские проекты, квесты, коллективные игры, объединённые единым сюжетом. Основными методами использования интеграции искусств в процессе изучения фольклора были: сравнение, анализ, обобщение, интерпретация, инсценирование песен, сказок, пословиц; музицирование, игра на простейших русских народных инструментах, театрализация, эмоциональная драматургия, творческие методы.

С целью определения эффективности реализации авторской программы был проведён контрольный этап эксперимента по тем же критериям, методам и диагностическим методикам. Динамика результатов исследования по критерию мотивация до и после эксперимента показана в таблице 2.

Таблица 2. ***Динамика результатов по мотивационному критерию до и после эксперимента***
Table 2 ***The Dynamics of the Results on the Motivational Criterion before and after the Experiment***

Уровни	Баллы	До эксперимента %		После эксперимента %	
		ЭГ	КГ	ЭГ	КГ
Высокий	8 – 10	25,0	23,1	63,4	30,7
Средний	3 – 5	63,4	67,3	17,9	59,7
Низкий	1 – 2	11, 6	9,6	5,8	9,6

Результаты исследования по критериям образность, вербализация, метафоризация, символизация, абстрагирование до и после эксперимента представлены в таблице 3.

Динамика сформированности эстетического отношения младших школьников к фольклору на высоком уровне до и после эксперимента показана на рис. 1.

Из таблицы 3 и рисунка 1 видно, что значительные изменения по всем критериям произошли в экспериментальной группе (ЭГ) на высоком и низком уровнях после эксперимента. Количество респондентов на высоком

уровне по мотивации после эксперимента в экспериментальной группе (ЭГ) увеличилось в 2,5 раз, а в КГ в 1,3 раза.

Таблица 3. ***Динамика результатов исследования до и после эксперимента***
Table 3 ***The Dynamics of the Results of the Study before and after the Experiment***

Уровни (%)	Образность				Вербализация				Метафоризация				Символизация				Абстрагирование			
	До		После		До		После		До		После		До		После		До		После	
	ЭГ	КГ	ЭГ	КГ	ЭГ	КГ	ЭГ	КГ	ЭГ	КГ	ЭГ	КГ	ЭГ	КГ	ЭГ	КГ	ЭГ	КГ	ЭГ	КГ
Высокий	15,4	17,3	35,4	23,1	26,9	23,1	66,2	34,6	13,5	15,4	30,8	23,1	9,6	13,5	26,9	15,4	5,8	5,8	18,1	9,6
Средний	65,4	59,6	58,4	61,5	51,9	59,6	26,1	51,9	63,4	65,4	63,4	63.4	61,6	59,6	63,5	61,5	59,6	63,4	70,3	67,3
Низкий	19,2	23,1	5,8	15,4	21,2	17,3	7,7	13,5	23,1	19,2	5,8	13,5	28,8	26,9	9,6	23,1	34,6	30,8	11,6	23,1
$\varphi^*_{эмп\ ЭГ}$ = 3.861									**$\varphi^*_{эмп\ КГ}$ = 1.174.**											

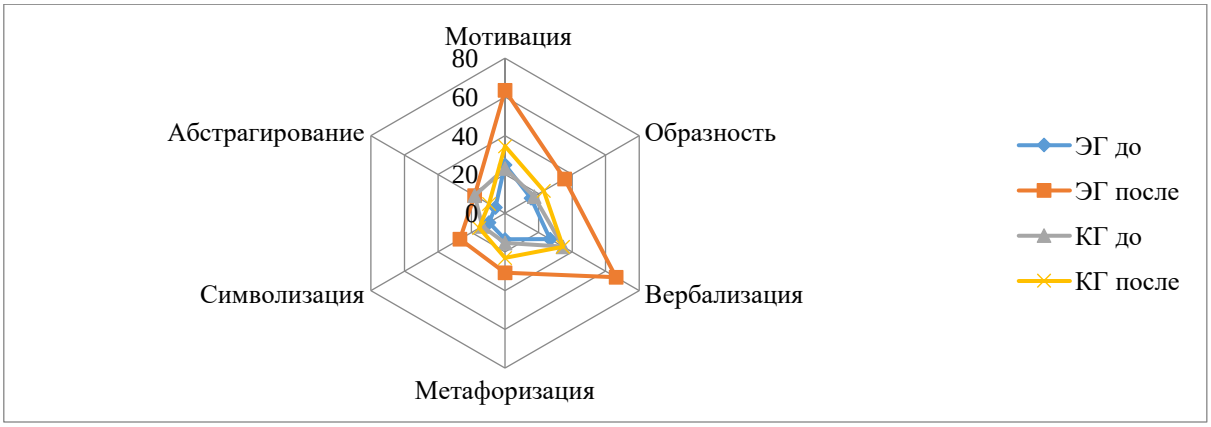

Рисунок 1. ***Динамика сформированности эстетического отношения младших школьников к фольклору в ЭГ и КГ на высоком уровне до и после эксперимента***
Figure 1 ***Dynamics of the Formation of the Aesthetic Attitude of Junior Schoolchildren to Folklore in EG and KG at a High Level before and after the Experiment***

Результаты в экспериментальной группе (ЭГ) выросли по сравнению с контрольной группой (КГ) после эксперимента в 2,1 раза. На среднем уровне результаты в экспериментальной группе (ЭГ) после эксперимента уменьшились в 3,6 раза по сравнению с результатами до обучения и в 3,3 раза по сравнению с контрольной группой (КГ) после обучения. На низком уровне результаты уменьшились после эксперимента в экспериментальной группе (ЭГ) в 2 раза, а в контрольной (КГ) не изменились. По сравнению с контрольной группой (КГ) после эксперимента результаты в экспериментально группе (ЭГ) увеличились в 2 раза. По образности результаты на высоком уровне в экспериментальной группе (ЭГ) после эксперимента выросли в 2,3 раза по сравнению с результатами до эксперимента; по вербализации в 2,5 раза, по метафоризации в 2 раза; по символизации в 2,8 раз; по абстрагированию в 3,1 раза.

Средние значения сформированности эстетического отношения младших школьников к фольклору на высоком уровне в

экспериментальной группе (ЭГ) составило 16,1% до обучения и 40,1% после обучения. Используя критерий углового преобразования Р.Фишера, мы получили $\varphi^*_{эмп} = 3.861$. Полученное эмпирическое значение φ* находится в зоне значимости. H_0 отвергается (ось значимости =2.31). Среднее значение в контрольной группе (КГ) до обучения составило 20,2%; после обучения 27,%. $\varphi^*_{эмп} = 1.174$. Полученное эмпирическое значение φ* находится в зоне незначимости. H_1 отвергается.

На среднем уровне (репродуктивном) результаты по образности, вербализации, метафоризации, символизации, и абстрагированию в экспериментальной (ЭГ) и контрольной (КГ) группах практически не изменились.

На низком уровне разница в показателях в экспериментальной группе (ЭГ) после эксперимента значительно уменьшились. Среднее значение сформированности эстетического отношения у младших школьников к фольклору по всем критериям составило 23,1% до эксперимента и 10,9 % после эксперимента в ЭГ; то есть результаты на низком уровне после эксперимента уменьшились в 2,1 раз. $\varphi^*_{эмп} = 2.517$. Полученное эмпирическое значение φ* находится в зоне значимости.

В контрольной группе (КГ) разница в показателях до и после обучения на низком уровне изменилась значительно меньше: до эксперимента среднее значение по всем критериям составило 20,2%, после эксперимента17,3% то есть уменьшилось в 1,2 раза. Полученное эмпирическое значение φ* находится в зоне незначимости.

Следовательно, представленная программа формирования эстетического отношения младших школьников к фольклору в процессе интеграции искусств «Образы русского фольклора», в которой отражены виды и связи интеграции искусств, является эффективной.

Обобщение
Conclusions

Ценность изучения эстетического отношения к фольклору позволяет создать целостную картину образов, связанных с устной формой изложения, развить мыслительные процессы и творческую деятельность у младших школьников. Значимость интеграции искусств, учёт их видов типов и связей определяет возможности данного феномена на основе единой природы эмоционально-образного, абстрактного, символического и метафорического постижения образов фольклора.

Выделенные критерии (мотивация, образность, вербализация, метафоризация, символизация, абстрагирование) являются необходимыми и достаточными для определения уровней сформированности

эстетического отношения детей к фольклору: высокого (творческого), среднего (репродуктивного), низкого (адаптивного). Разработанная диагностика позволяет чётко фиксировать происходящие на каждом уровне изменения и учитывать факторы эффективного формирования данного феномена.

Эффективность формирования эстетического отношения младших школьников к фольклору средствами интеграции искусств обеспечивает авторская программа «Образы русского фольклора», включающая основные направления, в которых учитываются типы, виды и связи интеграции искусств.

Summary

The value of studying the aesthetic attitude to folklore allows to create a holistic picture of images of folklore associated with the oral form of presentation, to develop thought processes and creative activities in younger schoolchildren. The importance of the integration of arts determines the possibilities of this phenomenon on the basis of a single nature of emotional-figurative, abstract, symbolic and metaphorical understanding of images of folklore.

Dedicated criteria (motivation, imagery, verbalization, metaphorization, symbolism, abstraction) are necessary and sufficient to determine the levels of formation of the aesthetic attitude of children to folklore: high (creative), medium (reproductive), low (adaptive). They allow you to clearly record the changes taking place at each level and determine the factors that contribute to the effective formation of this phenomenon.

The author's program "Images of Russian Folklore" provides the effectiveness of forming the aesthetic attitude of junior schoolchildren to folklore by means of integration of arts, including the main areas that take into account the types, types and connections of arts integration.

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EMOTIONAL INTELLIGENCE AND TRANSFORMATIONAL LEADERSHIP OF GYMNASIUM TEACHERS'

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Abstract. *The article deals with the associations of transformational leadership of gymnasium teachers' and their emotional intelligence. The operationalization of the concept of emotional intelligence in this study is viewed as the interaction of four determinants: Self-Emotional Appraisal (SEA); Others' Emotional Appraisal (OEA); Regulation of Emotion (RE); Use of Emotion (UE). The aim of the article is to explore how profile gymnasium teachers' transformational leadership is associated with their emotional intelligence dimensions.*
Wong and Law's Emotional Intelligence Scale (WLEIS) was used to measure the emotional intelligence of gymnasium teachers. Multifactor Leadership Questionnaire (MLQ) was used in the research of leadership expression. The collected data were analyzed using structural equation modelling (SEM). The findings confirm that the transformational leadership is statistically significantly associated with emotional intelligence of gymnasium teachers from Lithuania. SEM analysis revealed that the use of emotions is statistically significantly associated with gymnasium teachers' transformational leadership.
Keywords: *emotional intelligence; transformational leadership.*

Introduction

The teaching success and good results are often associated with effective school leader leadership, but teacher leadership is becoming an increasingly popular topic among policy makers and influential organizations contributing to education reform (Wenner & Campbell, 2017). Transformational leadership behaviors of teachers as an effective behavioral pattern can be useful in solving different problems in school and keeping it in a dynamic form (Cansoy, 2020). Transformational leadership is based on example and morality, awareness of the goal pursued, and team focus. Transformational leadership is a multidimensional construct consisting of different dimensions: an idealized effect (i.e., charisma), inspirational motivation, intellectual stimulation, and individual interest (Avolio, Bass, & Jung, 1999).

One of the essential components of leadership is recognizing and managing one's own and other people's emotions. Successful leadership is inseparable from the perception of properly used emotions and the emotional reactions of followers

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(Mayer, Salovey, & Caruso, 1999). Without understanding the feelings of their followers, leaders will not be able to communicate, understand and motivate them. It is also important to understand how emotions relate to each other. Finally, emotion management is very important for a leader who wants to attract the followers (Wang et al., 2018).

Scholars analyze the relationship between the leadership and emotional intelligence of universities and other educational institutions. However, there is a lack of research on the transformational leadership of gymnasium teachers and its links to emotional intelligence. The situation discussed highlights **the scientific problem**, which is formulated as a question: How does the emotional intelligence of gymnasium teachers relate to their transformational leadership?

The study aims at contributing to this body of literature by analyzing the relationship between the transformational leadership and the emotional intelligence of teachers.

The aim of the research is to reveal the relationship of emotional intelligence and transformational leadership of gymnasium teachers' and to highlight the influence of emotional intelligence on transformational leadership.

Literature review

The teachers, compared to other professions, are much more likely to show their emotions (both negative and positive), which affect their mental health, job satisfaction, and self-efficacy (Zurita-Ortega et al., 2019). It is important for teachers to know their own and others' emotions, as well as to motivate themselves properly, to manage their own and others' emotions.

Teachers who know their emotions and can control them as well as understand other people's emotions and manage them skillfully are more advantaged in their professional lives (Abiodullah, Dur-e-Sameen, & Aslam, 2020; Yildizbas, 2017). People who know their emotions can spend their life more easily and happily and such type of people are more satisfied than other people (Zeidner, Matthews, & Roberts, 2011).

Researchers refer to emotional intelligence (EI) as a set of abilities or perceptions concerning the way individuals identify, make use of, deal with, and process emotions (Petrides, 2011). Boyatzis (2009) states that "(a) an emotional, intelligence competency is an ability to recognize, understand, and use emotional information about oneself that leads to or causes effective or superior performance; and (b) a social intelligence competency is the ability to recognize, understand and use emotional information about others that leads to or causes effective or superior performance" (p. 757). Scholars have developed a four-branch emotional intelligence model: Perceive emotion, Use of emotion to

facilitate thought, Understand emotions, and Manage emotion (Mayer, Caruso, & Salovey, 1999).

The first dimension (perceived emotion) of EI is defined as the ability to perceive and identify emotions in oneself and others. When focused on the self, this dimension is related to greater emotional awareness, but when focused on other people, this dimension encompasses what is meant by affect sensitivity (Mayer, Caruso, & Salovey, 1999). The second dimension (Use of emotion to facilitate thought) of EI concerns the ability to use emotions to focus attention and to think more rationally, logically, and creatively. The third dimension (Understand emotions) of EI reflect the capacity to analyze emotions, to understand the progress of emotions, and transition from one to the other. The fourth dimension (Manage emotion) of EI concerns the ability to regulate moods and emotions in oneself and in other. When managing one's own emotions, people must be able to monitor, and label their emotions (Mayer, Caruso, & Salovey, 1999).

Despite the previously mentioned EI models, exist others EI models. According to Wong and Law (2002), emotional intelligence consists of four dimensions: Self-Emotion appraisal (individuals' ability to understand self-emotions and express them naturally), Other's Emotion Appraisal (individuals' ability to understand the emotions of people around them), Use of Emotion (individuals' ability to use their emotions towards constructive activities) and Regulation of Emotion (individuals' ability to regulate their emotions) (Wong & Law, 2002).

Methodology

The research methodology. The study is focused on social cognitive theory. This theory highlights personal factors (cognition, affect); behavior, and environmental influences (Bandura, 2001). Social cognitive theory has four cornerstones that play an important role in media environment: human agency, human capabilities, vicarious learning, and self-efficacy (Bandura, 2001; Khang et al., 2014). According to Social cognitive theory the fallowers observe a behavior of leaders and the consequences of their behavior, the fallowers remember the sequence of events and use this information to guide subsequent behaviors.

Method of research. The study was conducted in Lithuania. Gymnasium teachers participated in the study. Gymnasiums are an integral part of the Lithuanian education system, including basic and secondary education. The basic education program consists of two parts. Part I of the program lasts 4 years (includes grades 5-8). Part II lasts 2 years and includes grades 9-10 (or grades 1-2 of the gymnasium). Basic education is acquired after completing the basic

education program and passing the basic education achievement test. The secondary education program is of two years. It is provided in grades 11-12 (or grades 3-4 of the gymnasium). It consists of compulsory and optional general education and possible vocational training modules. The study involved teachers of various subjects working in grades 1-4 of the gymnasium.

The influence of emotional intelligence dimensions on transformational leadership of gymnasium teachers from Lithuania was disclosed by testing four hypotheses on path analysis:

H_1. The self-emotions appraisal (SEA) directly affects the transformational leadership of gymnasium teachers.

H_2. The other's emotions appraisal (OEA) directly affects the transformational leadership of gymnasium teachers.

H_3. The use of emotions (UE) directly affects the transformational leadership of gymnasium teachers.

H_4. The regulation of emotions (RE) directly affects the transformational leadership of gymnasium teachers.

The instrument of the quantitative research. Multifactor Leadership Questionnaire (MLQ) was used in the research of the leadership expression (Bass and Avolio, 1990). The current article explores exclusively the transformational leadership style. Wong and Law Emotional Intelligence Scale (WLEIS) was used to measure the emotional intelligence of gymnasium teachers (Wong, & Law, 2002).

The sample and sampling of the quantitative research. The research sample (the confidence interval being 5%, and the confidence level being 95%) was reliable as it involved 304 gymnasium teachers. The total population was 12644 of gymnasium teachers (Lithuanian education in numbers, 2018). Therefore, the probability (confidence level) is 95%, so the obtained data can shift only by 5% from the population parameters (confidence interval). The representativeness of the study sample was ensured by using a probability random sample. The teachers were involved in the study through social networks.

Results

This research aimed to measure the influence of the emotional intelligence dimensions on the gymnasium teachers' transformational leadership. For this purpose, simple linear regression and path analysis procedure was chosen. Simple linear regression allows summarizing and studying relationships between two continuous (quantitative) variables. The path analysis procedure was chosen to test the four hypotheses about the influence of the emotional intelligence on the transformational leadership of gymnasium teachers (Figure 1). The variables of all components were directly observable.

When performing a regression analysis, the normality test of Kolmogorov-Smirnov was used in this study (Table 1). This test was conducted to determine if the data were normally distributed. The results of Kolmogorov-Smirnov test showed that the data of the gymnasium teachers' emotional intelligence dimensions were normally distributed: (p_{PE}= 0.0913 > 0.05), (p_{UEF}= 0.122 > 0.05), (p_{UE}= 0.166 > 0.05), (p_{ME}= 0.910 > 0.05) (Table 1). The normality of the transformational leadership variables was also confirmed by Kolmogorov-Smirnov test (Table 2).

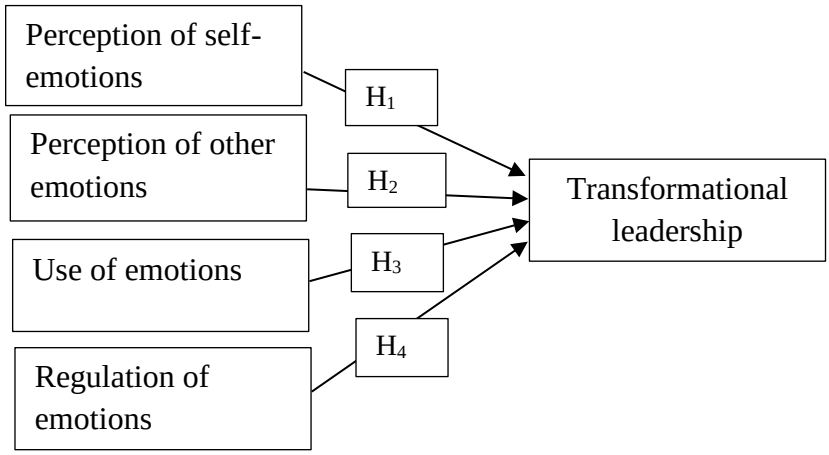

Figure 1 ***The Theoretical Model of the Emotional Intelligence and Transformational Leadership of Gymnasium Teachers***

Table 1 ***Results of the One-Sample Kolmogorov-Smirnov Normality Test of the Emotional Intelligence Dimensions of Gymnasium Teachers***

		PE	UEF	UE	ME
N		304	304	304	304
Normal Parameters[a,b]	Mean	94.923	90.201	90.712	83,202
	Std. Deviation	14.893	13.152	17.726	18,275
Kolmogorov-Smirnov Z		1,181	.865	1.193	.910
Asymp. Sig. (2-tailed)		.091	.122	.166	.311

a.Test distribution is Normal. b. Calculated from data.

A simple linear regression was used to predict the gymnasium teachers' transformational leadership based on their emotional intelligence. A significant regression equation was found (F (1.241) = 49.187, p<.001). The coefficient of determination (R^2) indicates that 30.1% of the variation in transformational leadership can be explained by the model containing only emotional intelligence. This coefficient is sufficient, so the predictions from the regression equation are reliable. The coefficient of gymnasium teachers for use of emotions was 0.241

and the constant number was 49.743. Based on these data, the regression line equation could be written as follows:

Transformational leadership (y) = 49.743 + 0.241 (use of emotions) (x) (1)

Table 2 Results of the One-Sample Kolmogorov-Smirnov Normality Test of the Transformational Leadership of Gymnasium Teachers

	Idealized Influence	Idealized Influence	Inspirational Motivation	Intellectual Stimulation (IS)	Individualized Consideration (IC)
Mean	59.791	64.894	63.497	62.722	67.011
Std. Deviation	10.841	10.211	9.892	9.182	9.904
Kolmogorov-Smirnov Z	1.332	1.551	1.222	1.987	1.714
Asymp. Sig. (2-tailed)	.987	.941	.998	.527	.558

Table 3 ***Simple Linear Regression Analysis: the Gymnasium Teachers' Transformational Leadership and Emotional Intelligence***

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	49.743	5.190		9.558	.000	39.476	60.013
	Use of emotions (UE)	.108	.046	.241	2.321	.022	.016	.199
	Self-emotions appraisal (SEA)	.049	.055	.094	.883	.379	.061	.158
	Other emotions appraisal (OEA)	.033	.063	.055	.520	.604	.092	.158
	Regulation of emotions (ME)	.042	.042	.098	.996	.321	.125	.041

a. Dependent Variable: transformational leadership

The equation (1) shows that if the gymnasium teachers' emotional intelligence dimension (use of emotions) increased by 1 unit, then the teachers' transformational leadership would increase by 0.241 units. Therefore, the

gymnasium teachers' emotional intelligence dimension (UE) had a positive influence on their media literacy (Table 3).

The theoretical model (Figure 1) was tested using the path analysis procedure with the software AMOS 17. The measurement model fit the data well (Table 4).

The main purpose of this study was to reveal the role of the emotional intelligence of the gymnasium teachers in their transformational leadership. We examined the direct effects for significance and magnitudes (Table 5). We found that only one direct path was significant in the final model (Table 5). The significant path coefficient in the model was: the emotional intelligence dimension (use of emotions) effected transformational leadership ($\beta = 0.108$).

Table 4 ***The Fitness of Items of Transformational Leadership and Emotional Intelligence of Gymnasium Teachers***

	Absolute fit index			Relative fit index		
	$\chi 2$/df	RMSEA	GFI	IFI	TLI	CFI
Assumed model	5.212	.073	.907	.999	.991	.995
Acceptance value	1-5	<.08	>.80	>.90	>.90	>.90

Table 5 ***The Hypothesis Testing the Gymnasium Teachers' Transformational Leadership and Emotional Intelligence: Direct Effect***

Hypothesis	Paths	Paths coefficients	P	R^2	Results	Effect
H1. The self-emotions appraisal (SEA) directly affects gymnasium teachers' transformational leadership.	SEA→ Transformational leadership	.049	.370	.080	Not support	Direct
H2. The other's emotions appraisal (OEA) directly affects gymnasium teachers' transformational leadership.	OEA → Transformational leadership	.033	.598	.117	Not support	Direct
H3. The use of emotions (UE) directly affects gymnasium teachers' transformational leadership.	UE → Transformational leadership	.108	.018	.307	Support	Direct
H4. The regulation of emotions (RE) directly affects gymnasium teachers' transformational leadership.	RE→ Transformational leadership	.042	.312	.032	Not support	Direct

The explanatory power of the gymnasium teachers' transformational leadership model (Figure 1; Table 5) was assessed by calculating the coefficient of determination (R^2) of the emotional intelligence dimensions: PE; UEF; UE; ME (Table 5). The data indicated that 30.7% of the variation in the gymnasium teachers' transformational leadership was accounted by their emotional intelligence dimension UE. The small R^2 values did not support hypothesis: H_1; H_2, H_4 (Table 5).

Discussion

The emotional intelligence is one of the factors that determines successful or unsuccessful leadership (Bagshaw, 2000). The objective of this study was to determine the influence of emotional intelligence on the transformational leadership of gymnasium teachers. Gymnasium teachers can successfully transform students' behavior only by being able to control emotions while achieving the educational goal. The ability to recognize and use emotions determines successful transformational leadership (Naznin, 2013). Scholars state that the leaders who can recognize their own and other people's emotions demonstrate a transformative type of leadership (Hajncl & Vučenović, 2020; Sunindijo, 2012). On the other hand, transformational leadership enhance emotional intelligence (Wang, et al., 2018).

Transformational leadership and emotional intelligence are multidimensional constructs. The research about the associations between the dimensions of transformational leadership and emotional intelligence reveals the links between emotional intelligence and transformational leadership, intellectual stimulation, and idealized influence in particular (Barbuto & Burbach, 2006). Researchers argue that emotional intelligence determines all the components of transformational leadership (Gardner & Stough, 2002). High emotional intelligence transforms, inspires and encourages followers, shows them the right way, and increases their self – confidence (Afzal, Khan, & Mujtaba, 2018). Emotional intelligence and transformational leadership are related through inspiring motivation. Leadership skills grow by perceiving and regulating emotions (Leban & Zulauf, 2004).

Scholars state that transformational leadership depends mainly on intellectual stimulation in university teachers, whereas intrinsic motivation is more relevant at the lower educational levels (Zurita-Ortega et al., 2019). They observe that transactional leadership is negatively related to some emotional intelligence dimensions, given the relevance of obtaining power in this dimension (Seydi Shahivand & Moradkhani, 2020; Zurita-Ortega et al., 2019).

Our research contributed into the associations of transformational leadership and emotional intelligence and highlights association between the use of emotions in educational practice and transformational leadership. Our research result corresponds to the main ideas of a large study about the associations of the teachers' transformational leadership and the emotional intelligence (Seydi Shahivand & Moradkhani, 2020). Scholars argue that there is a positive and direct relationship between the levels of emotional intelligence and transformational leadership in non-university teachers (Seydi Shahivand & Moradkhani, 2020).

Our study is based on the context of only one country. This is a limitation of this study. It would be appropriate to repeat this study in the context of another country.

Conclusions

We analysed the phenomenon of transformational leadership of the gymnasium teachers of Lithuania. The results of the linear regression analysis reveal the influence of the emotional intelligence on the transformational leadership of gymnasium teachers. Therefore, the gymnasium teachers' emotional intelligence has a positive influence on their transformational leadership.

The result of the path analysis reveals that the various emotional intelligence dimensions (SEA), (OEA), (UE), (RE) differently effect the transformational leadership of the gymnasium teachers. Only one dimension – the use of emotions (UE) in educational practice – statistically significantly influences the transformational leadership of the gymnasium teachers.

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DEVELOPMENT OF TRANSVERSAL SKILLS IN PRIMARY SCHOOL (CLASSES 1-3): CONTEXT OF LIFELONG LEARNING

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Abstract. *The primary task of the 21st century education is not anymore to transfer continuous information, but the skill to acquire independently and learn this knowledge during lifetime. In the future, the development of transversal skills plays an important role in the educational process. Transversal skills, such as critical thinking and problem-solving, creativity and innovation, self-guided learning, cooperation, civic participation and digital literacy, are raised in the framework of Education Reform in Latvia (Skola 2030, 2017).*
The beginning of the learning process during the stage of primary school is an essential step in transversal skills acquisition, particularly emphasizing the impact of the Classes 1-3 stage, on the further learning process. According to the outcomes determined in the standard of primary education to be achieved, it is necessary to develop significantly transversal skills in this stage, as well as observe carefully the changes in children's age development that affect the possibilities of transversal skills development.
The goal of the research: analyse the development of transversal skills in primary school (Classes 1-3).
Research method: content analysis of the education content regulating documents and scientific literature.
Keywords: *Classes 1- 3, learning process, primary school, skills development, transversal skills.*

Introduction

The 21st century has caused essential changes in the world- disappearance of borders, intercultural interaction and convergence, growing importance of technology and constant increase in the amount of information- which require to review the functions and values of education all over the world. If in the past the main function of education was to ensure the future generation with the transmission of public knowledge and values, then nowadays this function is losing rapidly its relevance. The knowledge that is currently being transferred in schools will have lost its relevance by the time the student graduates from the educational institution (Fulans, 1999), therefore right now the main function of education is to prepare the new generation for lifelong learning. In this context

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the significance of lifelong learning and transversal skills as an important component of lifelong learning has been raised.

The change of the education paradigm, in the context of the processes going on in the world, has also been raised in the most essential strategic planning documents of Latvia, which has resulted in the reorganization of the education system within the framework of the project "School 2030."

Within the project “School 2030” while reforming the system of Latvia, in order to provide compliance with the 21st century educational paradigm, a further consistency of the educational process is emphasized starting from the pre-school educational institution up to the secondary school graduation. The main emphasis of the consistency is to develop a common base for the learning process, based on specific learning areas, transversal skills and virtues / values.

The goal of the research: analyse the development of transversal skills in primary school (Classes 1-3).

Research objectives:

1. Analise scientific literature on the theoretical background of transversal skills in the 21st century education.
2. Study the results to be achieved in the transversal skills development in Classes 1-3 of primary school, looking at it in the relation to the result of the development of pre-school transversal skills.
3. Describe the importance of transversal skills in the age group to be studied, raising the significance of further studies.

Document analysis and content analysis have been performed in the study. In the research the most important planning documents influencing the educational process have been analysed: “Sustainable Development Strategy of Latvia until 2030,” “National Development Plan of Latvia 2014-2020,” “National Development Plan of Latvia 2021-2027,” “Provisions on Basic Education Standard and Models of Basic Education Programmes,” “Pre-school Education Programme.” The classification of transversal skills offered by different organizations has been used for the transversal skills analysis.

Priorities of Latvia Education System and Their Implementation Within Project “School 2030”

As it has been stated in the “Sustainable Development Strategy of Latvia until 2030,” the most important resource of Latvia is the human capital, therefore the change of education paradigm is roused, envisioning the transfer for the education system, which is mostly directed towards the logical thinking and intellect, to a system which promotes intuitions, emotions, creative ideas, develops critical thinking and is able to generate new visions and values (PKC, 2010]). The significance of lifelong learning is especially emphasized,

highlighting that just the quality of basic education and secondary education is the prerequisite for successful studies and further career (PKC, 2020).

Visions included in the planning documents are implemented within the project Nr.8.3.1.1/16/l/002 or "Competence-Based Approach in Curriculum" (VISC, 2016) which is recognized in the society as the project "School 2030". Implementation of this project envisages the development of such a learning process whose goal is a proficient pupil who is willing and ready for lifelong learning, can solve real-life challenges and creates innovations (Skola 2030, 2017).

The most essential changes that affect the curriculum envisage that in future education should be divided into the pre-school stage, basic education stage (dividing it into three sub-stages: Class1-3, Class 4-6, and Class 7-9), as well as the secondary education stage. In all these three stages the study process is based on three common elements – acquisition of transversal skills, development of virtues/values and content acquisition of seven study fields, planning the learning process – in the fields of languages, social and civic, cultural awareness and self-expression art, natural sciences, mathematics, technologies and health and physical activities.

With special emphasis on the transition to the new curriculum, during the stage of classes to be studied, it should be noted that the transition is planned for Class 1 in 2020/21, Class 2- 2012/22, Class 3 – 2022/2023.

Classification of Transversal Skills in Context of 21st Century Education Paradigm

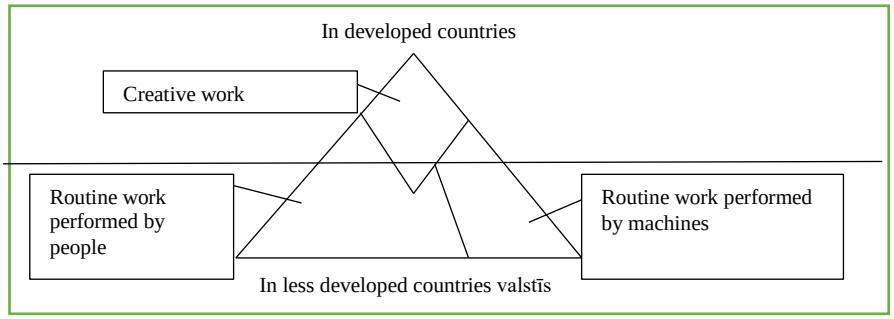

Figure 1 ***Importance of Creative Work in Developed Countries*** *(Trilling & Fadel, 2009)*

The new education paradigms are related to the change of the mindset of the era which envisages the transfer of the post-industrial society to information society (Briška, Klišāne, Brante & Helmane, 2006) or knowledge society (Trilling & Fadel, 2009). Social skills, the ability to assess critically information and the desire for lifelong learning have become an essential component for a

successful personal development and professional activity (Oliņa, Namsone & France, 2018).

Knowledge as the central object of the learning process is replaced by competences, which are based on the interaction of knowledge, skills and attitudes in different combinations (Aramaviciute & Martishauskiene, 2006, Kalniņa, 2014). Such changes are mainly related to the new requirements of the labour market where technologies replace gradually the less skilled workforce, and creativity, innovations and global competitiveness are becoming increasingly important (Figure 1).

Understanding of the learning process at school is changing, where the pupils' activity in the learning process is highlighted as the background of the pedagogical approach. The role of the teacher as the central provider of knowledge is no longer accepted, but it is acknowledged that learning is only possible with the individual's motivated involvement (Helds, 2006; Talts, Sikka, Mägi, Vikat, & Kurk, 2006; Maslo, 2003).

The issue of transversal skills becomes topical, as independence is not possible in the learning process if one lacks the necessary skills. Active debates are going on about the significance of transversal skills in both science and politics. Currently it has not been possible to create a common classification of transversal skills and agree on the exact use of the term. Transversal skills are also called as basic skills, employability skills, key competences and the 21st century skills. The concept of transversal competences is also used (Viska project, 2017).

In the context of the article the authors, referring to the new curriculum of the Latvia education system, use the term transversal skills, meaning "skills which have been acquired in one situation or area and which can be applied in other situations or areas" (AIC, 2016, 74).

In various documents and studies the classification of transversal skills is dissonant/different. In one of the formulations of the classification of transversal skills there have been listed such transversal skills as collaborative problem-solving, learning to learn and continuing to learn, digital competences and mindset, initiative and independent thinking, resilience, adaptability, cultural awareness and expression (Whittemore, 2018). Whereas, the United Nations have named such basic skills as communication skills, collaboration skills, teamwork, planning and organizing, accountability, creativity, client orientation and commitment to continuous learning (UNO, n.d.). According to another classification such transversal skills are essential as critical thinking, communication skill, collaboration skill and creativity and innovation skills (The Ontario Public Service, 2016). Even though differences can be noticed in the classification of transversal skills, the unified core of the skills is clear, i.e., the skills which are essential, necessary, reusable, transformable and not specifically

related to a field, job or discipline are acknowledged as transversal skills (Mateo et al., 2019).

Undeniably, different skills have also been topical during the industrialization and post-industrialization age, albeit the content of the skills has changed significantly. The industrialization and post-industrialization society was based on the so called 3R skills – Reading, wRiting and aRithmetic skills (Keane, 2012).

Figure 2 ***Core Skills of Industrial Society*** *(Keane, 2012)*

In its turn, nowadays the skills structure is viewed in a more complex way and the debate is most often about the so called 4C skills – critical thinking, communication skills, collaboration skills and innovation/creativity (Kivunja, 2015, Trilling & Fadel, 2009). These skills also form the central core of the transversal skills, which, in spite of the classification differences, can actually be seen in all definitions of these skills. Nevertheless, it should be emphasized that there is no intention to replace the old ones, but rather supplement them (3Rs+4Cs) (Keane, 2012).

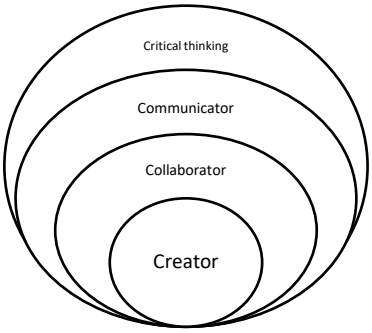

Figure 3 ***21st century 4C Skills*** *(Kivunja, 2015)*

Critical thinking and problem-solving skills are currently being analysed as the cornerstone of the 21st century learning. This concept is basically analysed as goal-oriented thinking (Stanford Encyclopaedia of Philosophy, 2018), which includes in itself the skill to solve unfamiliar problems in different ways, which during the age of global economics and technologies is an extremely essential skill throughout life (Kivunja, 2015). Also, collaboration and communication skills are important components of transversal skills. The skill to communicate

clearly is meant by these skills which includes in itself both an articulated speech, efficient listening and goal-orientated collaboration (Trilling & Fadel, 2009).

The innovation/ creative skill is acknowledged as the central skill of the new age, which currently takes the central place in the most important planning documents of different states, including Latvia. As it is mentioned in the *Sustainable Development Strategy of Latvia until 2030*, then "countries with expensive human capital are internationally competitive only then if their human capital is good at innovation (…) Nowadays innovation is no longer only limited to high technologies, but also to creation and implementation of new ideas in each field of activity, therefore it is increasingly important for national competitiveness to involve as many people as possible in the creative process" (PKC, 2010).

In general, according to the 21st century education paradigm, learning is a lifelong process. However, it is the experience gained during school that influences these lifelong learning skills in later life (Maslo, 2003).

Relevance of Transversal Skills Development in Primary School (Classes 1-3)

From 2018, the new standard of basic education entered into force whose goal is to provide a successful transmission of knowledge, skills and values through all vital stages of education, preparing the individual for the process of lifelong education. Further on, the result to be achieved is set as the main quality indicator of knowledge and skills development whose goal is to help understand whether the pupil has acquired the necessary knowledge, skills and attitudes in the particular field and age group. As it is stated in the standard of basic education: "The envisaged outcomes for the pupil to be achieved are complex, they reveal the final outcomes in activity, include knowledge, understanding and basic skills in fields of study, transversal skills, values and virtues and are expressed as requirements in fields of study" (Ministru kabinets, 2018).

Even though in the course of the learning process, according to the new education reform, transmission of educational values can be noticed, it is important to emphasize the significance of the first stage of primary education (Classes 1-3) in transversal skills development. One should take into account that despite the acquired learning skills in the pre-school educational institution, the results set to be achieved for the pupil, related to transversal skills, when finishing Class 3 and moving on to the next stage, are more complex and they confirm the importance of the period. In the *Sustainable Development Strategy of Latvia*, it is stated that in pre-school and primary school (after the Latvia Education Reform the term of primary school to mark the stage of Classes 1-4 is no longer used, today the term basic school is used (Classes 1-3; Classes 4-6; Classes 7-9))

education has to be directed towards the development of the child's communication skills, individuality and curiosity (PKC, 2010).

The following transversal skills are defined in the context of Latvia education system – critical thinking and problem-solving, creativity and undertaking, self-guided learning, collaboration, civic participation and digital skills.

To analyse and understand the most essential changes on the level of the results to be achieved, three transversal skills have been used for comparison – critical thinking and problem-solving, self -directed learning and collaboration skill. The particular skills have been selected based on the authors' knowledge on the significance of the skills for the quality assurance of the further learning process.

Table 1 ***Outcomes to be Achieved in Transversal Skills in Pre-school*** *(Pre-school Education Programme, n.d.)* ***and at the End of Class 3*** *(Ministru kabinets, 2018)*

	Pre-school	**Basic School Class 3**
Critical thinking and problem-solving	The child uses algorithms for everyday activities in familiar situations, formulates simple coherences and sequences of actions, identifies a familiar situation, causes and consequences of events, learns to assess the credibility of information, make decisions and choices, and assess what has been done.	- Formulates open cognitive questions in situations related to personal experience. Compares, interprets, evaluates, connects and arranges simple information according to the provided criteria. Looks for verified facts, checks them themselves; - Recognizes and formulates problems in a binding context related to personal experience. Sets a goal with the help of a teacher, offers solutions, chooses the best solution; Characterizes own experience in similar situations, comes up with ideas for solutions. With the help of teachers creates a plan to solve the chosen problem, implements it through learning several problem-solving strategies and evaluates the result.

Self-guided learning	The child distinguishes emotions and determines their causes, learns to control their behaviour, observes the daily routine, is able to wait, is able to complete the activity, gets dressed independently and tidies own possessions , learns to set a goal for their activity, plan activity in order to implement the intention, acts independently , overcomes hardships with a support, learns to perform the assigned tasks, takes pride in their achievements, failures and mistakes are seen as part of learning, assesses their own and others' activity and its result, explains their assessment.	- Names and applies several strategies for keeping attention, memorizing and remembering; - Explains the impact of different emotions on their thinking and behaviour; - In the learning process, with the teacher's support, follows the fulfilment of the previously set achievement criteria and evaluates their learning activities and learning experience.
Collaboration	The child expresses their opinion and feelings, learns to listen to others and say their opinion, starts to understand how their own emotions and behaviour affects others, learns to solve conflict situation, coordinate activities with others, behaves politely and acts in a sympathetic way, learns to establish sustainable relationships and their understanding of friendship, helps and accepts help, learns to work, setting a common goal, takes and shares responsibility.	- Ensures that the interlocutor has understood what has been said. Directs purposefully the conversation with the teacher's support in order to understand each other and applies consciously their social skills to establish and maintain positive relationships with others and get involved in social relations; - Collaborates with others to perform common and constructive tasks.

As it can be seen in the table provided, the results to be achieved in these transversal skills, which in the pre-school education stage are general and related to the first independent work skills, after the transition to the basic education stage, an impressive development of them is envisaged by the end of Class 3. For instance, in the critical thinking and problem-solving skill, during the first three years of school independent questioning skills have to be acquired, also the skill to analyse, interpret, assess etc. has to be developed. During these years, pupils have to improve not only their problem-solving skills, but also acquire the first problem-solving strategies. A similar situation is with the self-guided learning skill, for during the Class 1-3 stage of basic education the acquisition of the information memorization and recollection strategies and strengthening of metacognitive skills is envisaged, evaluating their own learning work and learning experience. Turning to the third of the described transversal skills - the collaboration skill, which is recognized as one of the most essential learning skills in the 21st century – the pupil has to be able not only to apply successfully their

communication skills upon reaching Class 3, but also direct them to solve constructive issues.

In general, focusing on the learning outcomes to be achieved, highlighted in the table, and comparing them with the above-described transversal skills raised in the 21st century, which are necessary throughout life, topicalization of these learning skills can be noticed in this age group.

Moreover, it is important to emphasize the pedagogically psychological significance of the age group in the development of transversal skills. As it is mentioned in the report on education for the 21st century submitted to UNESCO by the International Commission, attitudes towards lifelong learning are created in families, but in a broader sense, also during the stage of basic education, in which pre-school and primary school are included as well. This particular time is described as time in which skills are acquired to apply tools to develop a sense of judgment and responsibility in the future, since we learn to know the world around us (Delors et al., 2001).

From the pedagogically psychological point of view the age group of Classes 1-3 is assessed as important, for essential changes in the child's development are noticed which affect their possibilities to improve their transversal skills in compliance with the requirements set in the standard. At the age of about 7, there is a significant improvement in thinking operations. The main qualitative changes are related to the development of analysis, synthesis, comparison, generalization, classification and specification skills (Kalvāns, 2018). According to Piaget (Piažē), during the pre-school age there is the so called pre-operational stage which is related to several thinking restrictions, i.e., children's thinking during this time is concrete, irreversible, egocentric, it tends to be centred and during this timechildren focus their attention on the changes going on at that moment, whereas reaching the school age (6-12 years) important changes can be noticed in the child's cognitive development. In a pupil of Class 1, a gradual change in thinking can be observed in the intellectual development, which becomes less intuitive and ego-centric with a gradual transition to logical thinking. Similarly, children's thinking becomes more reversible, flexible and complex. Skills to determine causes and see regularities improve, also memory and metacognitive thinking develop rapidly (Piažē, 2002).

The development of transversal skills requires the components of the learning process to be reviewed– the pupil, teacher, content and surrounding environment. Any innovations that affect one of these elements in the process of change influence everyone else (Guilland, 2016), therefore the development of transversal skills in this particular and all other subsequent stages of education has to be considered as a complex process.

Changes in the study process affect not only the selection of teaching methods, but they also influence the awareness of the process in general. In the

scientific literature such development elements of transversal skills have been highlighted, which after being adapted to the peculiarities of the age group, can be applied in the skills development in Classes 1-3 (Pellegrino & Hilton, 2012): 1) the study process has to be directed towards the pupil. The development of transversal skills has to be related to the variety of tasks and their connection to real examples. The learning process with going deeper into the subject has got an active role – analysis, synthesis, evaluation, problem-solving etc. (Namsone & Oliņa, 2018); 2) The learning motivation becomes particularly important (Pellegrino & Hilton, 2012). If the learning process and development of transversal skills within its framework are directed towards the pupil, then this approach cannot be purposefully implemented in the study process with pupils of low motivation; 3) Targeted formative assessment must become an integral part of the learning process. In the development of transversal skills, formative assessment has to serve as a tool to help pupils see their learning goals, follow constantly the pupils' learning process and allow pupils to do their self-assessment (Pellegrino & Hilton, 2012); 4) Advantages of interactive learning environment have to be applied which allow them to develop and express new skills (Guilland, 2016).

Taking into account that the new model of Latvia education system is based on consistency, whereas the consistency is related not only to the school stage, but the significance of lifelong learning is also emphasized, qualitative and purposeful development of the skills during this age group is essential for further development and application of qualitative transversal skills throughout life. Thus, according to the authors, further empirical studies should be carried out in order to find out the level/ compliance of transversal skills with the results to be achieved at the end of pre-school and when starting school, as we are comparing it with the situation at the end of Class 3, proceeding with the research on the development of a didactic model for the development of transversal skills.

Conclusions

Assessing tendencies of the 21st century, the awareness of the educational process also changes. Currently the main objective of education is no longer transmission of knowledge, but rather acquisition of the skills necessary for the era, which would enable lifelong learning and adaptation to changing circumstances.

Transversal skills occupy the central place in the lifelong context. They are characterized by relevance, necessity, reusability, transformation depending on the conditions and their significance regardless the field or profession.

The classification of transversal skills is varied. However, the central ones are critical thinking, collaboration skills, communication skills and the creativity/innovation skill.

When commencing the implementation of the project "School 2030" in compliance with the 21st century paradigm, the Latvia education system is also reformed, in which the further development of transversal skills in three successive stages of education - pre-school, basic school, secondary school- is of great importance.

Starting school is essential for the acquisition of transversal skills, as the transversal skills defined in the standard of basic education, which in pre-school are based on comparatively simple everyday activities, envisage achievement of a more complex result based on cognitive activities when finishing Class 3. During the Classes 1-3 stage profound work has to be performed to develop the skills. However, basically, the studies related to the phenomenon to be researched up to now have been based on justifications for the changes, therefore further empirical studies and development of an appropriate didactic model of transversal skills would be important.

The development of transversal skills is complex. The study process has to be directed towards the pupil as an active participant of learning. More attention ought to be paid to the learning motivation, formative evaluation, interactive learning process based on the experience of developed teaching methods and didactic approaches.

Introduction of the new curricula in Class 1, commenced on September 1, 2020, will be continued in Class 2 on September 1, 2021, but in Class 3 on September 1, 2022. Introduction of the guidelines for the development of transversal skills in the learning process are in the approbation process currently, therefore it is essential to pursue the research in order to develop suggestions and provide support to teachers for a further study process provision.

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СОЦИАЛЬНО-ПСИХОЛОГИЧЕСКИЕ ХАРАКТЕРИСТИКИ СОВРЕМЕННОГО ПЕДАГОГА В ЦИФРОВУЮ ЭПОХУ

Socio-psychological Characteristics of a Modern Teacher in the Digital Age

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Abstract. *The article focuses on a teacher undergoing a transformation in the digital age. The authors considered the main socio-psychological characteristics of a modern teacher, conducted an empirical research and supplemented the professionogram of a modern teacher. The program of teachers' professional development proposed by the authors is based on the idea of system-activity and anthropological approaches.*
Keywords: *competence, digital age, meanings in education, multitasking, professionogram, socio-psychological characteristics, teacher.*

Введение
Introduction

Какой он – учитель 21 века? Это энергичный, образованный, легко адаптирующийся к изменениям профессионал, глубоко знающий свой предмет и желающий передать знания детям.

Но, современные дети, как и окружающая нас реальность, в значительной степени изменились. Период пандемии внес свои

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коррективы во все сферы жизни людей, в том числе и в образовательное пространство. За последний год школьное образование вышло на совершенно новый уровень, открыв для себя как плюсы, так и минусы дистанционного обучения. Как с такими стремительными переменами справились учителя?

Данное исследование призвано ответить на главный вопрос: какими социально-психологическими характеристиками, компетенциями должен обладать сегодня профессионал.

Цель исследования: модифицировать портрет учителя 21 века, дополнив его актуальными качествами, компетенциями в сравнении с учителем прошлого. **Задачи** исследования: выявление отличий между учителем сегодняшнего дня и педагогом, который работал в школе 10 лет назад; анализ изменений и особенностей педагогической эволюции; определение современных требований и профессиональных рисков.

Методологическими основаниями исследования являются:

- положения системно-деятельностного подхода, определяющего профессиональное совершенствование как исключительно активное включение учителя в деятельность по самоизменению и самосовершенствованию (Winter, 2000, Leontiev, 1975, Kuzmina, 1970);

- принципы антропологического подхода, рассматривающие учителя как Человека понимающего, создающего пространство доверия, находящегося в событии с ребенком, пробуждающего и организующего поиск смыслов. Пробуждение смысловых единиц жизни – это индивидуальная система ценностей и способов взаимодействия с ними, включающая: смыслы-цели; смыслы-интересы; смыслы-мотивы; смыслы-переживания; смыслы-отношения, значимые единицы человеческого сознания «для меня» (Leontiev, 1975, Bim-Bad, 1998, Kolesnikova, 2001, Gaponova, 2011).

- синергетический подход, представляющий инновационные процессы в образовании в качестве своеобразных флуктуаций, расшатывающих традиционную «знаниевую» модель образования и подводящих её к точке бифуркации, способствующие формированию компетентностной модели учителя, отвечающего современным реалиям и вызовам (Kolesnikova, 2001).

Теоретический взгляд на современного учителя
Theoretical View of the Modern Teacher

Проблема учительского профессионализма является междисциплинарной. Различные социальные и психологические составляющие профессиональной компетентности педагогов являются предметом

исследований многих российских и зарубежных ученых (Bobkova et al., 2020, Tondeur, 2018). О роли учителя и его профессионально-значимых качествах размышляют философы, психологи, специалисты по управлению образованием, экономисты, юристы и т. д. Однако, в первую очередь она интересует педагогику. Проблема влияния компетентности учителя на качество образования также освещалась на конференции в Латвии (Augstkalne & Garjane, 2019).

Учитель – это ключевая фигура современной школы, от профессионализма и мастерства которой напрямую зависит качество образования. Сегодня все более очевидно, что функции учителя не сводятся к трансляции знаний.

Профессиограмма современного учителя представляет характеристику профессии, включающую в себя основные требования, предъявляемые профессией к личным качествам человека: интеллектуальным, психологическим, физическим и др. Опираясь на научную психологическую и педагогическую литературу, мы определили наиболее часто упоминаемые составляющие профессиограммы современного педагога, требующие уточнения в современной меняющейся ситуации.

Под **профессиональной компетентностью** мы подразумеваем совокупность профессиональных знаний, умений, навыков и личностных качеств (компетенций), необходимых для успешной педагогической деятельности. В настоящее время в науке нет единого мнения по поводу содержания этого понятия. Исследователи (Gavrilova, 2012) выделяют в профессиональной компетентности учителя: профессиональные знания и профессиональное мышление; совокупность коммуникативных, конструктивных, организаторских умений учителя как субъекта педагогической деятельности, его способность практически использовать эти умения в труде; методологическую, методическую и технологическую грамотность учителя (владение современными образовательными технологиями, технологиями педагогической диагностики), а также его ценностные установки, жизненный опыт.

Быстрое устаревание части информации и появление огромных массивов новой, а также изменение социализирующей среды учеников ставят еще более остро вопрос о непрерывном образовании. Профессор Асмолов А.Г. (Asmolov, 2010) утверждает, что современная жизнь – это история «отклоненных альтернатив». Общество больше не надеется на стабильность. Перед учителем встает вопрос, а как управлять рисками? Целесообразно говорить о развитии и у педагога, и у детей soft skills, которые представляют собой важные навыки: сотрудничества, командообразования, критического мышления и креативности.

Современный педагог должен обладать **креативной компетентностью.** Креативная компетентность – это самостоятельное новообразование, которое проявляется не только в обладании разными способностями к творчеству, но и в разной готовности к развитию этих способностей у своих учеников (Bryakova, 2019).

Не менее актуальна **информационно-коммуникационная компетентность,** т.к. учитель должен уметь работать с различными информационными источниками, программно-методическими комплексами, быть готовым к ведению школьной документации на электронных носителях и к дистанционной образовательной деятельности.

Важной социально-психологической характеристикой образовательной деятельности как педагогов, так и учеников в цифровую эпоху является **многозадачность** (Sidorova, 2020). Современных педагогов профессионалов можно назвать «многозадачниками», так как они научились одновременно проверять тетради, слушать директора на педагогическом совещании, переписываться с кем-то в мессенджерах и отвечать на вопросы сидящего рядом учителя. Так устроен современный мир. Сегодня многозадачность – это такая же способность, как читать или складывать числа, настолько фундаментальная, что воспринимается как нечто само собой разумеющееся.

Значимыми для современного учителя являются: **культурная, профессиональная, педагогическая мобильность.** Культурная мобильность – это способность самостоятельно и свободно мыслить и оценивать события, творчески воспринимать учебные программы и предлагаемую информацию, способность к критическому мышлению, умение находить нестандартные решения в новых ситуациях, умение предвидеть характер и ход изменений, как в изучаемой области, так и в общественном развитии. Профессиональная мобильность, как часть социальной мобильности, может быть представлена вертикальной и горизонтальной лестницами. Горизонтальная, а тем более вертикальная педагогическая мобильность невозможна без таких качеств педагога, как гибкость, дивергентность (повышение разнообразия в процессе психического развития), конвергентность (усиление избирательности), способности рассуждать, рефлексировать, занимать активную социокультурную позицию.

Педагогическая мобильность предполагает способность учителя организовать совместную деятельность с другими субъектами образовательного процесса – учащимися, их родителями, коллегами, администрацией – в соответствии с целями и задачами современной концепции образования, ценностями мировой, отечественной и национальной культуры, реализуя свою социокультурную и социально-

профессиональную компетентность, в том числе в процессе осмысления и прогнозирования результатов организуемых им субъект-субъектных отношений.

Изменчивость социальной среды актуализирует включение «социальной зоркости» в состав **социальной компетентности** учителя (Galeeva, Gubanova, Kozilova, Isaikina, 2010)**.** Ориентация в политической обстановке, в социальных ситуациях, умение выбрать эффективную стратегию поведения и обучения, адекватные способы общения невозможны без социальной зоркости, понимания сути и поиска смыслов. Важно учиться мотивировать и понимать детей, создавая для них ситуацию успеха и выбора.

Выстраивание доверительных отношений, предполагающих совместную деятельность, наполненную смыслами-переживаниями, смыслами-отношениями с субъектами образовательного процесса, всегда находится в фокусе внимания учителя-профессионала (Tutova, 2010, Petrash, Manuilova, 2020). Педагоги и дети должны быть способны, при безусловном наличии собственных ценностей, целей, интересов, иметь и общую платформу как меру соотношения чуждости и общности, которая достигается с расширением круга интересов, способностей, сфер деятельности и обуславливает взаимопонимание. Доверительные отношения находятся в связке с взаимопониманием.

Учителю, готовому выполнять роль **«духовного наставника»,** доступно стать авторитетом для школьников. Его можно представить в роли проводника в мир адекватных ценностей и смыслов. Учитель, с одной стороны, способен противостоять нравственной относительности: помочь отличить добро от зла, а, с другой — стремится пропустить через себя лучшие ценности нового поколения, чтобы воспитать «ученика, у которого было бы чему учиться» (Sysoeva, 2015).

К списку качеств учителей, важных во все времена, относятся другодоминантность, то есть желание понять другого человека, эмпатия (сопереживание), готовность и способность к оптимальному педагогическому общению на уровне со-бытия и обмена личностными смыслами, умение выстраивать помогающие отношения с учащимся, любовь и оптимизм и многое другое. В контексте проведенного исследования нас интересовало наличие данных ключевых социально-психологических характеристик у современных учителей.

Эмпирическое исследование. Портрет современного учителя
Empirical Research. Portrait of a Modern Teacher

Для составления портрета современного учителя было проведено эмпирическое исследование, в ходе которого использовались количественные (анкетирование, контент-анализ) и качественные (опрос, интервью, включенное и не включенное наблюдение, анализ творческих работ педагогов) методы исследования.

В анкетировании приняли участие 300 педагогов средних общеобразовательных школ г.Пскова, г.Санкт-Петербурга и г.Москва. Выборка учителей производилась случайным образом: педагогический стаж учителей разный (от 1 года до 35 лет работы, что особенно важно для объективности исследования). 90% опрошенных считают, что к современному педагогу предъявляют больше требований, чем 5-10 лет назад. 282 педагога отметили, что регулярно испытывают информационную перегрузку, остальные затруднились ответить на вопрос об уровне информационной перегрузки. При этом 64% учителей подтвердили, что с информационной перегрузкой им помогает справиться искусство тайм-менеджмента и умение работать в условиях многозадачности. Выяснилось, что, лишь 15% научились фильтровать источники информации, а 10% - овладели важными социальными умениями (социальная зоркость, мобильность, гибкость).

Ответ на вопрос «Какие роли вы выполняете в отношении своих учеников?» представлен в диаграмме (рис 1).

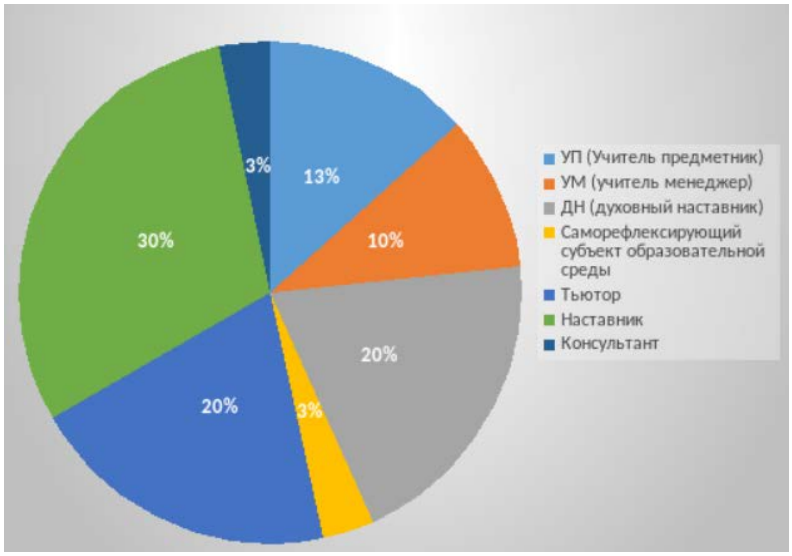

Рисунок 1. ***Роль педагога в отношении учеников***
Figure 1 ***The Teacher's Role in Relation to Students***

В процессе соотнесения результатов, полученных в ходе интерпретации продуктов деятельности, с анкетными данными участников исследования, были выявлены важные корреляции, помогающие лучше понять потрет современного учителя.

В интервьюировании приняли участие 28 учителей из Московской области, проходившие курсы повышения квалификации в Академии социального управления Московской области. Результаты контент-анализа кластеров показали неравномерное распределение мнений учителей. Все отмечают важность мобильности учителя, но часть педагогов считают, что это вынужденное качество, востребованное новыми нестабильными условиями, которые должны быть преодолены в будущем. Гибкость, по мнению большинства учителей, – это «готовность работать в любых условиях, способность быстро перестраиваться под новые требования образовательного стандарта, осваивать новые учебники, применять новые технические средства, работать на различных онлайн платформах, четко реагировать на уровень обученности аудитории». По мнению 75% педагогов, данные достижения были обусловлены отсутствием стабильности в обществе и неудачами в поисках оптимальной модели образования. Учителя рассматривают нестабильность в образовании не столько как режим функционирования, открывающий новые возможности, сколько как свидетельство нарастания кризисных явлений.

Педагоги осознают, что в современных условиях компетентный учитель должен быть универсальным. Без этого сложно обрести уверенность в себе и стрессоустойчивость, но высокая степень профессионализма интерпретируется учителями неодинаково. 15% педагогов, раскрывая смысл профессионализма, делают акцент на знаниях и на владении методикой. 22% педагогов, концентрируя внимание на современных условиях работы, побуждающих учителя следовать рецептам клиентоориентированного подхода (обучение все больше отождествляется с оказанием образовательных услуг), раскрывают понятие профессионализм через коммуникабельность и артистичность. При клиентоориентированном подходе учитель выступает в роли партнера ученика, но при этом он не должен ради создания благоприятного имиджа приносить в жертву идеалы, принципы и цели образовательного процесса.

Учителя жалуются на подавление креативности бюрократическими обязанностями. Опыт наших исследований показал, что стереотип невысокого уровня креативности учителей не соответствует действительности. Креативность присуща учителям, но она проявляется крайне ситуационно.

45% учителей опасаются, что владение техническими средствами выходят на первый план, отодвигая на второй план владение методикой

преподавания. Технические средства превращаются в посредника, медиатора между субъектами образовательного процесса. Поскольку средства становятся медиатором в образовательном процессе, без них порой оказывается невозможным продемонстрировать весь набор методических приемов и современных образовательных технологий. Между тем, 55% учителей сомневаются в том, что эти образовательные приемы можно механически переносить в новую технологизированную среду без специальной адаптации. Технические средства способны как снижать креативность, так и выступать дополнительным средством ее стимуляции. В данном случае многое зависит от развития воображения учителя. Нами была установлена корреляция между возрастом учителя и умениями креативно использовать технические средства. Коэффициент корреляции по Пирсону по данному параметру составил 0,894.

Хотя в описании портрета учителя были выявлены определенные различия, которые, чаще всего, предопределялись возрастными, психологическими, социальными особенностями, личным опытом преподавания, за всем этим просматривается обеспокоенность за будущее своей профессии. Больше 50% учителей обеспокоены уровнем уважения к представителям своей профессии и тенденцией его дальнейшего снижения, что подтверждается и другими исследованиями (Brushkova, Gavrov, 2020).

Однако, в представлениях учителей о портрете учителя смешивается набор сущностных черт идеального и реального учителя. Портрет содержал избыточное количество выделенных качеств, что связано с присущим учителям перфекционизмом, который ведет к осознанию ими нереализуемости требований к современному учителю. Учителя с большим стажем работы тяготеют к идеализации прошлого, в том числе к романтизации практики работы учителя в прошлом веке.

Предлагаемые по итогам исследования рекомендации сделаны с учетом проблемного видения психолого-педагогических характеристик современного учителя. Экспериментальная работа, общение с педагогами и наблюдение за ними и их деятельностью позволили осознать актуальные потребности современных учителей в прохождении курсов повышения квалификации. Программа под названием **«Вызовы 21 века и социально-психологические компетенции современного учителя»** позволит актуализировать знания педагогов о системно-деятельностном и антропологическом подходах с учетом особенностей современной эпохи. Для учителей важно создать ситуацию успеха и апробировать современные приёмы, методы, технологии образования. В рамках предлагаемой программы каждое занятие должно стать интерактивным.

Возможна следующая тематика занятий: «Развитие креативной компетенции», «Учитель в обществе риска и неопределённости», тренинг

«Преодоление страха перед использования новых технологий», дискуссия «Лайфхаки современного учителя», «Педагогический челлендж», «Мультфильм/фильм как средство пробуждения смыслов переживаний, смыслов мотивов, смыслов целей» и др. Формы проведения занятий: мастер-классы, мастерские, проведение открытых уроков с последующим анализом, case-study, фото-кросс, квест, создание артбука и т.д.

Актуальные приёмы, методы, технологии, развивающие критическое мышление педагогов, эффективно отрабатывать в мастерских, представляющих собой площадку для обмена опытом реальных педагогических ситуаций. В педагогических мастерских требуют отработки такие модусы человеческого бытия как: доверие, понимание, встреча, послушание и др. Уместно создание музея творчества учителей для повышения престижа профессии учителя и опровержения негативных стереотипов, подрывающих доверие к учителю.

Заключение
Conclusion

Современное образовательное учреждение нуждается в «новом» типе педагога – креативном, рефлексирующем, имеющим четкие представления о современных технологиях и владеющим способами конструктивного взаимодействия с учащимися.

Контексты профессиональной деятельности современного учителя определяются, в первую очередь, самими условиями профессиональной деятельности, а также особенностями современных школьников, новыми требованиями к результатам образования. При этом, учитель должен восприниматься носителем новой нравственности, новой системы ценностей, авторитетной личностью. Сегодня мы наблюдаем трансформацию образа учителя: он уже не просто учитель предметник и классный руководитель, он – наставник, тьютор и консультант.

Очевидно, что роль учителя – духовного наставника, требующая высокого авторитета, уходит на второй план, а роль учителя-менеджера-технолога выходит на первый план. Авторитет учащихся с легкостью завоюет тот педагог, который легко овладеет техническими средствами и своевременно, обновляя свои методические разработки, «свой продукт» в электронном виде.

Таким образом, профессиограмма современного педагога претерпела трансформацию: успех ждет тех учителей, кто овладел техническими средствами, научился оценивать достоверность информации, фильтровать ее, а также работать в режиме многозадачности и научился быть гибким к

вызовам новой реальности. Однако основные качества гуманного педагога по-прежнему актуальны и лишь дополняются новыми функциями.

Summary

A modern teacher is an energetic, educated, and easily adaptable professional. This is a specialist who deeply knows his subject and wants to pass on knowledge to children.

Over the past year school education has reached a new level, discovering both the pros and cons of distance learning. This research is designed to answer the main question: what social and psychological characteristics and competencies a professional should have today. The purpose of the article is to describe the professiogram of a modern school teacher.

The authors carried out theoretical and empirical research. The survey involved teachers from the Pskov and Moscow regions, as well as from the city of St. Petersburg. 90% of the respondents believe that more demands are made on a modern teacher than 5-10 years ago. 282 teachers noted that they regularly feel information overload.

According to the results of the study, the authors propose the professional development program for teachers called "Challenges of the 21st century and socio-psychological competencies of a modern teacher." This program will allow to update the knowledge of teachers about the system-activity and anthropological approaches, taking into account the digital age. It is important for teachers to skillfully create a situation of success, where they will have the opportunity to try and put into practice modern techniques, methods and technologies of education. Within the framework of the proposed program, each lesson will be interactive.

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THE STYLE FEATURES OF STUDENTS' COGNITIVE ACTIVITY AS THE BASIS FOR FORMATION OF MATHEMATICAL LITERACY

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Abstract. *Mathematical literacy is the main indicator of the mathematical development of schoolchildren from different countries. In the concept of the direction "mathematical literacy" of the PISA-2021 study, the key component of the concept of mathematical literacy is mathematical reasoning. The development of this skill, first of all, is determined by the stylistic features of the cognitive activity of students in the study of mathematics. Taking them into account in the development of educational material in mathematics will create optimal conditions for the formation of a key component of mathematical literacy. But there are many stylistic features of cognitive activity. Therefore, to develop optimal conditions, taking into account the style features, it is necessary to answer the question: "Which of the style features of cognitive activity have a stronger effect on the effectiveness of solving mathematical problems and how to implement them in educational mathematical activity." In our study, we identified various ways of implementing style features in educational mathematical material, one of the most significant are ways of presenting (coding) information. With this in mind, an experiment was conducted. We applied analysis of variance to its results. The study showed: 1) in general, it is possible to trace relations between successful mathematical problem solving by students with certain individual styles and the way the selected problem is represented; 2) it is necessary to make further research on students' awareness of their personal cognitive characteristics (style features).*
Keywords: *mathematical literacy, components of mathematical content, style features of students' cognitive activity, ways of representation of information (information coding ways).*

Introduction

In the 21st century, significant changes have taken place in the education system: the main guideline of mastering mathematics in secondary school is the formation of functional literacy in students - the ability of students to apply knowledge and skills to solve everyday problems in situations which differ from educational ones. One of the basic components of functional literacy is mathematical literacy, which is interpreted in some studies as the ability of a person to think mathematically, formulate, apply and interpret mathematics to

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solve problems in a variety of practical contexts, in others - as the ability of a person to define and understand the role that mathematics plays in world, make informed judgments, and also ... do mathematics in a way that meets the needs of a person as a constructive, interested and thinking citizen (PISA, 2017).

One of the recognized tools for assessing mathematical literacy in the international educational community is specially designed assignments offered in the framework of international studies PISA.

Almost all countries consider PISA results as an indicator of students' mathematical literacy. And if this indicator is not high enough for students in a country, then the education system of that country is undergoing transformations aimed at increasing this indicator (Fullan, 2011).

Traditionally, an increase in the number of tasks offered to students, similar to PISA tasks, is considered as the main direction of such transformations in the study of the subject of mathematics. Is this way advisable? Unlikely. After all, mathematical activities in general and activities aimed at solving the PISA task include various components. And a competent solution to the problem involves identifying those pain points in the mastery of certain components among students, which together lead to poor results in solving PISA problems, and determining further work to improve the level of mastery of these components.

As a result of the analysis of tasks aimed at the formation of mathematical literacy, we have identified such components as:

1. math content used in problems,
2. the context in which this mathematical content is presented, given in different forms of presentation,
3. student' cognitive activity aimed at analyzing and establishing a connection between the components identified above.

The analysis of the last component made it possible to highlight the specifics of cognitive skills, which are the focus of problems, namely:

- establishing a link between different forms of information presentation.
- translation of the situation into mathematical language (mathematical modeling).
- application of mathematical concepts, facts, procedures of reasoning and justification for solving a mathematical problem.
- interpretation and evaluation of the obtained mathematical result, as well as its use.

In turn, the analysis of the skills required to master the selected mathematical content makes it possible to single out a number of activity components of the mathematical content that underlie the construction of PISA problems (tasks):

1) figuratively - graphic component;

2) an algorithmic component;
3) an abstract-logical component.

Note that the conditions of tasks corresponding to the first component of the mathematical content, as a rule, are presented in textbooks in a figurative-graphic form, and their solution involves the transformation of graphic information. The conditions of tasks corresponding to the third component of mathematical content, as a rule, are presented in textbooks in symbolic form, and solutions presuppose, in general, the transformation of symbolic information. Tasks corresponding to the second component of mathematical content can be presented in different forms, their solution involves arbitrary transformations of information. Considering that all people are characterized by "individually unique ways of studying reality" and perception and information transformation, which are called "cognitive styles" (Holodnaja, 2004), it was suggested that the levels of mastering different activity components in the same student don't coincide, because different components require different ways of transforming information. Confirmation or refutation of this assumption was put forward as an auxiliary goal of the study. These individually unique ways are determined by the cognitive styles characteristic of the student, and set his individual learning model.

These individual features are attributed to the style features of cognitive activity. Style features also affect the choice of the way present (coding) information by students. To build a system of tasks aimed at mastering different activity components (which means on the development of mathematical literacy), it is necessary to determine which of the style features predominantly determine the choice and effectiveness of the student's solution to the problem given by a certain way of coding information. This determined the main goal of the study.

Literature Review

The manifestations of ways of coding information in teaching mathematics have been studied by various psychologists and educators (Kruteckij, 1998; Jakimanskaja, 1979). They showed that students of the same age differ sharply in their approach to the analysis of visual material and its use. So some students quickly and easily generalize the material presented in the form of mathematical symbols and signs. Others, on the contrary, learn more easily the material presented in the form of geometric shapes, drawings; still others use verbal material more freely (Jakimanskaja, 1979). The foregoing determines the need to present students with information in various ways of coding. Information presented in only one form of coding may not coincide with the student's presentational system of perception, and then it is not perceived fully enough

and is not assimilated. In addition, the research of psychologists (Bruner, 2010; Jakimanskaja, 1979, Holodnaja, 2002) showed that it is the mechanism of mutual transition in the system of three ways of coding information that affects the two main lines of the child's intellectual development. Its formation determines, firstly, the growth of conceptual competence through the integration of various forms of experience, and secondly, the growth of individualization of intellectual activity due to the identification of individual styles of information coding. Therefore, the process of teaching mathematics, organized taking into account the style features and the use of different ways of coding information, contributes not only to the mastery of mathematical content, but also to the intellectual development of students.

There are various studies that discuss how thinking styles affect academic performance in Mathematics or intellectual development. Anderson K.L., Casey, M.B., et al. (Anderson, Casey, Thompson, Burrage, Pezaris, Kosslyn, 2008) investigated the relationship between 3 ability-based cognitive styles (verbal deductive, spatial imagery, and object imagery) and performance on geometry problems that provided different types of clues. The purpose was to determine whether students with a specific cognitive style outperformed other students, when the geometry problems provided clues compatible with their cognitive style. The study (Onwumere, Reid, 2014) aimed to explore the concept of field dependency which may offer a way forward in reducing the cognitive demands of finite working memory capacity, thus enabling higher performance to be attained.

However, international studies disagree in terms of how direct influence of cognitive styles correlates to high performance in Mathematics. For instance, study (Jantan, 2007) showed a positive and significant relation between cognitive styles and academic performance of school students, while study (Jantan, 2014) did not reveal any significant effect of cognitive styles on students' performance. Although, all studies showed that Math learning outcomes differ depending on whether students' cognitive styles were taken into account or not when selecting teaching methods.

Western psychological and pedagogical studies adopted the term "learning style" in the 1970s. Dunn R., Dunn K., & Price G.E. defined learning styles as the student's ability to interact with their educational environment (Dunn, Dunn, & Price, 1989). J. Hartley distinguished between two close concepts: a cognitive style as typical personal ways to perform cognitive tasks; and a learning style as typical personal ways to perform educational tasks (Hartley, 1998). Later, the study of styles covered a broader field when scholars introduced such concepts as "educational preferences" (Jantan, 2014), "learning styles" (Luver, 1995; Grigorenko, Sternberg, 1995; Kolb A. & Kolb D., 2005; Peterson, Kolb, 2018), "thinking styles" (Clarke, 2011). One of the key concepts

to be associated with academic performance is learning style. So far, there is no uniform definition of the "learning style" concept. In fact, learning styles represent models of how a person learns. Initially, the idea was that each individual had a single learning style. But students learn in different ways and depend up on many different and personal factors (Ritu, Sugata, 1999). More recent studies have shown the majority of people are multimodal, meaning they have more than one learning style (Fleming, 2007). However, many years of observation by teachers of Mathematics, including those participating in the PCMAT project, showed that learning styles must be considered in learning process (Martins, Couto, Fernandes, Bastos, Lobo, Faria, Carrapatoso, 2011).

Betty Lou Leaver's (Luver, 1995), study shows that it is necessary to base teaching on an understanding of learning style differences at all learning stages, and at the monitoring stage it is recommended to adapt assessment to the main style of students.

We have identified those style features that are most closely related to the perception of mathematical information and the specifics of the ways it is presented in teaching mathematics. To build a system of tasks aimed at mastering different activity components taking into account the style features, it is necessary to determine which of the style features predominantly determine the choice and effectiveness of the student's solution to the problem given in a certain way of coding? This determined the main question of the research. The answer to it will allow the most economical and effective way to form the ability of students with a certain learning style to transform information to increase the level of mastery in the component formed at a low level.

Methodology

To achieve the auxiliary goal, an experiment was carried out in which 513 students of grades 8-10 took part in six different schools in St. Petersburg and the Leningrad region. Students were offered tasks of three levels of complexity, involving a demonstration of the skills of the selected components: figurative-graphic, algorithmic and abstract-logical. The success of their performance of tasks of different levels corresponding to different elements of the activity components of mathematical content was recorded. According to the results of the study, each student was assigned a profile: G_n, AL_m, A_k. The index shows at what level this or that component is formed. For example, the profile G_2, AL_3, A_1 shows that the graphic component is formed at the second level, the level of formation of the abstract-logical component corresponds to the second, the algorithmic component is formed at the first level.

To statistically test the hypothesis of improved learning outcomes when using adaptive tests, the Pearson criterion was used with a probability of error $p = 0.05$ (with a confidence level of 95%).

To answer the main research question, we ran an experiment in 2020. The goal is to reveal the preferences of students in choosing the type of educational task in connection with their style features. The students were offered three problems identical in mathematical content (generalization of properties of functions), but different in the way the information was presented – problem A was presented in a graphical form, B - in a symbolic form, C - in a verbal form. The experiment recorded what problem the students selected and whether they solved the problem correctly or failed.

Style features to be considered:

- leading channel of perception (auditory, visual, kinesthetic);
- prevalence of an intuitive or logical approach to problem solving;
- prevalence of a synthetic or analytical approach to problem solving.

These parameters were measured based on self-esteem of students under the experiment; in order to identify an individual learning style, the experiment applied “Review of a Learning Style” (Rebecca L. Oxford) (Sirotjuk, 2001). Using the Learning Styles Questionnaire (LSQ) adapted in Russian, the experiment identified learning styles by Kolb (Kolb A. & Kolb D., 2005): activist, thinker (reflexive), theorist and pragmatist (Learning Styles Questionnaire, LSQ) (Ishkov, Miloradova, 2015).The experiment involved 105 students of grades 8-10, including 54 boys and 51 girls.

We applied variance analysis to the results, where independent variables were selection of the problem by the students (A, B, C) and correct solution of the selected problem (0 - wrong solution, 1 - correct solution); while dependent variables were four groups of style features. It is worth noting that none of students under the experiment selected problem C presented in a traditional verbal form, typical of course books. Most of the students (63%) selected problem A, others problem B.

Research Results

As a result of an auxiliary study, it turned out:

- almost 60% of students cope with the tasks for the manifestation of the algorithmic component, the level of complexity of which is more than 1 lower than the level of complexity of the mathematical problems they solve for the manifestation of the abstract-logical component;
- about 10% of students cope with tasks for the manifestation of the algorithmic component, the level of complexity of which is more than

1 lower than the level of complexity of the mathematical problems they solve for the manifestation of the figurative-graphic component;

- about 10% the level of complexity of mathematical problems aimed at the manifestation of the figurative-graphic component, more than 1 lower than the level of complexity of the mathematical problems they solve for the manifestation of the abstract-logical component;
- the algorithmic component was formed worst of all: 85% of students had the algorithmic component formed at level 1 or lower. Level 1 of the algorithmic component implies a conscious reproduction of a known algorithm in a standard situation.

In the study, we also considered the transitional levels of component formation: 0-1, 1-2 and 2-3. Taking this into account, 216 different profiles of component formation are possible. Of the 513 participants in the study, cases of the same level of all three components (for example, 2-2-2) occurred only 6 times. At the same time, no more than 6 of the same profiles were diagnosed. As a rule, in each separate group (class) with the number of students no more than 30, there were no matching profiles.

Let us give examples of such situations. The table shows the levels of formation of the selected components of mathematical content for several students.

Table 1 ***Results of the Study of the Levels of Formation of Components Mathematical Content (fragment)***

	level of the graphic component	level of the abstract-logical component	level of the algorithmic component A
1 student	1	2-3	0-1
2 student	0-1	1-2	1
3 student	1-2	2	0-1
4 student	3	2	1
5 student	3	2-3	1
6 student	2-3	2	0

Our main research led to the following results.

When analyzing manifestations of intuitive and logical styles, it turned out students who selected problem A have a more pronounced intuitive style, including those who solved problem A correctly ($F = 8.724$, $p \leq 0.006$).

Analysis of manifestations of auditory, visual, and kinesthetic channels of perception (Fig. 1) showed that students who selected problem A have a more pronounced auditory perception of information ($F = 5.176$, $p \leq 0.03$), however, we can see that the correct solution of both problem A and problem B with auditory learners is significantly lower.

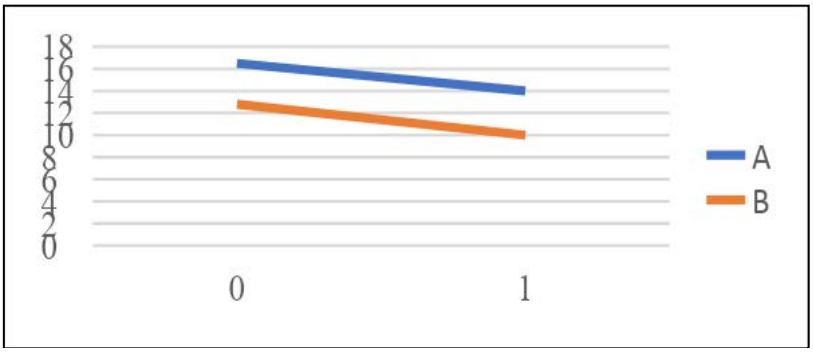

Figure1 ***Manifestation Degree of Auditory Style Depending on Selection of the Problem and Correct Solution***

Among those who chose task A, the synthetic style of working with information is more pronounced ($F = 3.867$, $p \leq 0.059$), in addition, we can say that both in solving task A and in solving task B those students turned out to be more successful.

It is interesting that students with a more pronounced analytical style of perceiving information, who preferred problem B to problem A ($F = 4.295$, $p \leq 0.047$), turned out to have statistically significant success in solving problems (Fig. 2).

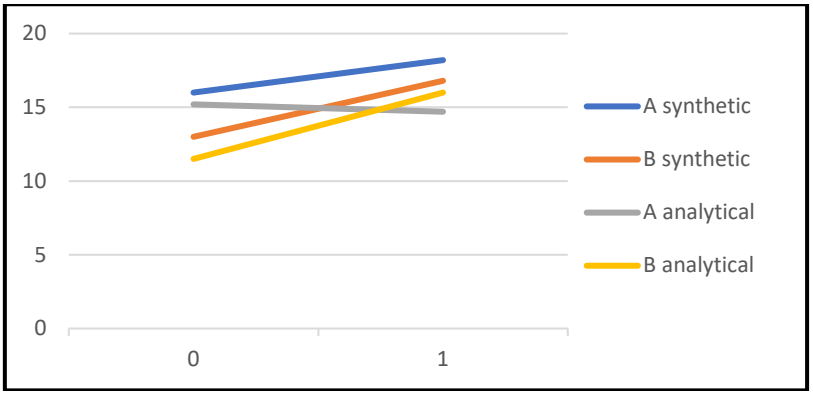

Figure 2 ***Manifestation Degree of Synthetic and Analytical Style Depending on Selection of the Problem and Correct Solution***

Analysis of manifestation degree of learning styles by Kolb showed that among students who selected problem A, pragmatic ($F = 6.42$, $p \leq 0.017$) or theoretical learning style ($F = 11.153$, $p \leq 0.002$) is statistically significant. We can see that students with those styles are more successful in problem solving.

We can also note that among students with a pronounced activist learning style who selected problem B, correct solution of the problem is statistically significant ($F = 5.548$, $p \leq 0.025$) (Fig. 3).

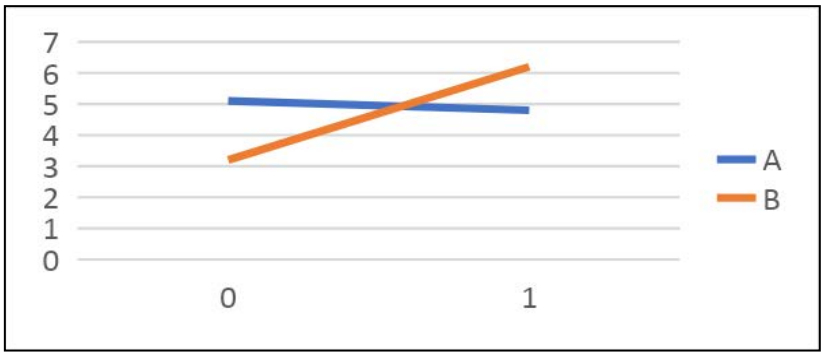

Figure 3 ***Manifestation Degree of Activist Style Depending on Selection of the Problem and Correct Solution***

Analyzing the results, we can state that, in general, it is possible to trace relations between successful mathematical problem solving by students with certain individual styles and the type of problem selected by them. So, students with more pronounced intuitive, synthetic, and pragmatic styles proved to be more successful when selecting problem A, represented in a graphical form matching their preferred style. While students with a more pronounced analytical style were more successful in solving problem B in a symbolic form. Students with a more pronounced auditory style, who erroneously selected problems A and B that do not match their style, were equally less successful in solving them.

However, this relation was not universal, since theorists, who selected problem A in a mismatching graphical form, and activists, who selected problem B in a symbolic form, solved the problems more successfully.

Conclusions and Discussion

Thus, in the framework of the auxiliary study, our assumption was confirmed. This means that when working on raising the level of one of the activity components of mathematical literacy, it is necessary to organize competent work, aimed, first of all, at developing style flexibility. To do this, it was necessary to investigate the relationship between a certain style and the success of solving a mathematical problem represented by a certain way of coding.

The study made it possible to show the importance of taking into account style features when organizing work on the development of mathematical literacy. This is confirmed by the revealed dependences of the success of solving problems on the style characteristics of students. At the same time, the aspect of understanding by schoolchildren of their individual characteristics needs additional research, since they did not always choose the closest in style, and

therefore, a potentially simpler form of assignment for themselves and, as a result, gave the wrong solution.

A practical conclusion follows from this. Knowledge by teachers and familiarization of the students themselves with their style features will not only allow students to better know themselves, but will also contribute to the development of mathematical literacy. This will be achieved through purposeful work with those ways of coding information that do not correspond to the student's style, but are basic for the activity component formed at a low level. An effective technique in this work is the student's reliance on peculiar to him ways of coding through the choice of a problem in peculiar to him form of coding or the translation of this problem into the form of coding peculiar to the student.

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ORGANIZATION OF NON-FORMAL ACTIVITIES AND LEISURE OUTSIDE SCHOOL: ANALYSIS OF STUDENTS' ATTITUDE

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Abstract*. Study present the research aimed to reveal the situation of non-formal students' activity. The process of non-formal education tends characterized by creating more flexible learning spaces, developing more caring and less hierarchical relationships, and aiming to meet participants' needs. According to the research, the results discussed in two aspects: a) non – formal education implemented out of comprehensive school and b) non – formal education implemented in the comprehensive school. Having compared the attendance of non – formal education activity at school and out of comprehensive school according to gender, the results have shown that girls' and boys' choice of activity types is similar; girls are more involved into non – formal activities organized out of comprehensive school. Reasons participating in the activities of non – formal education are primary associated with general psychological status, life goals, motives and interests of students.*
Keywords: *non-formal education, school activities, preferences of non – formal activities of 13 – 16 years' age students.*

Introduction

During recent years, intensive education reform is taking place and pedagogues and school community face with a new challenge solving the problem of students' qualitative leisure time and the non-formal education activities, as well.

Object of the research – Analyzes of student's non - formal activity and determination of the relationship between leisure and non-formal education.

Aim of the research: Based on literature studies to reveal the preferences of student's non - formal activity and to determine the relationship between leisure and non-formal education.

Methods of the research: Analysis of scientific literature; quantitative research (questionnaire survey); Statistical data analysis was performed with

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SPSS 11.0programme. Analyzing the results, the percent distribution of the responses and statistically significant differences among them, correlation coefficient, data analysis and interpretation was calculated. Popularity index (PI) shows which place is taken by a concrete evaluated object in the list created in the order of decreasing scores. The reliability of differences was evaluated according to the indicator of Pearson Chi-Square; the strength of relation between indicators was evaluated calculating the Spearman correlation coefficient (r). All differences commented in the text are statistically significant, the threshold of significance is 0,05.

The research data was collected using questionnaires, composed according to the analysis of scientific literature (Mikalauskas, et al., 2017; Langvinienė, 2013, Batlle, 2019). The questionnaire consisted of 37 questions that aimed to find out the student's attitudes towards the organization of non - formal activity at school, its influence on students' learning, self-expression, and communication.

Quota of research. 344 students of 7^{th} (N=203) and 9^{th} (N=141) grades of Siauliai comprehensive schools participated in the survey. There were 212 girls and 132 boys at the age of 13 – 16 years.

Analysis of Research Results

There are some differences in understanding leisure time and non-formal activities. Leisure is described as a "non-obligatory activity that is intrinsically motivated and engaged in during discretionary time, that is, time not committed to obligatory occupations such as work, self-care, or sleep" (Guruprasad, Kr. Banumathe & Sinu 2012). Student's leisure time develop socialization, creativity and many-sided abilities, improving the culture of self -growing, meeting the needs of self-expression. Leisure activities helps to improve quality of life characteristics. Auhuber, Vogel, Grafe, Kiess & Poulain (2019) state that children with lower SES (Education and socioeconomic status) more often use screen-based media and were less physically active. Physical activity, in contrast, was significantly related to better social life and more outdoor time. So, it supports the need to involve students into active leisure through physical activities. The basic characteristics of leisure are relaxation, enjoyment, freedom of choice, intrinsic motivation, commitment, control and challenge. Engagement in leisure can promote physical and psychological wellbeing for persons of all ages (Elsborg & Pedersen, 2013, Mirić, 2016) stated that a lack of satisfying leisure activities may be associated with behavior problems such as delinquency. Some common leisure activities in school children were reading, television watching, use of computers, spectator activities, arts and crafts, game and physical activities and some other hobbies as per their interest (Guruprasad, Kr Banumathe & Sinu, 2012). These considerations support idea that non – formal education and leisure

having some differences has one common feature - both of them are deliberately chosen leisure activities.

Non-formal education mostly leads to qualifications that not recognized as formal qualifications by the relevant national educational authorities or to no qualifications at all. Batlle (2019) present Coombs & Ahmed's (cit. Batlle, 2019) definition of non – formal activity as an organized activity, with a learning goal in mind, that occurs outside of the more hierarchical formal education system (i.e., school or university). However, alternative interpretations of non-formal education define it as a process rather than focusing on the setting. The process of non-formal education tends to be characterized by creating more flexible learning spaces, developing more caring and less hierarchical relationships, and aiming to meet participants' needs (Malcom, Wilson, & Davidson, cit. Campbell M., N. Watson, & N. Watters, 2015); Romi & Schmida, (2009). Non-formal education activity includes students' participation in various groups, clubs, trips, festivals and other activities that are organized in mainstream schools and elsewhere (music, art, sport schools, etc.) (Juodaitytė, 2002 & Mikalauskas, et al., 2017).

With proper organization of non-formal activity, it is possible to achieve strengthening of child's self-confidence and his/her feeling of higher independence. During complementary education it is possible to implement many tasks of education. When the stream of information is becoming larger and the process of teaching (learning) is becoming more intensive it is important to appropriately match non-formal activity and leisure (Garbauskaitė-Jakimovska, 2014; Priti, 2016). So, different youth programs do not simply 'happen' – they are designed to have particular outputs (exl. to stop or prevent a behavior; not alter social structures). Similarly, initiatives that promote life skills like teamwork and leadership usually do so in a manner that emphasizes individual responsibility. In other words, it is up to the young person to become an active person, regardless of the environment they live in (Batlle, 2019; Priti, 2016). School systems can encourage group games, sports, arts and crafts, or can be a free play which develops unity and social integration among students. Active leisure also stimulates physical and cognitive process which in turn leads to good physical and mental wellbeing. It can also enhance self-esteem and confidence thereby the child can achieve a sense of self-satisfaction (Guruprasad, Kr. Banumathe, & Sinu, 2012).

Summarizing theoretical issues pointed out that non-formal education and leisure time of students analyzed from the different points of view. Leisure time is not highly structured, flexible, not required administrative measures and reflects personal internal situation of preferred activities. Non- formal activities usually are organized in more structured way, they may need some specific environment, non-formal activities require leadership and action planning according to the

content of non – formal activity. However, in both cases activities arises from the internal needs of the students, interest in the process, opportunities to experience satisfaction and to reach own goals, both activities reflects individual well-being of the student.

Appropriate organization of non – formal activities after lessons retract students from spending time in vain. And at the same time from harmful habits, delinquency creates conditions to realize the need for self-expression and communication through artistic, technical and sports activity, to develop national and cultural self-identification, raises the prestige of the school (Petronė 2011; Pinkevičienė, 2012; Mikalauskas et al., 2017; Samašonok & Barkauskaitė, 2012). Different programs in non-formal education supported development of student's personality and they as a part of holistic education, could be included into curricular in formal education. Non- formal programs in schools provide reinforcement of positive character and even become necessary" so that students' character develops well (Widodo & Nusantara, 2020; Tudor, 2013).

Non – formal education of students, as a significant leisure problem, analyzed by the Lithuanian researchers. The importance of complementary education for personalities' socialization has been analyzed by Langvinienė (2013), Kedrayate (2012), Šiaučiulienė (2011). As Tudor (2013) noticed it almost become a rule, to engage students, starting from early age, in various categories of non-formal activities. The intentions of these processes are to build learning experiences formally gained and ensure the development of skills discovered in the student. The significance of any type of occupation in the development of personality has been pointed out by Romi & Schmida (2009). Straub (2004), Malcom et. al. (cit. Campbell M., N. Watson & N. Watters, 2015) have noted that non – formal activities gaining increasing role in the whole process of students' socialization. Great attention by the European authorities: initiative of the European Council (The State Education Strategy 2013-2022, 2012), European Association for Leisure Time Institutions of Children and Youth (EAICY) shown. Document Non-Formal Education with Children and Young People (2013) points out the need of coordination of non - formal activity of children and youth, the concern towards the readiness of the growing generation for independent political, cultural and educative activity. According to A. Petrauskienė & D.Matulevičiūtė (2007) it is not enough formal education only to educate students and youth as responsible and creative citizens. Organization of non-formal activity is an important part of the modern process of education and it correspond with STE(A)M (Science, Technology, Engineering, (Art), Mathematics), goals that points out significant of complex education of creativity, interrelation and application of practical and theoretical knowledge (Šorienė, 2015).

However, a lot of question are still need more careful research (what are the preferences of students – leisure time or non- formal activities, what type of

activities that attract students could be applied more widely, ext.) So, it should be noted that the development of the system of non – formal education is important part of whole education system and area of student's personal development as well.

According to the obtained results, students most often choose non – formal education at school according of a subject, and mostly they organized at school. Subject non-formal education organized out of school is less. Sports groups are popular among students both at school and out of school. As the research shows that non – formal educational institutions are popular among the students (Fig.1).

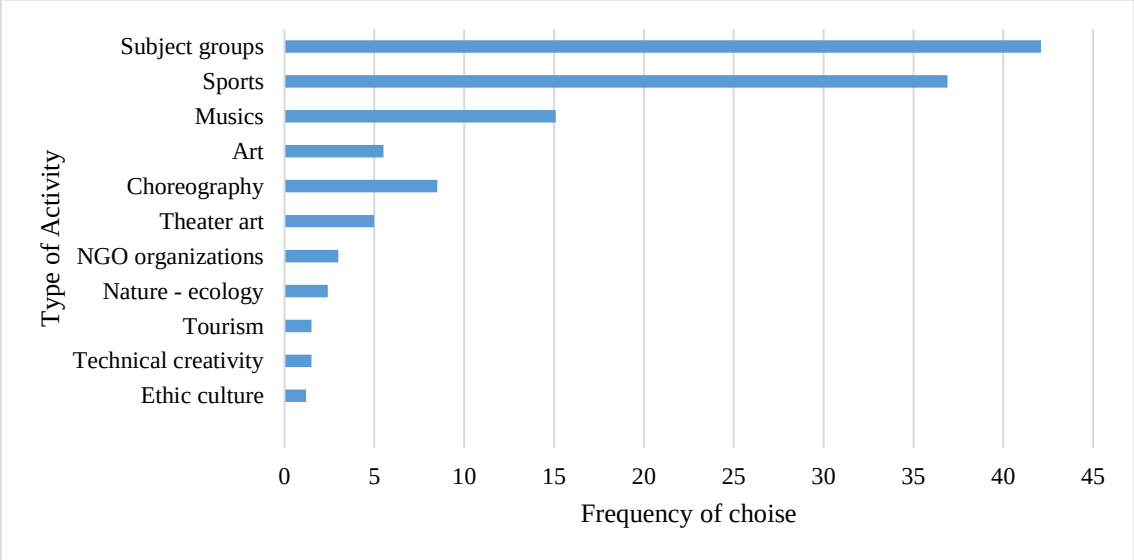

Figure 1 ***Attendance of Non – formal Education Activities at School and out of School***

Analyzing results of the research a certain paradox emerged. Sometimes there occur misunderstandings talking about non – formal education. In every day practice, it is accepted that non-formal education is often understood as a non-classroom activity. But following under the description of non – formal education it is obvious that these institutions have all features of formal educational institutions: structure, hierarchy, recognized level and type of education. According to our research, the results discussed in two aspects: a) non – formal education implemented out of comprehensive school and b) non – formal education implemented in the comprehensive school.

General attendance of non – formal education groups by students at school and out of school has been present according to the criterion of sampling frequency (fk). Mostly non – formal education activities are organized in out of school educational institutions (specialized sports, art, music schools). Other ones' non – formal activities students can attend at school after lessons time. In the out of school non – formal education (sports, music, art, choreography, theatre

art, NGO's) participated 51,26 % of all respondents; and 48,74 % prefer to attend activities organized at school. The research has shown that subject employment at school (42,1fk) is preferred most of all in comparison with all other forms of non – formal education. Ethnic culture (1,2fk), technical creation and tourism and regional studies (1,5fk) are less popular. The number of students attending non – formal education out of school is larger (and most preferable is sport activity (36,9fk).

Having compared the attendance of non – formal education activity at school and out of comprehensive school according to gender, the results have shown that girls' and boys' choice of activity types is similar. The differences are observed in choosing certain activity groups: a larger number of girls attend subject groups, 65,3(fk) at school and 36,7(fk) out of school, but a fewer girls attend sport activities; girls participate in the activity of non-governmental organizations (9,3 fk), boys do not participate there at all. Girls more actively attend activities associated with artistic character while boys attend those of sports and technical character. Having compared the attendance and choice of non - formal activities according to gender observed the tendency that a larger number of girls participate in non – formal activities both at comprehensive school and out of it.

The results show that girls are more involved into non – formal activities organized out of comprehensive school. For students it is not important were the non – formal education is organized, they pointed out the opportunity to realize their abilities (64,8fk). It is important to pay attention on this result, because it could be useful in thinking about future profession. Participation in non – formal education activities important for general psychological wellbeing of students. Girls were looking for new impressions (67,3fk), boys – 32,7(fk). Participating in non – formal education let's to fill gaps in student's knowledge (66,7fk), boys – 33,3(fk). For boys it is more characteristic to be respected by friends (71,1 k), for girls – 28,9(fk). For students it is important the personality of supervisor: if he/she is a good and well-known specialist is more important for boys (57,7fk). A part of students demonstrated some indifference to the forms of non – formal education. The motive of a random choice – "there was nothing else to choose" was fixed in 64 cases. The "need to spend time somewhere after" the lessons more actual for the boys (57,1fk). Both boys and girls had similar motive to participate in the non – formal education activities if a friend attends the activity together (boys – 53,1fk, girls – 46,9fk). Some students try to develop healthy life mode and strengthen their health (girls – 52,5fk, boys – 47,5fk). Attending both (non – formal education in the comprehensive school or outside the school) chosen activities, students realized the expectations and hopes: the activities met the about 45-55(fk) of expectations of the students, i.e. those who had striven there for the realization of abilities and interests.

Students, participating in the activities of non – formal education (Fig.2), indicated different reasons and motives. It is primary associated with general psychological status, life goals, motives and interests.

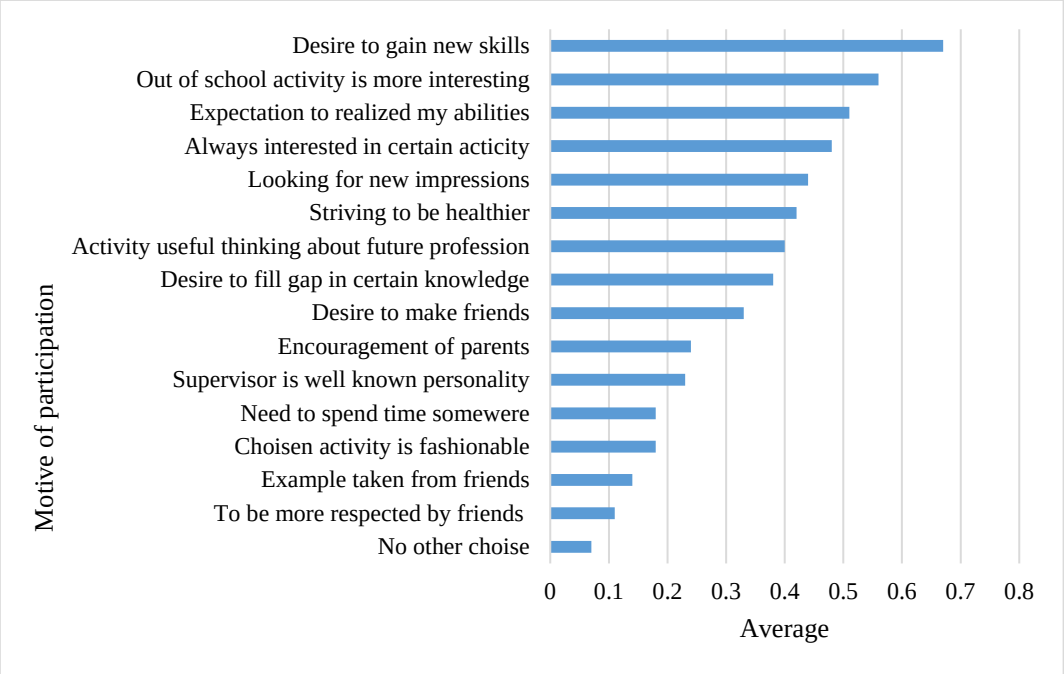

Figure 2 ***The Motives of Attendance in Non – formal Activities***

Relatively, the motives for the non – formal participation choice analyzed from two aspects: prevalence of personal motives and prevalence of social motives. Personal motives include 9 items and named as desire to gain new skills (M - 0,67), expectation to realized own abilities (M- 0,51), interested in certain activity (M-0,48), striving for better health (M-0,42), activity associated with future profession (M-0,4), desire to fill gap in certain knowledge (M-0,38), need to spend time somewhere (M-0,18), to be more respected by friends (M-0,11), because of there were no other choice (M-0,07). Distribution according to the motive to participate in activities of non – formal education (Fig.2) points out the desire to gain new skills. As S.Elsborg & S. H.Pedersen (2013) says, learning is equivalent to basic changes, changes within the totality that consists of cognition (knowledge, concepts, thoughts, notions, perceptions of one's self and the world) action and social processes, in which the individual takes part. So, the highest points in desire to gain new skills and to realize own potential is the most motivating activity in the process of non – formal education. Higher scores in striving for better health and planning future profession proves R.Šiaučiulienė (2011). statement that motivation involves physical, emotional, and intellectual effort, that is socially important for personally satisfying and broad perspectives

on personality development. Non – formal education build is a direct link between external and internal motivation, in which the external circumstances comprise of the layout, frame, culture, and social conventions, etc., of the given environment (Elsborg & Pedersen, 2013). The main condition that these elements must connect with the expectations and life prospects, etc., of the participants, thus creating coherence and meaningfulness. The outside environment (or social situation) serves to support and strengthen the individual's motivation.

As it mentioned, the second part of the choice motives of non – formal participation named as social motives. In this research social motives include: example taken from friends (M-0,14), chosen activity is fashionable (M-0,18), supervisor leading the non – formal activity is well known personality (M-0,23), encouragement of parents (M-0,24), desire to make friends (M-0,33), looking for new impressions (M-0,44) and statement that out of school activities are more interesting (M-0,56). Sh. Priti (2016) states that soft skills gain in non – formal education include work ethics, attitude, communication skills, emotional intelligence and a whole host of other personal attributes. It means, that motives based on motives, linked to social activities, are important for the development of student's personality, as well. Desire to make friendships, seeking for new impressions; wish to participate in wider social environment show that students are going to be active citizens.

At the same time, we face with the results that explains student's unwillingness to participate in non – formal activities. Most of the students indicate objective reasons including the load of lessons 27,9%. It was set up that students lack time to prepare for lessons, 22,8%. 7,3% of the students do not attend non – formal education anymore because of a mismatch of interests and not satisfying their expectations and needs. 11,9 % of the respondents do not attend non – formal activities because of disagreements with supervisor and 8,7% of the respondents found a new activity. Comparing results according to the gender and grade girls indicate heavy workload (statistical significance $p<0,05$, the correlation according to gender – 0,21 and according to grade – 0,29).

The results of the research show that unattractive non – formal education activities related to the certain subjects; advanced students more in comparison with others indicated this choice. It's because of purposeful choice, already knowing what they are going to study after the school graduation. Such types of non – formal education as safe traffic, regional studies are attractive only for a small number of students.

Organization of non – formal activities at school, it is attempted to meet students' needs, parents' wishes that are taken in the mind firstly. The meetings with students are organized and they express their wishes and needs.

Therefore, in organizing non - formal activity the following is important: to start the formulation of activity strategy of/out the institution from finding out

student's needs and creation of proper database, to organize activities starting from the first grades.

Conclusions

1. Theoretical issues let's to summarize, that non-formal education and leisure time of students could be analyzed from the different points of view. Leisure time is not highly structured, flexible, not required administrative measures and reflects personal internal situation of preferred activities. Non- formal activities usually are organized in more structured way, they may need some specific environment, non-formal activities require leadership and action planning according to the content of non – formal activity.
2. Dominating motives encouraging students to participate in non – formal education activities are related to the formation of skills and improvement of the knowledge, preparing for future profession, desire to strengthen their health, admiring supervisor's personality, expectation to realize one's abilities. Different reasons and motives were indicated by students, participating in the activities of non – formal education. It is primary associated with general psychological status, life goals, motives and interests.
3. Students' lack of time is the main reason of non-attendance of non – formal education and it is more common for the students of the 9th grade. The results of the research show that unattractive non – formal education activities are related to the certain subjects; this choice was indicated by advanced students more in comparison with others. It's because of purposeful choice, already knowing what they are going to study after the school graduation. Such types of non – formal education as safe traffic, regional studies are attractive only for a small number of students.

Summary

Study present the research aimed to reveal the situation of non-formal students' activity. The process of non-formal education tends to characterized by creating flexible learning spaces, developing more caring and less hierarchical relationships, and aiming to meet participants' needs. According to the research, the results discussed in two aspects: a) non – formal education implemented out of comprehensive school and b) non – formal education implemented in the comprehensive school. Object of the research – analyzes of student's non - formal activity and determination of the relationship between leisure and non-formal education. Aim of the research: Based on literature studies to reveal the preferences of student's non - formal activity and to determine the relationship between leisure and non-formal education. Analysis of scientific literature, quantitative research (questionnaire survey) used. Statistical data was analyzed applying non – parametric methods of SPSS 11.0 programme and methods of descriptive statistics.

Research data was collected using questionnaires, composed according to the analysis of scientific literature by Mikalauskas et al., (2017); Langvinienė (2013) & Batlle, (2019) consisted of 37 questions that aimed to find out the student's attitudes towards the organization of non - formal activity at school, preference of activities, and motives of attendance. Quota of research. 344 students of 7^{th} (N=203) and 9^{th} (N=141) grades of Siauliai comprehensive schools participated in the survey. There were 212 girls and 132 boys at the age of 13 – 16 years.

Theoretical issues let us to summarize, that non-formal education and leisure time of students analyzed from the different points of view. Leisure time is not highly structured, flexible, not required administrative measures and reflects personal internal situation of preferred activities. Non- formal activities usually organized in more structured way, they may need some specific environment, non-formal activities require leadership and action planning according to the content of non – formal activity. Dominating motives encouraging students to participate in non – formal education activities related to the formation of skills and improvement of the knowledge, preparing for future profession, desire to strengthen their health, admiring supervisor's personality, expectation to realize one's abilities. Students, participating in the activities of non – formal education, indicated different reasons and motives. It is primary associated with general psychological status, life goals, motives and interests. Students' lack of time is the main reason of non-attendance of non – formal education and it is more common for the students of the 9th grade. The results of the research show that unattractive non – formal education activities related to the certain subjects; advanced students more in comparison with others indicated this choice. It's because of purposeful choice, already knowing what they are going to study after the school graduation. Such types of non – formal education as safe traffic, regional studies are attractive only for a small number of students.

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THE EXPRESSION OF LEARNING ORIENTED ASSESSMENT CULTURE: A QUALITATIVE STUDY OF TEACHERS' PERCEPTIONS ABOUT ASSESSMENT

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Abstract. *This article presents the results of a thematic analysis conducted after informal interviews with 10 teachers and a head teacher of one secondary school in the city of Vilnius about their classroom assessment practices. Part of a larger critical ethnographic research exploring the change of school culture when introducing assessment innovation, this analysis reveals common classroom assessment practices, teachers' beliefs about the role of assessment, and the anxiety the school community shares around standardized testing and examinations. Literature suggests that both formative and summative assessment practices have great potential for improving students' learning. Teachers are encouraged to integrate assessment into their teaching in order to identify where their pupils are in their learning and the steps they need to take for improvement and progress (Gardner, Hayward, Harlen & Stobart, 2008). However convincing the arguments in favour of change are, the external school evaluation data shows that the real change in the way teachers assess students' progress is very slow and hardly noticed. The concept of learning oriented assessment culture (Birenbaum, 2014) could provide more understanding about the nature of good classroom assessment and necessary conditions that help to sustain school efforts in improving assessment practices.*
Keywords: *assessment culture, testing culture, formative assessment, test anxiety.*

Introduction

This article makes visible the issues that the teachers at one school face in relation to assessment. Teachers shared their ideas during informal interviews with the researcher as part of the schools' initiative to introduce the *System of Assessing Child's Individual Progress* (the SACIP) and to improve overall assessment practices.

The introduction of SACIP has become a real concern for the school after the Ministry of Education and Science in Lithuania issued a recommendation for schools to develop and implement the SACIP in order to support a holistic approach to child development and improve student motivation and learning outcomes. The ministry has provided very general principles for SACIP, that each school was supposed to adapt to their needs and contexts and to develop schools'

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SACIP based on the agreements of the school community. As a result, schools in Lithuania started developing the SACIP without a clear orientation of a desired outcome, often missing the important phase of convincing teachers and the community about the benefits of change, and paying little attention to the vast body of research in this field and other related literature.

Under these circumstances, the school administration has responded to the researchers' proposal sent through the Vilnius municipality Education office to all secondary schools in the city inviting them to work jointly on the improvement of assessment practices. The readiness and high motivation of this school to implement change demonstrated in the introductory meetings with administration was a crucial factor for the researcher when selecting a school to carry out the doctoral research.

In the first meetings with administration it was agreed that our joint work would be guided by the Participatory Action Research (PAR) approach while developing and implementing school's SACIP as we all share the belief in the capacity of the community to participate actively in all aspects of the research process that is meant to improve their daily practices (Kemmis, McTaggart & Nixon, 2014). PAR in this case is regarded as a means of systemic enquiry for all participants in the quest for greater effectiveness through democratic participation (Adelman, 2006).

The very first step of PAR is a *Reconnaissance phase* that is essential in order to explore with others the kinds of felt concerns experienced by people and groups involved in and affected by a practice. The researcher's aim during this PAR phase was to collect evidence of how assessment is practiced in the school, to identify the reasons behind teachers' assessment choices and to encourage participants to ask critical questions about whether their practices, and perhaps the consequences of their practices, are educational or whether they are irrational, unreasonable or unsustainable (Kemmis et al., 2014).

For this reason, 11 informal interviews were conducted with volunteer teachers and a head teacher that provided a broad understanding of current assessment practices in school, teachers' shared concerns related to assessment, the dilemmas that teachers face when assessing students' work, and their anxieties about standardized testing and examinations.

Literature Review

Any discussion about improving students' learning and learning outcomes requires reconsidering common assessment practices. Assessment provides necessary data to monitor students' progress and to plan teaching. However, it is formative assessment that informs teachers about student learning at a point when

timely adjustments to teaching can be made (Black & Wiliam, 1998; DeLuca & Volante, 2016; Swaffield, 2011; Wiliam, 2011). Summative assessment, on the other hand, is guided by accountability demands and is performed at the end of instructional period, thus, it has little capacity to directly influence student learning. The historic account presented by L. Shepard of how assessment theory developed throughout the last century and how it affected the way teachers practice assessment in the classrooms up to now explains why classroom assessment has been associated with the scientific measurement approach that, "is exemplified by standardized tests and teacher-made emulations of those tests" (Shepard, 2000). It is not that summative assessment is bad in itself; what's bad is the fact that it dominates teachers', students', parents', head-teachers' minds, prescribes some teaching, learning, and assessment practices, and stops teachers from exploring new ways of assessing students' progress.

An alternative view on assessment that has a potential to stimulate reflective classroom practices and to develop the dialogic relation between teaching and assessment is often referred to as formative assessment. A number of researchers have acknowledged the benefits of formative assessment for students, their motivation, academic achievement, and overall learning gains.

P. Black and D. Wiliam's (1998) influential review of 250 studies on classroom strategies revealed that the effect size of formative assessment varies between 0,4 to 0,7, which is larger than the effects produced by any other educational intervention. When describing the learning gains of formative assessment interventions the researchers compared its effect to the country's (e.g. the USA) jump from approximately 20th position to that of top five countries in the international comparative study in mathematics. They also arrived at another important observation that formative assessment helps disadvantaged students' more than others and in this way it helps to reduce the achievement gap among different student groups. In their analysis, P. Black and D. Wiliam were exploring the assessment practices commonly used by the teachers and described them as "a poverty of practice". They were concerned that for teachers giving marks and grading students was more important than recognizing their learning needs, they also noticed that students were often compared to each other and this increased competition among them. Moreover, teachers' beliefs that some students had a low potential for learning was upsetting as such a view has a direct implication on how teaching and assessment is implemented.

Apart from these observations they also identified certain strategies that showed positive effects on students' learning, including asking questions to check how well students understood the material, wait time to let students think and produce more sophisticated and comprehensive answers, providing feedback to students about the qualities of their work with advice on what they can do to

improve, and to provide time for student to self-assess in order to increase their commitment to learning.

Another noteworthy study conducted by J. Hattie (2012), supports Black and Wiliam's thoughts about effective classroom strategies. He compiled a long list of effect sizes related to student outcomes, the top three of over 250 effect sizes are the prerequisites of successfully implemented formative assessment, and they are - collective teacher efficacy, self-reported grades, and teacher estimates of achievement. Other classroom practices that are normally attributed to formative assessment, like evaluation and reflection, scaffolding, reciprocal teaching, setting standards for self-judgement, record keeping, clear goal intentions, questioning, peer tutoring and many more proved to be effective and appeared on Hattie's list of effect sizes.

Unfortunately, it is correct to say that despite these conclusions and arguments in favor of formative assessment, the challenges described in Black and Wiliam's publication more than 20 years ago remain unchanged, especially in those educational systems where governments have put little effort in developing systemic and research based policies to improve student learning. In Lithuania, as indicated by the *External school evaluation reports*, teachers' practices to assess students' progress and application of formative assessment in the classrooms have been evaluated very low (Nacionalinė švietimo agentūra, 2019).

Nevertheless, in some countries the attempts to improve classroom assessment have started; some attempts being more successful than others. They do provide important data for thoughtful reflection on what measures help to sustain changes in assessment practice. One common conclusion that both the researchers and the practitioners point to is the importance of changing attitudes of the education community about the role of assessment. That it is not only about judging students but a way to support and improve students' learning.

M. Birenbaum (2014) suggested exploring the concept of culture to better understand how change in attitudes that later translates into daily teaching and assessment practices takes place in schools. She identified two opposing cultures present in schools, grading oriented testing culture (TC) and learning oriented assessment culture (AC). In TC, teaching and assessment are considered as distinct activities, the assessment fulfils the accountability demands and therefore is characterized by the power relations between the assessor and the assessed, standardized forms and procedures, and ignorance of the students' individual needs and capacities.

When it comes to AC, it is conceptualized as the complex system where classroom learning and teacher professional learning systems interact and evolve to create new knowledge. Teaching and assessment is in dialogic relation in order

to support learning and empower the learner. The individualized approach is preferred and individual learner's needs are respected.

This joint concept of assessment and culture offers a new perspective on the analysis of school improvement. Without any doubt, the cultural change will challenge the assumptions, beliefs, behaviors, practices and what C. Levi-Strauss calls the unwritten rules that school community obeys unconsciously without understanding them (Morgan & Just, 2000). Schools that have courage to work on this should be aware in advance that this is not a quick and easy undertaking.

Method

As described in the literature, PAR offers a framework for transformative school practices. Embedded into the systemic inquiry approach, PAR invites the researchers to create better knowledge to theorize and inform practice. By taking *action turn* seriously, the researchers recognize the connections between experience, human participation, and the generation of new knowledge (Coghlan & Brydon-Miller, 2014).

Not surprisingly the school's attempt to introduce the SACIP as assessment innovation had been planned in line with the five PAR steps: reconnaissance, planning, observing, enacting and reflecting (Kemmis et al., 2014). The first *reconnaissance* step was crucial as it helped to identify the assessment related areas of felt concern experienced by the school community. Since the initiative was planned to begin in March 2020, coinciding with the start of the COVID-19 pandemic, the PAR beginning date was moved to June when the first introductory researcher and teachers' meeting took place in order to get to know each other and share preliminary views on assessment. At the end of the meeting, the researcher invited volunteers to share individually their assessment beliefs and talk about classroom assessment practices through an online communication platform. Out of 28 participants, 11 teachers left their contact information in the researcher's notebook. Shortly after this meeting, the informal interviews were conducted. The length of each varied from 30 minutes to one hour. The teachers who gave interviews were all women, two teachers were generalists teaching primary level students, one teacher was teaching ceramics as an extra curriculum subject, one teacher was a social pedagogue responsible for helping underachieving students, among those 11 was also the school's head teacher, the rest were subject teachers teaching grades 5 through 12. The purpose of these interviews was to get to know people better, to establish rapport with teachers and to work out what was happening in the teachers' shared setting, it was also an attempt to form the initial group of co-participants – a public sphere (Kemmis et al., 2014).

The research object, the school culture, determined the selection of the methodology of the overall study. The ethnographic approach in combination

with the PAR strategy made up the research framework, therefore the methods to collect and analyse data were typical of ethnographies – participant observation and ethnographic interviews. All ethnographic studies usually start from the participant observation in order to learn how people act in certain situations; the deeper interviews follow later when the relation between the researcher and participants is established. Due to the pandemic, the researcher had no possibility to start from participant observation, instead she made a decision to talk with teachers about their practices in the manner of a casual and friendly conversation that normally occurs between the researcher and the observed during the participant observation. Ethnographers can collect most of their data through casual conversations each time gradually introducing new ethnographic questions (Spradley, 1979).

All conversations were recorded; in total almost 8 hours of teacher talk were transcribed by the researcher in order to prepare the data for further analysis. The first step of analysis was coding and it involved assigning symbolic meaning to data units compiled during the study so the researcher can quickly find, pull out, and cluster the segments relating to a particular research question (Miles, Huberman & Saldana, 2014). The second step was grouping those codes into smaller number of pattern codes, more meaningful units of analysis that cover large amount of data. Pattern codes made a list of topics that represent the areas of felt concern to the school community, which in the next step were systemically organized into a set of challenges that the school community is going to address through PAR.

Results

The analysis of conversations with teachers yielded a number of themes that define teachers' classroom practices, their perceptions about assessment, and their roles, commitments and relations with others. Some of these themes are presented below. The presented themes are illustrated with the quotes from teachers' talk and discussed in relation to the scientific literature. The following themes were identified:

Sustaining/maintaining strong commitment to teachers' professional standards. Teachers' talk reveals how demanding they are of themselves; they assume that it is their duty to ensure students have learned what was expected. Sometimes teachers were overly critical about themselves *"…if I failed to ensure that they [students] had learned, I had no right to request …no right to demand from them to behave as I expected"*. They had doubts about their decisions, reflected on their practices, recognized their failures, and were looking for explanations, one teacher said "*…I was analysing their answers…and then I could*

see if that was my teaching mistake or my wrong decision, or are there any other reason, like illness, why a child's performance was poor." Teachers' ability to reflect echoes J. Dewey's (1910, p.6) thoughts about the role of reflective thought "Active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusions to which it tends, constitute a reflective mind" that is truly educative.

Teachers did not calculate their teaching hours, that has become obvious during the pandemic, when they had to overcome a challenge to start using technologies for teaching and spent hours on preparation and communication with the students and their parents, "*I know it's time consuming but it is my responsibility to provide feedback to students and parents, I spend about two hours for each class to comment on every student's progress on a test…and parents were surprised to see that, some even wrote good words back to me"*. Teachers told stories about how they were writing personal messages about what they did well and what needs to be improved in their work during the pandemic, for some teachers who teach over 200 students it took hours every week. Primary teachers told me how they were checking their students understanding in every math and language lesson and daily analyzed their results in order to plan their teaching for the next day's lesson. All this experience could be inspiring for other teachers who feel tired and exhausted in order to motivate their colleagues and to build a school based professional learning community where both success and failure stories are reflected in order to improve practice (Opfer & Pedder, 2011).

Negotiating equity in assessment. The fact that almost every teacher was talking about the importance of being fair and assessing students' results objectively showed that the questions of equity really matter to them. In the school, they have students who have a range of learning needs and cognitive capacities, and their speed of learning and motivation differs. Unfortunately, not all families tended to follow school advice and consult specialists who diagnose their children learning needs. The diagnosis would entitle them to extra support of psychologists, social pedagogues, speech therapists, etc. while for teachers it would allow more freedom to individualize the curriculum and assessment requirements. Otherwise, teachers have little freedom to ignore the national standards and achievement requirements, and sometimes they feel desperate about parents' decision, putting pressure on children and desire to help these students. They ask rhetorical questions like "*what am I supposed to do if I see he is working hard but the results do not reach the standards, I cannot write good marks it would be unfair in relation to other students and unprofessional, but on the other hand giving all the time only low marks demotivates students"*.

In the literature, the issue of fairness or equity in assessment is approached from different perspectives, namely measurement theory and sociocultural theory. The chosen approach may lead to the reproduction of certain cultural practices

and discrimination (Gipps & Stobart, 2014). Teachers' talk revealed that the measurement approach puts pressure on them while the contradiction between the students' effort and the academic performance remains unsolved. In learning oriented culture, teachers need to find balance between those two; however, both, when overestimated, may work against the equity the teachers may be trying to achieve for their students (Wiliam, Brookhart, Guskey, & McTighe, 2020).

Applying assessment practices intuitively. The analysis of classroom practices showed that some elements of formative assessment had been used intuitively by teachers. When asked, if they were familiar with the formative assessment strategies, they could hardly mention any, but the descriptions of their lessons showed they had been using some, although sometimes the process had lacked the consistency and purpose. For example, the majority of teachers said, they had been using student self-assessment, but it was not clear how they incorporated students' self-assessment into the overall assessment framework. They could not provide comprehensive answers and the impression remained that the process in itself was the aim.

Several teachers spoke about how they were activating learners as instructional resources for one another (Wiliam, 2011), "*I ask students to read each other's work and think of what they liked most in classmates' work and what would they change to improve the work*".

Teachers were encouraging students' self-directed learning, and tried "*to ensure the regularity and consistency of student learning, learning should take place not only before the test*".

One of the main principles of formative assessment is to make sure the students have learned and only then, to move on to the next topic. Teachers who were talking about their practices seemed to follow this principle *"I am not starting the new unit until the majority in the class has demonstrated the sufficient understanding of the previous units, even if we are behind schedule"*.

In this context, it is important to draw our attention to the teachers' assessment literacy (Zhang & Burry-Stock, 2003; DeLuca, La Pointe-Mc Evan, & Luhanga, 2015) that has room for improvement.

Experiencing anxiety about external assessment. Teachers' talk about examinations or standardized tests seem to be upsetting to teachers. They expressed how insecure they were feeling about school ratings that are based on the results of standardized tests. They felt it was unfair to compare the results of students who have different learning needs, and to judge teachers' work based on that data. The research school is located on the outskirts of the city, many students from neighbouring villages are brought by bus, a number of students receive free lunches, the overall social, economic and cultural context is relatively low if compared with other city areas. The comparison of schools based on the external

testing results has a negative effect on students learning, increases competition, and teachers expressed concern about students' psychological condition and increased test anxiety before high stakes examinations. For the teachers, it causes a sense of guilt, or they feel shame as seen from teachers' talk *"It's a small village [some call this city area a village as it used to be separate from the city some time ago], everyone knows everyone and it is so humiliating when people start talking, especially if you work so hard"*.

It is not surprising why some teachers' start "teaching to the test" (Popham, 2001, Dionne & Milley, 2009), which narrows the curriculum and takes away a chance for students to receive a holistic education. It also has to do with the issues of ethics in assessment and teaching, when teachers give more time and attention to the students who choose to take the exam, other students receive fewer opportunities for learning.

To sum up, it is hardly possible that examinations and standardized tests would cease to exist soon, because education is an extremely rigid system and any change of such nature would take years or even decades. However, for the teachers working in these conditions, the advice would be do not forget what is the ultimate goal of education, and to plan clear steps how to move towards this goal. Better familiarization with the test requirements, the analysis of students' performance on these tests, professional talk with other teachers about the results, and planning further teaching would be a practical utilization of test results.

Conclusion

This article presents one fragment of the larger ethnographic research carried out in conjunction with the PAR implemented by the school community in order to introduce the assessment innovation in schools. This analysis presents teachers perceptions about assessment and their daily assessment practices told by the teachers during online conversations with the researcher. It reveals some challenges that school faces in relation to assessment and raises certain questions about the origins of certain classroom practices. Frequent testing, narrowing curriculum, teaching to the test, labelling students based on their cognitive abilities, providing more help before examinations to the high achievers rather than the low achievers, focusing on grading rather than learning, tolerating unethical assessment practices are some examples of how school responds to the external pressure to succeed in examinations and testing. If analysed from the perspective of critical theory, it reveals how oppressive the examinations and grading might be, how they reproduce certain cultural patterns in schools, and how they contradict the nationally declared educational goals. It also highlights the importance of rethinking assessment policies on the national level, like the role of standardized testing, the use of testing results, the form and scope of

examinations, the enrolment to the university, etc. in order to ensure the alignment of curriculum goals, teaching methods and assessment practices.

On the other hand, the study revealed how innovative some teachers are in their daily work and how compassionate and dedicated they are to their students, especially to the disadvantaged and special needs students. It is an important factor but not sufficient, however. In order to become better professionals, who are ready to reflect on the added value of certain assessment policies and practices, they need to improve the overall understanding about the different roles of assessment ant to develop their assessment literacy that would enrich their repertoire of assessment methods to be introduced in the classrooms. The school based professional learning community of teachers who regularly discuss and reflect on their classroom practices is a key factor that would contribute to the development of learning oriented assessment culture.

Though the habits that are typical of the testing culture are very common among teachers, parents and decisions makers on the national and local levels, the successful practices generated in schools might be ahead of the system and foster the bottom up approach to the overall transformations of the education systems to better meet students learning needs. The ample research on assessment provides convincing arguments for the power of "assessment to become the glue that holds pieces of learning process together" (Graue, 1993). This particular research aims to contribute to the vast body of research on school improvement by introducing cultural dimensions to sustain assessment changes in schools.

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PATIESAS UN HOLOGRĀFISKAS ZINĀŠANAS

True and Holographic Knowledge

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Abstract. *The article deals with the direction of philosophy - epistemology, it is a study of knowledge and cognition. The main aspects of epistemology are the dimensions of knowledge, the sources of knowledge and the reliability of knowledge. The education system deals with the acquisition of knowledge, the use of various sources of knowledge and the reflection of the reliability of knowledge in curricula. Learning content includes knowledge that helps to find, create and use new knowledge. Modern curriculum requires a review of all school knowledge, conceptual and factual apparatus of school education. Mankind has accumulated a tremendous amount of knowledge. Essential preconditions for the selection of educational content: that the acquired knowledge covers the basics of various sciences; so that the curriculum covers different types of knowledge; that the student acquires knowledge from different sources of knowledge and uses different dimensions of knowledge; so that in order to explain the processes taking place in the universe, the student uses the true knowledge, which is formed on the laws of eternal harmony, is structured and maintains the whole of the world. The topicality of the article is related to the modern study content, which is based on true structured knowledge. The aim of the article is to review the content of the curriculum so that students have access to quality knowledge that is organized in a system and considered as a whole, and explains the processes taking place in the world.*
Keywords: *holographic knowledge; meta-knowledge, sources of knowledge, true knowledge, types of knowledge.*

Ievads
Introduction

Filozofijas centrālais jautājums saistīts ar zināšanām. Zināšanu klasiskā definīcija: Zināšanas ir patiesība un pierādīta pārliecība. Savukārt Ņikiforovs zināšanas skaidro, kā izziņas procesa rezultātu, kuram ir sava struktūra un veidi, kas saistīti ar cilvēka sabiedrības attīstības posmiem (Ņikiforovs, 2007). Zināšanas ir vairāk vai mazāk strukturēta un apzināta sabiedriskā prakse, kas apgūta darbībā. Apgūšana var notikt tikai aktīvi- patstāvīgā izzināšanas un pārdzīvojumu procesā, būtisko saņemto informāciju transformējot atbilstoši skolēna personībai un pieredzei (Breslavs, 1999).

Raksta aktualitāte saistās ar teorētisku ieteikumu mūsdienīga skolas mācību satura izveidei, kurš balstās uz patiesām un strukturētām zināšanām. Raksta

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mērķis ir aktualizēt jautājumu par skolas mācību satura pārskatīšanu, lai skolēniem būtu pieejamas kvalitatīvas zināšanas un metazināšanas, kuras ir sakārtotas sistēmā un aplūkotas struktūrā un veselumā, un integrēti skaidro Visumā un pasaulē notiekošos procesus. Mērķa sasniegšanas metodes ir teorētiskās literatūras, pieredzes un pedagoģisko pētījumu rezultātu analīze.

Rakstā izvirzītais jautājums:

Kādi priekšnoteikumi jāievēro mācību satura atlasē, lai skolēnam būtu pieejamas patiesas, holistiskas un holoģrāfiskas zināšanas?

Zināšanu veidi un to klasifikācija
Types of Knowledge and Their Classification

Zināšanas iedalās gan faktu zināšanās, gan teorētiskās zināšanās. Faktu zināšanas iegūst vērojumu un eksperimentu rezultātā, bet teorētiskās zināšanas ir faktu vispārinājuma rezultāts.

Izziņas procesa struktūras komponenti ir: zināšanu uzkrāšana un zināšanu bagātināšana, bet izziņas procesa struktūru veido darbības veidi: praktiska darbība (fiziska) un teorētiska darbība (garīga). Izglītības satura komponenti ir 1) zināšanas; 2) prasmes un iemaņas; 3) radošās darbības pieredze; 4) emocionāli vērtējošās attieksmes pieredze (Albrehta, 2001; Skatkins, 1984). Mācību satura galvenais komponents ir zināšanas, jo bez zināšanām nav iespējama neviena mērķtiecīga darbība. Mācību saturam jāaptver dažādi zināšanu veidi, lai zināšanas būtu savstarpēji saistītas, tiktu mācītas kompleksi un dažādās sasaistēs (Albrehta, 2001; Mencis, 2001; Skatkins, 1984). Cilvēce ir uzkrājusi milzīgu daudzumu zināšanu un metazināšanu, un neviens cilvēks nevar tās visas apgūt. Tās apgūst visa paaudze kopumā, bet katrs cilvēks apgūst tikai daļu no tām.

Izglītības satura atlasē būtiski priekšnoteikumi:

(1) lai apgūtās zināšanas aptvertu dažādu zināšanu jomu zinātņu pamatus, galvenos sociālās darbības un dzīves veidus; (2) lai saturs aptvertu dažādus zināšanu veidus (Albrehta, 2001); (3) lai saturs būtu mūsdienīgs (atbilstu jaunajai zinātnes paradigmai) un balstītos uz visjaunākajiem zinātnes sasniegumiem visā Visumā (Reihenova, 2018c; Reihenova, 2012). (4) lai saturs būtu personalizēts un atbilstu skolēna interesēm, spējām un vajadzībām (Reihenova, 2019b; Reihenova, 2018b); (5) lai saturs balstītos daudzveidīgos kontekstos (Reihenova, 2021); (6) lai saturs iekļautu patieso Zemes cilvēces un Metavisuma cilvēces vēsturi (Lir, 2020), un Visuma uzbūvi (Rodina, 2020); (7) lai saturā būtu iestrādāts Vernadska un citu zinātnieku pierādījums par dzīvi kā kosmisku parādību (Vernadskij, 1981).

Zinātne ir indivīda intelektuālās darbības joma, kuras mērķis ir jaunu zināšanu radīšana, sistēmiska sakārtošana un apkopošana (Vedins, 2008). Zinātnisko zināšanu līmeņi: faktu, jēdzienu, teorētiskais un filozofiskais. Zinātnei attīstoties, zinātniskās zināšanas nemitīgi mainās.

Zinātne neattīstās lineāra un nepārtraukta progresa ceļā, bet piedzīvojot paradigmu maiņas. Paradigmas maiņu veicina tādu vērojumu uzkrāšanās, kuri, pirmkārt, vairs neatbilst jau esošajām teorijām un, otrkārt, nevar tām atbilst pēc vienkāršas šo teoriju pārskatīšanas. Zinātniskai paradigmai ir stingras prasības (Lāslo, 2011).

Zinātnes teorijā lieto jēdzienu netiešās (mēmās, slēptās) zināšanas, tādas zināšanas, kuras ir dotas pastarpināti (Hegel, 1986). Tās nav iespējams nodefinēt, jo zināšanas darbojas kā pavadonis, kas ir klātesošas cilvēku darbībā un rīcībā. Netiešās zināšanas ir rīcību pavadošo attieksmju un vērtību kopums. To ir gandrīz neiespējami pārnest no vienas valsts un tautas uz citu, jo tās ir humanitāro zināšanu un izjūtu dziļākās struktūras. Arī mācību procesā skolotājs nevar pārnest noteikta mācību priekšmeta satura savas meistara zināšanas uz skolēnu, jo skolēnam šīs struktūras ir jāizjūt un jāizveido pašam (Reihenova, 2019a). Geidža uzsver, ka netiešās zināšanas atšķiras no formālajām akadēmiskajām, jo tās orientētas uz darbību; tiek iegūtas bez citu cilvēku palīdzības; ir procesuālas (attiecas uz darba veikšanas norisēm); ir izsecināmas no tā, ko cilvēki saka vai dara; lielākoties ir vārdos neietveramas; attiecas uz konkrētu nolūku vai problēmas veidu (Geidžs & Berliners, 1999); palīdz sasniegt personiskos mērķus (Reihenova, 2019a).

Zināšanām piemīt kvalitāte: plašas vai šauras, izvērstas vai koncentrētas, noturīgas vai paviršas, izmantojamas vai pasīvas (Žogla, 2001). Zināšanas top vērtību kontekstos. Zināšanām ir dažādi veidi: a) informatīvi uzzinošās, uz tām var balstīt iecerētu darbību; b) zināšanas kā radošas, pētnieciskas darbības rezultāts. Mūsdienu zinātne ir daudzveidīga, tādējādi ir sarežģīti aprakstīt visu veidu pētnieciskos ieguvumus. Pētniecībā iegūtās zināšanas var iedalīt, gan fundamentālās (teorētiskas), gan lietišķās (praktiskas, empīriskas) (Kūle, 2016).

Savukārt japāņu zinātnieks, filozofs D.T. Suzuki izdala zināšanu veidus: (1) zināšanas, kuras iegūst ar lasīšanu un klausīšanos (tā ir lielākā daļa); (2) zināšanas, kuras saprot kā zinātni (novērojumi un mēģinājumi, analīzes un spekulācijas rezultāts); (3) zināšanas, kuras sasniedz ar intuitīvo sapratni (tām nav stingra pamatojuma faktos, kā arī sapratne nav izsmeļoša). Ar intuitīvo sapratni iegūtās zināšanas dziļi iesniedzas paša esamības saknēs, vai kuras aug laukā no mūsu pašu būtības dziļumiem. Savukārt personīgās pieredzes centrālā nozīme: katru patiesību, lai kāda veida tā arī būtu, pieredzēt personīgi, bez kaut kādas prātiskas, sistemātiskas vai teorētiskas mācības. Ar teorētiskām zināšanām nepietiek, lai radītu mākslas darbus vai kaut ko citu, kas ir cilvēka dvēseles tieša izpausme (Suzuki, 1991).

Kants atzīmēja, ka zināšanas ir tas, ko mēs uztveram, un kā mēs uztveram pasauli, kura dota mūsu apziņai, kā arī zināšanas ir mūsu izziņas spēja. Spriešana nevar neko radīt un sajūtas nevar neko domāt, tikai savienojot sajūtas un spriešanu, var radīt zināšanas (Kants, 2011). Racionālisti (Dekarts, Spinoza)

uzskatīja, ka cilvēka zināšanu pamats meklējams apziņā, bet empīristi (Loks, Bērklijs, Hjūms) uzskatīja, ka visas zināšanas par pasauli nāk no sajūtās dotās pieredzes (Kūle & Kūlis, 1998).

Zināšanu veidus iedala arī: (1) objektīvas zināšanas, kuras tiek sasniegtas empīriski racionālā veidā, loģiski izprotot maņu pieredzi; (2) pēc intuīcijas (intelektuālas vai radošas), tā ir tieša iekļūšana objektā, objekta satveršana kopumā, vienotībā. Intuīcija ir filozofisko zināšanu neaizstājams elements; (3) patiesas zināšanas kā sevi atklājoša realitāte, tā neaprobežojas tikai ar personiskām zināšanām, bet ir universāla zināšanu forma.

Visu individuālo var izzināt pieredzē, bet ne saprast jēdzienos. Lai izprastu zināšanas par dzīvi ir nepieciešamas patiesas zināšanas. Patiesas zināšanas ir vienīgās zināšanas, kas tieši nosaka mūsu uzvedību: zināt nozīmē- dzīvot noteiktā veidā. Suzuki atzīmēja, ka personīgais pilnīgi pieder atsevišķajam un bez pārdzīvojuma nenozīmē itin neko (Suzuki, 1991). Neirozinātnieks E. Goldbergs atzīmēja, ka personīgā gudrība- tas ir zināšanu veids. Viņš gudrību skaidro kā pieeju plašam paraugu klāstam, kas indivīdam ļauj atpazīt jaunas situācijas un jaunas problēmas tā, it kā tās jau būtu sastaptas (Goldbergs, 2009).

Zināšanu avoti un mācību saturs
Sources of Knowledge and Learning Content

Dažādu zināšanu avotu lietojums un zināšanu ticamība atspoguļojas mācību programmās. Mācību saturs iekļauj zināšanas, kuras palīdz atrast, radīt un izmantot jaunas zināšanas. Mācību programmas ir jāpārstrādā, lai skolēnos atraisītu intelektuālo zinātkāri, radošumu un iztēli (Šarmers, 2018), tajās iekļaujot jaunākās zinātniskās atziņas (Reihenova, 2019a), patieso Zemes cilvēces un Metavisuma cilvēces vēsturi (Lir, 2020), Visuma uzbūvi (Rodina, 2020), tām ir jābūt personalizētām (Reihenova, 2019a) un kontekstuālām.

Skolēni zināšanas iegūst no dažādiem zināšanu avotiem, tādējādi svarīgākais skolas uzdevums ir palīdzēt skolēniem sistematizēt, strukturēt zināšanas, apgūt to pielietošanas un izmantošanas prasmi. Apgūstamās zināšanas veido pamatu divdaļīgām prasmēm: prasmei izmantot zināšanas praktiski vai jaunu zināšanu iegūšanai; prasmei patstāvīgi mācīties (Žogla, 2001).

Zināšanu avoti. Sajūtas- zināšanas iegūst izmantojot maņas; atklāsme- paredz transcendentu pārdabisku realitāti; autoritāte- tās ir patiesas zināšanas, kas nāk no ekspertiem, meistariem; domāšana (saprāts)- zināšanu galvenais faktors racionālismā ir spriešana, domāšana un loģika; intuīcija- tieša nojauta par zināšanām, kas nav sajūtu un domāšanas rezultāts. Iegūtās zināšanas ir jāpārbauda (Mārtiņsone et al., 2016). Nākotnē vairāk tiks izmantotas zināšanas, kuras nāk no intuīcijas un kuras iegūtas atklāsmes ceļā (Rodina, 2020). Vernadskis izdalīja divus zināšanu avotus: zemes, kas ir saistīta ar blīvu matēriju, un ārpuszemes, kas

ir smalka, kurai piemīt liela enerģija (Vernadskij, 1981). Tikai zināšanām, kuras skolēns izmanto, ir vērtība, tādējādi zināšanu apguves procesā ir svarīgi panākt to noturīgumu, plašumu, kā arī prasmi pielietot zināšanas praksē.

Zināšanu lietošana, iegaumēšana un nostiprināšana. Zināšanas nav pašmērķis, bet līdzeklis dzīves pilnveidošanai, to vērtība izpaužas daudzveidībā: (1) kā priekšzināšanas tās palīdz apgūt jaunas, aizvien plašākas un dziļākas atziņas par apkārtējo pasauli un pašiem par sevi; (2) skolas mācību procesā un pašvadītās mācībās nepārtraukti attīstās skolēna prāta spējas, pieaug viņa zināšanu apjoms; (3) vispusīgas zināšanas palīdz skolēnam labāk iekļauties sabiedrībā, saprast citus skolēnus un dzīvot pilnvērtīgu dzīvi; (4) zināšanas ir nepieciešamas, lai apgūtu dažādas praktiskās darbības prasmes un iemaņas, iegūtu specializāciju; (5) zināšanas uzglabājas tur, kur tās nokļuva pirmajā brīdī (Goldbergs, 2009); (6) zināšanu vispārināšana dod iespēju izstrādāt jaunas teorijas; (7) holistiskas zināšanas- visaptveroši apraksta notiekošos procesus. Holisma zinātne uzsver, lai paceltos pāri detaļām un saskatītu kopumu, mums jāiegūst izpratne par Dabu un cilvēku pieredzi (Liptons, 2013); (8) pieaugot atklāsmes ceļā un intuitīvi iegūto zināšanu apjomam, veidojas apstākļi zinātniskās paradigmas maiņai (Lir, 2020; Rodina, 2020), kur metazināšanas izskaidro notiekošos procesus smalkajā realitātē (Lir, 2020; UNESCO, 1998).

Svarīgs mācību procesa posms ir zināšanu nostiprināšana (Reihenova, 2018b). Zināšanu nostiprināšana ietver trīs savstarpēji saistītus uzdevumus: speciāli organizētu individuāli garīgu piepūli faktu un likumsakarību iegaumēšanai; dažādu vingrinājumu izpildi prasmju un iemaņu izkopšanai; zināšanu un prasmju izmantošanai praksē.

Iegaumēt jaunās zināšanas nozīmē- saistīt tās ar agrāko pieredzi, izveidot noteiktas asociācijas un struktūras. Zināšanas ir atkarīgas no vides (no konteksta, no kultūrvides), kurā tās tiek iegūtas. Zināšanas visvieglāk pielietot situācijās, kas līdzīgas situācijai, kurā tās iegūtas, tādēļ būtiski apgūt prasmi- lietot zināšanas jaunā situācijā, veikt pārnesumu (Reihenova, 2019a), radoši darboties un aplūkot tās no daudzveidīgiem skatupunktiem (Lir, 2020; Nevils, 1999; Šarmers, 2018; Vyas, 2019).

Radošas darbības pieredzei raksturīgās īpatnības: patstāvīga zināšanu un prasmju pārnese uz jaunu situāciju; jaunas problēmas saskatīšana pazīstamā situācijā; jaunas objekta funkcijas saskatīšana; zināmu darbības veidu sakombinēšana jaunā darbības veidā; objektu struktūras saskatīšana; alternatīva domāšana; principiāli jauna risināšanas paņēmiena radīšana (Andersone, 2007). Kultūras zināšanas ir komplicēts tīmeklis. Kultūras radošums nosaka to, cik atvērti ir šie tīkli, cik viegli ir pieejamas zināšanas. Radošums nozīmē sakaru dibināšanu (Robinsons, 2013).

Metakognitīvās zināšanas nozīmē izpratni par to, kā cilvēks iegūst zināšanas, un izpratni par domāšanas procesiem. Metakognitīvās prasmes palīdz apgūt

zināšanas, kā arī pārvaldīt savas zināšanas un domāšanu, tās ietver pārdomas par savu domāšanu (Fišers, 2005).

Integrētās (veseluma, sintētiskās) zināšanas un prasmes ir vispārinātu zināšanu un prasmju veids, to daudz augstāks starpdisciplīnu un/vai transdisciplīnu zināšanu un prasmju attīstības līmenis, daudz augstāka personības īpašību integrācija (Čehlova & Grinpauks, 2003). Integrāls jeb holistisks skatījums piedāvā vairāk veseluma nekā uz konkrētību vērstās alternatīvas (Vilbers, 2010). Veselajam ir īpašības, kuras nevar izzināt, izpētot tā daļas.

Zinātnisko zināšanu raksturīga pazīme ir sistemātiskums. Zināšanu sistemātiskums saistās ar prasību pēc sistēmiskuma. Sistēmiskas zināšanas ir izkārtojušās skolēna apziņā pēc shēmas: zinātnes pamatjēdzieni- teorijas pamatatzinumi- sekas- pielietojums- vispārinājums.

Skolēniem ir jāapgūst katras teorijas pamatelementi un to struktūru veidojošie sakari, tās ir metodoloģijas zināšanas. Metodoloģiskās zināšanas palīdz izprast mācību priekšmeta saturu, kā arī pilda apzinīguma funkciju, kura veido pasaules uzskatu un sagatavo skolēnu pašizglītībai. Sistēmiski apgūtas zināšanas, palielina skolēna interesi par zinātni, par mācīšanos (Skatkins, 1984).

Sistēmiskā izpratnē konstruēšana kā izziņas process sevī ietver kognitīvo darbību. Zināšanu konstruēšanas procesā aplūko fāzes: reprodukciju (atcerēšanās, saprašana, reproducēšana), rekonstrukciju (sistēmiska izpratne, pasīvo zināšanu aktualizēšana), dekonstrukciju (ne visas zināšanas ir dogmas, ja tās lieto attiecīgos kontekstos), jaunkonstrukciju (veidot jaunas zināšanu konstrukcijas) (Tiļļa,2005).

Vernadskis izveidoja zinātnisku izziņas metodi, kuras pamatā ir zināšanu sintēze. Viņš atzīmēja, ka patiesas zinātniskas zināšanas tiek radītas, piedaloties visām cilvēka apziņas formām: ikdienas, teorētiskām (zinātniskām un filozofiskām) un ārpus teorētiskām (reliģiski-mitoloģiskām un māksliniecisķām) (Vernadskij, 1981).

Filozofiskās zināšanas ir zināšanas par visu pasauli, tās ir universālas. Filozofija darbojas ar jēdzieniem un kategorijām, ar augstu vispārināšanas līmeni, tā atbild uz globāliem jautājumiem par būtību un risina visas cilvēces abstraktās problēmas. Filozofija balstās uz loģiku un argumentāciju, tāpēc filozofiskās zināšanas ir pārbaudāmas, objektīvas un refleksīvas.

Zināšanas paplašinās ātrāk par to kategorizēšanas veidiem (Vilbers, 2010). Zināšanas bagātinās visu mūžu, tās ir dinamiskas. Daļa zināšanu ir apgūtas tā, ka cilvēks tās izmanto praktiskā un intelektuālā darbībā automātiski, savukārt katram cilvēkam ir zināšanas, kuru pielietošanu un izmantošanu kontrolē domāšana. Garīgajā un praktiskajā darbībā zināšanas pārgrupējas atkarībā no to kvalitātes un veicamā uzdevuma: daļa zināšanu aktualizējas un kļūst par pamatzināšanām uzdevuma veikšanai (Skatkins, 1984).

Iekšējās zināšanas izmanto, lai aprakstītu komplekso uztveres matrici, no kuras veidojas mūsu uz ego balstītā izpratne par to, kas esam un kā

mijiedarbojamies ar pasauli. Iekšējās zināšanas apraksta zināšanas, kas rodas no mūsu spējas un apzināšanās izmantot savu uzkrāto pieredzi, lai saskatītu un izvēlētos to, kas ir dzīvi apliecinošs. Iekšējās zināšanas paplašina mūsu tīri racionālo zināšanu robežas (Lāslo & Karivana, 2009).

Metazināšanas ir zināšanas par zināšanām, par zināšanu iegūšanas struktūru un metodēm. Meta nozīmē augstāku vispārināšanas, universāluma un integritātes līmeni. Metaobjektu pieejas būtība nodrošina pāreju no esošās zināšanu sadalīšanas objektos prakses uz holistisku pasaules iztēles uztveri, uz metadarbību. Metapriekšmets kā izglītības satura integrēšanas princips, kā teorētiskās domāšanas un universālu darbības metožu veidošanas veids nodrošina holistiskas pasaules ainas veidošanos skolēna prātā (UNESCO, 1998).

Patiesas zināšanas ir atkarīgas no paša cilvēka, tās ir unikālas, tās apraksta indivīda vajadzības, rīcības veidu, kas ir piemērotākais tieši viņam (Goldbergs, 2009). Patiesas zināšanas veidojas uz mūžīgās harmonijas likumiem, kuras ir strukturētas un uztur pasaules veselumu. Patiesas zināšanas ir kompleksas, veselas, sakārtotas, pozitīvas un humānas, tās ir virzošs spēks. Patiesas zināšanas un pasaules veseluma aina neizslēdz garīgo dabu. Izmantojot pasaules izziņas ceļu no augšas uz leju, iegūstam kopīgu ainu caur atklāsmi, tad caur šo kopīgo ainu uztveram detaļas.

Vernadskis pierādīja, ka dzīve ir kosmiska parādība, nevis tīri zemes, ka cilvēce jau no paša sākuma attīstās kā kosmozemes dabiskās vides neatņemama sastāvdaļa un kā biosfēras sastāvdaļa (Vernadskij, 1981). Patiesas zināšanas ir vienkāršas. Viss Visums ir veidots vienkārši, arī visi evolūcijas procesi, pasauļu formēšana ir veidoti uz vienkāršām parādībām, kuras var apvienot ar vienkāršu patiesību: ar Zelta griezumu; ar evolūcijas spirāli, kura veidota pēc Zelta griezuma; ar fraktālām kompozīcijām, kas iespiežas fraktālās dimensijas kodā, kuras balstās uz Zelta griezumu (Lir, 2020).

Visums ir kā liela mums vienmēr atvērta grāmata, kuru nav iespējams saprast, iepriekš neiemācoties valodu un simbolus, ar kuriem tā uzrakstīta. Tā ir rakstīta matemātikas valodā, un tās tēli ir trīsstūri, apļi un citas ģeometriskas figūras, tā rakstīja Galileo Galilejs (Siliņš, 2008). Savukārt sakrālā matemātika attiecas uz jēdzieniem, kuri matemātiski apraksta visu radīto. Tā ietver, skaitliskās attiecības ar visdziļāko nozīmi, raksturojot, gan pašu skaitļu raksturu, gan to savstarpējās attiecības. Tā apraksta apbrīnojamos ģeometrisko attiecību aspektus sakrālajā ģeometrijā, kas it kā ir pretrunā ar loģisku vai racionālu skaidrojumu, un veidu, kā visi šie aspekti raksturo Visumu- ar mūžīgās harmonijas likumiem, ar Zelta proporciju. Savukārt grieķu filozofs Platons ir teicis: Ģeometrija ir zināšanas par mūžīgo eksistenci. Skaitļi ir visaugstākā zināšanu pakāpe. Tie ir īstas zināšanas (Siliņš, 2008).

Matemātikas zināšanas palīdz izskaidrot pārējo nozaru noslēpumus, kuri atklājas, skatot lietas no apakšas uz augšu. Zinātnes zināšanām piemīt sava

hierarhija. Matemātika ir pamats, uz kura balstās pārējās zinātnes nozares. Visas zinātnes ir savstarpēji saistītas, tādējādi zinātņu piramīdas augšējiem līmeņiem jāpārņem jaunās atziņas no zemākajiem līmeņiem, lai saglabātu sistēmas stabilitāti un zinātniskumu (Bradens, 2014).

Matemātiskās zināšanas. Ja skolēns nezina pamatjēdzienus, tad tālākais zināšanu pilnveidošanas process ir apgrūtināts. Galvenais ir matemātiskus jēdzienus iegaumēt ar jēgu, jo svarīga ir to izpratne, uzskatāmais priekšstats. Jēga nekad nav tikusi dota gatava, nedz bijusi viegli pieejama, tā ir sevis atvēršana jēgai (Hegel, 1986).

Visām matemātikas nozarēm ir kopīgs pētījuma objekts- reālās pasaules kvantitatīvās attiecības un telpas formas. Skolas matemātiskās izglītības vispārējo struktūru veido komponenti: matemātiskie jēdzieni (termini); matemātiskie apgalvojumi (fakti, īpašības, formulas, teorēmas); matemātiskās prasmes; attīstīta matemātiskā domāšana (Mencis, 2001; Mencis, 2014). Matemātikas kompetences veidošanos, balstoties uz apgūtajām zināšanām un attīstītajām prasmēm, ietekmē attieksmes. Attieksme ir saistīta ar skolēna interesēm, motīviem, uzskatiem un pārliecību.

Matemātikas mācībās ir attīstāma refleksīvā darbība. Tā ļauj atskatīties uz paveikto un kalpo par pamatu tālākai attīstībai. Reflektēšana ir spēja kritiski domāt un veidot patstāvīgus kritiskus spriedumus. Reflektēšana saistās ar analizēšanu, domu un spriedumu kritisku izvērtēšanu, zināšanu un viedokļu aktīvu pārstrukturēšanu (Rubene, 2008), tā ir pašizziņa, savu izjūtu un pārdomu uztveršana un apcerēšana.

Attīstīta reflektēšanas prasme dod skolēniem sapratni par savas matemātikas kompetences līmeni, par nepieciešamību tās pilnveidē. Reflektēšana sevī ietver pārdomas, pašnovērtēšanu, personisko domu un pārdzīvojumu analīzi un norit izteikto domu un emociju apmaiņas veidā (Reihenova, 2018b; Žogla, 2001).

Nākotnes zināšanas un hologrāfiskais princips
Future Knowledge and Hlographic Principle

K.O.Šarmers zināšanas iedala: (1) precīzi formulētas zināšanas: kuras ir neatkarīgas no konteksta; (2) netveramas zināšanas, kuras ir saistītas ar kontekstu; (3) nākotnes zināšanas, kuras vēl nav iemiesotas (Šarmers, 2018). Visuma dziļākos noslēpumus var uztvert: ar prātu, ar sirdi un veselumā.

Aizejošā laikmetā primāro lomu ieņēma prāts, bet jaunajā laikmetā- pārņems sirds, jo kritikas, šaubu un šķelšanās laikmets ir beidzies un sācies jūtziņas un sintēzes laikmets, sadarbošanās un apvienošanās laikmets. Intelekts nav gudrība. Jūtziņa ir gudrība, intelekts ir saprāts. Visas augstākās patiesības var uztvert ar cilvēka augstāko apziņu, kas atrodas viņa sirdī. Tikai sirds un jūtziņas attīstība

spēj uzbūvēt tiltu starp cilvēka zemāko un augstāko apziņu, kas piesaistīs viņu gan augstākajām zināšanām, gan tālajām pasaulēm (Klizovskis, 1992).

Šarmers uzsver, ka jārada jauna sabiedriska tehnoloģija, kura balstītos uz trim instrumentiem: atvērtu prātu, atvērtu sirdi un atvērtu gribu, un šīs spējas ir jāizkopj, gan individuāli, gan kolektīvi. Atvērta prāta spēja ir piekļūt apziņas intelektuālajam slānim un redzēt problēmu citā perspektīvā. Atvērta sirds spēj piekļūt emocionālajai inteliģencei, spēj just līdzi citiem, uztvert atšķirīgus kontekstus un iejusties tajos. Atvērta griba spēj piekļūt savam patiesajam nodomam un īstajai patībai (Šarmers, 2018).

Atvērt sirdi nozīmē piekļūt dziļākajiem emocionālās uztveres līmeņiem un tos aktivizēt. Klausīties ar sirdi būtībā nozīmē izmantot sirdi, kā atzinīgas izpratnes un mīlestības spēju, kā uztveres orgānu, tad mēs spējam redzēt ar sirdi (Šarmers, 2018).

No katra protona mūsu ķermenī skolēns var piekļūt pie savām Visuma zināšanām. Zināšanas pienāk gan no ārienes, gan no iekšienes. Zināšanas ir skolēnā iekšā un tās var rasties no paša skolēma. Tas ir radošs process, tas nāk no izpratnes, no apzināšanās avota un no apziņas (Haramein, 2021). Skolēns saņem informāciju caur savām jūtām, instinktiem un intuīciju, kad sirds ir atvērta (Kellijs, 2012).

Hologrāfisko principu koncepcija:

1) Ikvienā lauka daļiņā ietilpst viss, kas ir laukā; no katra Visuma punkta var iegūt informāciju par veselo.
2) Viss pastāv dievišķās matrices ietvaros, visas lietas ir saistītas.
3) Matrice ir ietvars, kurā atrodas laiks, kas nodrošina kontinuitāti starp mūsu tagadnes izvēli un nākotnes pieredzējumiem (Bradens, 2008; Haramein, 2021; Kellijs, 2012).

Izglītības sistēmas problēmas, saistās ar procesu sadalīšanu starp dažādām mācību jomām: fiziku un bioloģiju, bioloģiju un filozofiju. Visums nedalās jomās: tā ir fizika, tā ir bioloģija, tā ir astrofizika un tā ir kvantu fizika. Skolēni neredz sasaisti starp jomām, jo nepēta procesus integrēti un dziļi. Bet viss dabā saistīts vienkopus, viss Visums ir vienots, saistīts un darbojas veselumā (Haramein, 2021). Rietumu izglītības sistēmas nevēlēšanās pieņemt jaunatklājumus un jaunās teorijas- neļauj arī pārējai cilvēcei atbrīvoties no novecojušiem uzskatiem (Bradens, 2014).

Datu un zināšanu apstrādes procesa norisi raksturo:

realitāte- dati- informācija- zināšanas- gudrība. Informācija ir tikai datu bits. Zināšanas tos saliek kopā. Gudrība tos pārnes. Cilvēkam jāizkopj personīgā spēja saprotamā formā informāciju adaptēt, sintezēt un piedāvāt pārējiem.

Viens no zināšanu kvalitātes rādītājiem ir uz tām balstīto paņēmienu pārnesums, kas ir iespējams, ja skolēns ir apguvis būtību, ja viņš ir adekvāti izpratis jēdziena saturu. Tas nozīmē, ka skolēna zināšanu integrētība un līdz ar to

arī izmantojamība ir sasniedzama uz domāšanas un citu izziņas procesu apguves pamata (Reihenova, 2018a). Zināšanu integrēšanās ir individuālās apziņas process, ko var atvieglināt ar ārējiem līdzekļiem- mācību satura organizēšanu, paņēmieniem, mācību metodēm, formu izvēli un kontekstiem (Čehlova & Grinpauks, 2003; Reihenova, 2018c; Reihenova, 2019a; Žogla, 2001).

Zināšanu dimensijas. Relatīvas patiesības- mainās saistībā ar laiku, bet absolūtas patiesības ir mūžīgas, universālas, gan laikā, gan telpā. Apriori zināšanas ir patiesība, kas nav atkarīga no skolēna pieredzes, bet aposteriori zināšanas ir atkarīgas no pieredzes (Kants, 2011). Katrs cilvēks pasauli redz atšķirīgi. Nav vienotas, vienojošas, objektīvas patiesības. Mēs visi esam ierobežoti ar savu perspektīvu.

Mūsdienu pasaule ir kļuvusi tik sarežģīta, ka matemātikas, fizikas, un citu precīzo zinātņu zināšanas nav pietiekamas, lai izzinātu jauno objektīvo realitāti. Ir nepieciešamas zināšanas par Kosmosu, par psiholoģiju, bioloģiju, ekoloģiju, valodniecību. Mums nepieciešama zināšanu sintēze par materiālo un garīgo pasauli, kas ļauj pasauli redzēt kopumā kā vienotu Kosmosu. Tas prasa izrāvienu uz kosmisko domāšanas līmeni (Nikitin, 2015), uz kvantu domāšanu, kas ir prāta spēja aplūkot daudzveidīgi problēmu. Savukārt kvantu domāšana spēj vairākus pretējus viedokļus aplūkot vienlaicīgi, spēj pārdomāt pretējas domas, kas palīdz saprast problēmu no citas perspektīvas un atrast atbildes, kuras citādi būtu palikušas nerealizētas (Vyas, 2019).

Jaunā pasaules redzējuma mērķis - antropokosmisms, pirmkārt, ir radoša cilvēka apziņas attīstīšana. Tāpēc uzdevums ir paplašināt un pārveidot apziņu. Šī apziņas paplašināšanās notiks caur zināšanām par vienota Kosmosa likumiem, garīgās enerģijas izpēti un dvēseles smalkāko matēriju iekļūšanu nozīmju pasaulē (Nikitin, 2015). Vernadskis atzīmēja, ka mūsdienu pasaules kā realitātes atzīšanai ir nepieciešama kosmiska domāšana, zināšanu sintēze un holistiska pieeja zinātnei kā dabas un humanitāro zinātņu vienotībai (Vernadskij, 1981).

Uz katru problēmu jāskatās kompleksi, lai nepalaistu garām nevienu tās aspektu. Mums vajag izveidot vienotu platformu vienotas zināšanu sistēmas izveidē. Skolēniem jāzina patiesā Visuma vēsture, ne tikai Zemes cilvēces vēsture, bet arī mūsu Metavisuma Cilvēces vēsture, kura ir radījusi mūsu Visumu (Lir, 2020). Visu zināšanu atslēga, visa Kosmosa gudrība ir mūsos pašos. Arī mūsu nespēja šo gudrību izmantot atkarīga no mums pašiem (Klizovskis, 1992).

Secinājumi
Conclusions

Zināšanas ir informācijas kopums, kas pieder kādam subjektam, informācijas nesējam. Patiesas zināšanas ir izjustas zināšanas, skolēna personības līmenī integrētas zināšanas. Patiesas zināšanas veidojas uz mūžīgās harmonijas

likumiem, kuras ir strukturētas, uztur pasaules veselumu un neizslēdz garīgo dabu. Metazināšanas ir garīgais zināšanu slānis, tā ir jutekliskā pieredze, kur informācija ir kopā ar izjūtām. Raksturojot zināšanas fiziskā realitātē, lieto vienkāršus jēdzienus: zināšanas, domāšana, process, bet nosaucot lietas no garīgās realitātes lieto jēdzienus- metazināšanas, metadomāšana, metaprocess.

Zināšanu struktūra nosaka zināšanu kvalitāti. Jo vairāk zināšanas nāk no pieredzes, jo tās vairāk paplašinās un pāriet no apakšējām struktūrām uz augšējām un iegūst citu dabu. Kad zināšanas ir plašas, tad lietas, notikumus var skatīt no dažādiem skatupunktiem un sākt visās zinātnēs pielietot šo teoriju.

Izglītības sistēma darbojas ar zināšanām, kuras skolēniem sniedz mūžīgo patiesību un iepazīstina ar nemainīgo pasaulē. Zināšanu nodošanas metodes nomaina konceptuāla domāšana un mācību satura integrēšana, refleksija un dialogs, attieksmes un spēju attīstība, pašvērtējums un pašnovērtēšanas pieredzes attīstība. Mācību saturam jāaptver dažādi zināšanu veidi, lai zināšanas un metazināšanas būtu savstarpēji saistītas, tiktu mācītas kompleksi un dažādās sasaistēs.

Mācību satura atlasē būtiski priekšnoteikumi: lai apgūtās zināšanas aptvertu dažādu zināšanu jomu zinātņu pamatus; lai saturs aptvertu dažādus zināšanu veidus; lai saturs būtu mūsdienīgs (atbilstu jaunajai zinātnes paradigmai); lai saturs balstītos uz visjaunākajiem zinātnes sasniegumiem visā Visumā; lai saturs būtu personalizēts un atbilstu skolēna interesēm, spējām un vajadzībām; lai saturs balstītos daudzveidīgos kontekstos, lai saturā iekļautu patieso Zemes cilvēces un Metavisuma cilvēces vēsturi un Visuma uzbūvi; lai saturā būtu iestrādāts Vernadska un citu zinātnieku pierādījums par dzīvi kā kosmisku parādību. Mācību programmām jābūt personalizētām un kontekstuālām.

Kompleksi un ar vienotiem spēkiem jāizveido vienota platforma vienotas mācību sistēmas izveidē, kura balstās: uz stingru zinātnisku pamatojumu, ievērojot mūsdienu zinātnes paradigmu; uz katra skolēna unikālo struktūru; uz katra skolēna spējām, interesēm, vajadzībām un viņa attīstības un darbības vidi. Visas mācības jāapvieno vienotā zinātnē, nevis mācot diskrēti katru zinātni. Nepieciešama hologrāfisku principu ievērošana- no katra Visuma punkta var iegūt informāciju par veselo, vienota hologrāfiska struktūra gan no augšas uz apakšu, gan no apakšas uz augšu. Ar visu zinātņu saistītiem jēdzieniem, terminiem un kopīgu metodoloģiju to izskaidrot, izmantojot matemātikas un dabas zinātņu saturu.

Summary

Knowledge is a set of information that belongs to a subject, a medium. True knowledge is formed on the laws of eternal harmony, which are structured, maintain the integrity of the world, and do not exclude spiritual nature. Meta-knowledge is the spiritual layer of knowledge, it is a sensual experience where information is accompanied by feelings.

The knowledge structure determines the quality of knowledge. The more knowledge comes from experience, the more it expands and transitions from lower to upper structures and acquires a different nature.

The education system works with knowledge that gives students eternal truth and introduces the unchanging to the world. Methods of knowledge transfer are replaced by conceptual thinking and integration of learning content, reflection and dialogue, development of attitudes and abilities, self-assessment and development of self-assessment experience. The curriculum should cover different types of knowledge so that knowledge and meta-knowledge are interconnected, taught in a complex way and in different ways.

Essential prerequisites for the selection of study content: that the acquired knowledge covers the basics of sciences of different fields of knowledge; so that the content covers different types of knowledge; to keep the content up-to-date; that the content be based on the latest scientific developments throughout the universe; that the content is personalized and meets the interests, abilities and needs of the student; that the content be based on a variety of contexts, to incorporate into the content the true history of humanity on Earth and Meta-universe, and the structure of the universe; to incorporate in the content Vernadsky's proof of life as a cosmic phenomenon. Curricula should be personalized and contextual

A common platform for the creation of a common learning system must be created in a complex and united way, based on: a solid scientific basis, observing the modern paradigm of science; to the unique structure of each student; on each student's abilities, interests, needs and environment of his / her development and activity. All teachings should be combined in a single science, not by teaching each science discreetly. It is necessary to follow holographic principles- from each point of the universe one can get information about the whole, unified holographic structure both from the top to the bottom and from the bottom to the top. Explain the concepts, terms and common methodology related to all sciences using the content of mathematics and natural sciences.

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ASSESSMENT STRATEGIES TO PROMOTE STUDENTS` LEARNING PROGRESS

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Abstract. *The article highlights the topicality of assessment in the context of promoting learning achievements and students` self-efficacy. The aim of the article is to analyze the sources of literature and stimulate scientific discussion about strategies for assessing students' learning achievements and individual progress, which provide opportunities to develop each student's potential by improving cognitive activity and learning outcomes. The authors of the article analyse the perspectives of assessment of the learning process, systematize theoretical findings on the basic principles and methods of learning assessment improvement, identify and describe the pedagogical potential of diverse assessment strategies.*
Keywords: *assessment, assessment methods, assessment strategy, learning, student.*

Introduction

There is a rapid reorientation of learning approaches from the reproductive approach to the transformative approach to pedagogical process, which is rightly actualized by the introduction of competence-based learning. Special attention is paid to strategies for assessing students` achievements and progress. Focusing on the competence approach, the change of emphasis in the assessment system has become especially topical: from assessment in grades to assessment of knowledge, skills and also competences in various learning situations. However, it is important to find an answer: how to implement the performance evaluation of students with different learning needs and interests in the practical pedagogical process, increasing self-effectiveness of students' own learning and promoting the development of curiosity and motivation.

Regulations of the Cabinet of Ministers of Latvia (November 27, 2018) No. 747 on lower secondary education standards and programs emphasize the topicality of outcome-based methods in the assessment process and the need to adapt assessment to the learning needs of each student, as well as specifies the forms of assessment: formative, diagnostic and summative assessment (Ministru Kabinets, 2018). Scriven (1967) has defined terms: formative and summative

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assessment, emphasizing the difference in purpose of these two types of assessment. Summative assessment refers to the student's achievement over a period of time, mainly in the form of tests or exams, while formative assessment is an assessment of students` progress, which is not revealed in grades. Formative assessment promotes cognitive processes, e.g. thinking, knowing, remembering, problem solving, etc. Cognition is not only an information processing process at the individual level, but it is one of the essential mechanisms of psychological development, which promotes and integrates cognitive abilities and thinking; develops problem-solving skills; strengthens analysis and synthesis; facilitates process comparison and evaluation. It should be noted that it is formative assessment that contributes the most to metacognition. Noushad (2008) points out that metacognitive skills combine knowledge and control over thought processes, which in the context of modern education becomes a sustainable basis for personal growth.

The information obtained in the evaluation process is can also be reflected in its documentation, which becomes a productive basis for further planning and implementation of pedagogical activities. The result of summative assessment is a score in points or a grade, which usually expresses a certain quality that is strictly regulated. In turn, formative assessment recording is more flexible and diverse, because facts and pedagogical findings can be documented by expressing them with percentages or points, as well as by providing verbal descriptions according to the levels, etc. Although some of the information obtained in the assessment process is documented, assessment also includes discussions between teachers and students, observations, peer reviews and exchange of views in a variety of situations: these are very important assessment techniques and methods that quite often are not being documented at all.

Assessment is a complex process that takes place in daily pedagogical work, in a close cooperation between students and teachers, assessing the uniqueness of each student and choosing the most appropriate assessment methods. Each child is unique with individual learning needs. Therefore, the need for vertical direction in the development and improvement of assessment strategy should be emphasized: it should start with each student, class, school, moving towards the improvement of the education system at the regional and national level.

The Organization for Economic Co-operation and Development (OECD) study “Assessment for Learning. Formative Assessment” (OECD/CERI, 2008) emphasizes that information on students' learning outcomes in the assessment process is primarily obtained by the teacher from each student and at the class level, choosing the most effective teaching methods and approaches according to the identified learning needs. At school level, school authorities use the data

collected by each teacher on learning progress and needs to identify strengths and weaknesses at the school level. This is a way how strategies for improving the learning process should be developed. The information is used to develop the national education policy strategies in order to determine general education priorities (OECD/CERI, 2008, 4).

The aim of the article: is to analyse the sources of literature and stimulate scientific discussion about strategies for assessing student`s individual learning progress and needs, which provide opportunities to develop each student's potential by improving cognitive activity and curiosity.

Based on the analysis of the scientific literature, the publication updates and describes the assessment process as an essential part of the learning process, as well as systematizes and describes the preconditions for the implementation of assessment strategies in pedagogical work.

Basic Principles on the Improvement of Assessment Strategies

Regulations of the Cabinet of Ministers of Latvia No. 747 define the basic principles of assessment of students' learning achievements. These are: the principle of systematicity; the principle of openness and clarity; the principle of methodological diversity; the principle of inclusion and the principle of growth. The mentioned principles emphasize the need for a regular and substantiated set of assessment activities in a certain order related to planned results to be achieved and performance evaluation criteria known and understood by the student (Ministru Kabinets, 2018).

Clark (2008) emphasizes understanding of the possibilities of improving one's performance and awareness of the goal as the basic principle of evaluation.

Researchers of The Assessment Reform Group (Broadfoot, Dougherty, Gardner, James, Stobart) emphasize assessment as the process of seeking and interpreting evidence used by both: teachers and students to find out to what extent students have mastered the content of the curriculum, where they need to move forward and the best way to get there (The Assessment Reform Group, 2002, 2). Researchers from The Assessment Reform Group have also identified 10 evaluation principles, which are:

- assessment is a part of effective planning of the learning process;
- the focus of assessment is students` learning;
- assessment is the most important part of the lesson;
- assessing students' growth/progress is the most important skill in teachers' professional development;
- assessment promotes motivation;

- assessment promotes student's commitment to learning as well as goal setting;
- assessment helps to identify opportunities for improving the learning process;
- students' self-assessment becomes an integral part of the daily learning process;
- assessment helps to be aware of learning progress;
- positive emotional background is important in the assessment process (The Assessment Reform Group, 2002, 2).

Fisher (2005) emphasizes the influence of emotions on the assessment process. He describes the impact of the assessment process on emotions and the learning process in general: "the idea that it is necessary to ignore the emotional side of life in the learning process is wrong. (..). Children do not have to be turned into insensitive robots that know the price of everything and the value of nothing. Thinking does not flourish in emotional emptiness. (..) Human behaviour is based on various emotions, feelings and passions. We, as well as children, must get rid not of emotions and feelings, but of prejudices and irrational emotions and opinions. The strongest motivation to learn and the development of intelligence are provided by the connection of common sense and emotions" (Fisher, 2005).

Positive emotions, e.g. joy of cognition, promote learning environment in which students are not afraid to leave comfort zones without risking being uncertain about possible negative consequences (Sarasin, 2006). Therefore, it is necessary to avoid any assessment processes with negative emotional background (e.g., fear of underestimation), which highlights the necessity to reduce the emphasis on the importance of summative assessment.

It is essential that not only students and teachers, but also parents accept a shift in emphasis in their attitudes towards assessment, from focusing on assessment in grades (summative assessment) to the assessment of learning progress and awareness of learning needs (formative assessment). The 'creation of an open classroom culture' is the result of this change in attitudes and views. It is a process when students are encouraged to be aware of their personal cognitive growth and the next steps to the achievement of their learning goals (OECD/CERI, 2008, 6), which includes openness to collaboration, exchange of ideas and continuous identification of learning needs. Such assessment promotes thinking skills, personality development, lifelong learning and mutual understanding. It is more important to focus on improving the learning process for particular student and all class in general than identifying particular learning outcomes expressed in grade in the assessment process (Bennett, 2011; Black & Wiliam, 1998).

Perspectives of Evaluation Strategies and Their Characteristics

James (2014) emphasizes three assessment perspectives: technical (I), humanistic (II), and interactionist perspective (human interaction with the environment) (III) (James 2014, 158). The technical perspective (I) is characterized by its validity and the reliability of the data gathered in the assessment process. The humanistic perspective (II) emphasizes the constant variability of the student's learning needs and the applicability of the specific assessment to the student's current learning process, as well as highlights the need for the changing an assessment strategy as soon as it is needed. The interactionist perspective (III) promotes the collective thinking and decision-making of the involved in the learning process, bearing in mind the diversity of interpretation possibilities.

In order to apply the most appropriate assessment methods and techniques to a particular student or class as a whole, all perspectives of assessment must be taken into account, as well as the data gathered during assessment; its interpretation possibilities and effective use of the data in the process of improving students' learning progress. Therefore O'Sullivan & Burce (2014) emphasize the need to develop an assessment strategy that can be used not only to assess knowledge and skills, but also to assess students' competences transferring good practice (O'Sullivan & Burce, 2014).

The study “Assessment for Learning. Formative Assessment” carried out by The Organization for Economic Co-operation and Development (OECD) and The Centre for Educational Research (CERI) highlights that in order to improve students` learning, it is vital to use different assessment methods according to students' learning needs, as well as appropriate use of assessment methods to assess students' understanding (OECD/CERI, 2008, 6).

Nagowah, S. & Nagowah, L. (2009) emphasize that assessment is a strategy aimed at improving students` performance and the key benefits of the assessment process are systematic and regular evidence about learning gathered. The teacher can develop an assessment strategy for each student and the class as a whole, assessing students' learning styles and needs, offering different assessment methods and thus gathering diverse evidence of learning outcomes as a result of assessment (Nagowah, S. & Nagowah, L., 2009). While Pietersen (2010) emphasizes that strategy is a set of choices.

An assessment strategy is a set of choices for both the teacher and the student that becomes a part of learning and is constantly leading towards improving the quality of learning. The qualities of successful assessment strategy are: critical evaluation of the learning process, reduction of fragmentation in the assessment process and promotion of thinking about the benefits of learning in a very complex world (Barnett, 2000).

After analysis of theoretical resources (Barnett, 2000, Nagowah, S. & Nagowah, L., 2009; Fisher, 2005; OECD/CERI, 2008), it can be concluded that

the use of a variety of assessment methods are needed for the development of an effective assessment strategy.

Each student`s learning performanc is different, for example, in written tests, the student's performance might be excellent, but the assessment of the same student's oral performance may be insufficient due to a lack of presentation skills. One student can perfectly remember the correct concrete answers to already prepared questions, but in the real life situations this knowledge may not be applied (Nagowah, S. & Nagowah, L., 2009). Therefore individual assessment methods should be offered to the students who are unable to demonstrate their knowledge and skills in the particular tests or tasks, transferring learning and assessment to new real life situations (OECD/CERI, 2008, 11). Fisher (2005) emphasizes that the disadvantage of some methods in the learning process is that students are hardly given an idea of their learning progress, thus students are not aware of their performance. Nagowah S. & Nagowah, L., (2009) highlights the methods, which can be successfully implemented in the assessment process (see table No.1).

Table 1 ***Description of Learning Activities and Assessment Methods***
(Nagowah & Nagowah, 2009)

Assessment method	Teaching / learning activities
Conference	There is an exchange of views between the participants, awareness of the learning outcomes.
Essay	Students analyze, synthesize, and critically evaluate information.
Interview	Conversation with the student, finding out his/her understanding of the topic or the problem. The motivation of a student can also be revealed during the interview.
Learning logs	Students made records of their learning outcomes: discoveries, acquired knowledge, skills and competencies.
Observations	Systematic observation of students in the learning process in different contexts (e.g. face-to-face and online learning), obtaining information on students' learning needs, learning styles, interests and attitudes.
Questions	The answers largely reveal to what extent students have understood the subject matter. Asking questions also promotes idea generation and problem solving skills.
Students' self - evaluation	Self-assessment is a process in which students gather information about their personal learning progress and reflect on it. The student assesses not only his/her knowledge and skills, but also their attitude towards learning.
Tasks for assessment competence	Within the framework of such tasks, students work creatively; apply the knowledge and skills acquired in the learning process in solving real life problems. Such tasks provide students and teachers with important information not only about the learning process, but also about its most important results.

Logins (2018) emphasizes the need to create an e-portfolio (electronic collection of learning evidence), which is especially relevant in the distance learning process.

For any assessment strategies to be applied in the learning process, students should be encouraged to ask themselves questions, finding out: "What information do I need?; Where are the errors/mistakes? or Which facts are missing?. It is also important to evaluate the result of the learning progress (Fisher, 2005, 163). Schmittou (2020) is convinced that assessment cannot be divided only into summative or formative evaluation categories. He emphasizes that the only assessment criteria is a high quality and "unfortunately, too often teachers offer a universal assessment tool for all students". He highlights that learning is a cyclical process in which the teacher's task is to assess both: the student's learning needs and progress (Schmittou, 2020, 4). There can be other types of assessment defined:

- subjective assessment - Gates (2016) expresses confidence in the effectiveness of subjective assessment in promoting student creativity. Subjective assessment can be implemented if the specific appropriate correct answer/answers are not defined in the task. Such tasks are: essays, presentations, various creative works;
- objective assessment - the student is offered tasks in which answer options have already been provided. In turn, the student chooses the most appropriate answer;
- an 'open book assessment' can be implemented if students can use their notes (done in the lessons) or other sources of information during the test. Students' critical thinking skills and information skills are important for such tests. This type of assessment also reduces the level of anxiety for students, as well as promotes students' learning during the test as well;
- long-term assessment involves the assessment of a set of activities or tasks over a longer period (for example, a month or a semester) rather than at the end of a particular topic. Students receive feedback on their performance over a period of time. In turn, teachers can analyze the effectiveness of teaching materials and evaluate the effectiveness of students' learning strategies;
- oral performance assessment can be done as a part of a student's presentation or oral answers. It aims to assess the students' presentation and communication skills;
- process assessment: students` performance is assessed in a variety of learning activities, while result assessment emphasizes the assessment of learning outcomes (Nagowah, S. & Nagowah,L., 2009, 12-19).

Conclusions

The purpose of students` assessment is to identify their learning needs and progress to define further learning goals. Information on each student`s and the whole class` learning outcomes in the assessment process is primarily assessed by the teacher, choosing the most effective teaching methods and assessment strategy types based on identifying strengths and learning needs of the students at the school level for the further development of regional and national education policy strategy as well.

Assessment of students learning performance takes place not only in everyday learning situations at school and purposefully planned tests, but also within various forms of assessment, including writing essays, participating in conferences, making observations, through interviews, asking questions, in the real life situations, etc. There are different forms of documenting learning progress as well, e.g. in 'learning journals' or e-portfolios, etc.

Students' positive emotions, e.g. joy and satisfaction, is one of the basic conditions and operating principles of the learning process. They contribute to personal growth, productivity of the assessment process and its impact on the learning process as a whole. Thus, it is necessary to avoid any negative emotions, for example, fear of some unproductive assessment, which can even stop learning. The development of positive emotions towards learning in the process can be facilitated by changing the attitudes of students, teachers and parents towards assessment: from focusing on assessment in grades to focusing on learning progress and awareness of needs and their further development.

An assessment strategy is an important unit of a teacher's pedagogical activity. It includes a set of assessment methods and types of choices to promote the course of the process. An assessment strategy is a regular set of assessment activities based on learning outcomes, in which evidence is found and interpreted, giving both teachers and students an understanding of the interrelationships and opportunities for improvement in teaching and learning performance.

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THE EFFECTIVENESS OF ZUMBA KIDS IMPLEMENTATION INTO PHYSICAL EDUCATION OF ELEMENTARY SCHOOL PUPILS

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Abstract. *The demand to improve physical education process of elementary school pupils by the tools of innovative dancing fitness branch – Zumba Kids is described in the article. Positive changes in dynamics among children have occurred in indicators of functional and physical preparation in conditions of the experiment. The goal of the work is the optimization process of physical education of elementary school pupils by Zumba Kids tools. There were investigated children's physical development, functional and physical preparation and experimentally was checked the effectiveness of the implementation program of Zumba Kids tolls into process of physical education. There were 54 participants, 26 among them are boys and 28 are girls (the children's age is 9 years old). The methods of the research are theoretical analysis and literature sources generalization; physiological research methods; pedagogical observation (passing of control standards); pedagogical experiment and mathematical statistics methods. There are presented and scientifically justified the program of implementing Zumba Kids tools into physical education lessons of elementary school pupils. The content of the program consists of the synthesis of energetic modern dances with aerobics, fitness exercises, stretching and also exercises for breathing exercises and muscle relaxation. The elaborated program is realized in the educational process and proved its effectiveness. The results of investigation have shown its positive influence on the functional and physical preparation of elementary school pupils. It was proved by mathematical statistics methods.*
Keywords: *elementary school pupils, physical education, Zumba kids.*

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Introduction

In conditions of reforming of education system in Ukraine rises the issue of changing of physical education, beginnings from younger school age. The basis of health, comprehensive physical preparation and harmonized physical development are forming in this age (Bulatova & Usachov, 2008).

The optimization of physical education of elementary school pupils connected as with strategical task to improve education quality, so with low indicators of health, motor activity and motivation towards physical education classes. In accordance with this, the need to make few corrections into the content, physical education organization of younger pupils and into improvement of educational process, applying innovative tools of motor activity become pretty obvious.

One of possible ways to improve physical education of elementary school pupils is to elaborate and apply innovative technologies. Particularly, it is the implementation of different fitness types into the system of school physical education, that would promote renovation of physical education classes for younger pupils.

There have been appearing fitness technologies in the physical education practice in last years, that are recommended to implement into physical education of younger school age pupils as far as they are oriented to increase physical preparation level, interest towards physical education trainings, they promote physical development, health healing, prevention of different illnesses, forming of personality culture and picture about healthy lifestyle (Starchenko, 2014). Some aspects of theoretical and methodologic implementation of innovative fitness programs into educational process of preschoolers and pupils are shown in the domestic and foreign scientists' works (Hawley & Franks, 2000; Weinberg & Gould, 2003; Zhdanova, Chekhovska, & Bakhovskiy, 2016).

The authors (Chuprun, 2018; Domene, Moir Pummell, & Easton, 2016; Perez, Robinson, & Herlong, 2011) have determined the innovative fitness version – Zumba Fitness, created on the basis of popular Latina and other international dance styles. General rhythms and changeable tempos of Zumba Fitness allow to heal musculoskeletal system, cardiovascular, breathing and nervous human systems. It helps to increase level of motor skills and to prevent different illnesses. Emotionality of Zumba fitness is explained not only by music that creates positive mood but also by the desire to follow movements of group participants, the opportunity to demonstrate well-developed movements, to get satisfaction from lessons, that emotionally inspire and raise interest towards classes.

There were defined different variations of Zumba Fitness by scientists (Chuprun, 2018; Domene et al., 2016). These variations are Zumba Basis

(classic) – for youth and adult people; Zumba Gold – for old people, exercises are characterized by low intensity and decreased tempo; Zumba Sentao – exercises performed sitting on the chair; Zumba Toning – performed with dumbbells; Zumba Kids – for 4-12 years old children; Aqua Zumba – exercises performed in water.

Zumba Kids lessons are quite different from classes with adults according to its intensity, load volume, the set of dancing elements and music rhythm. The program content has choreography and dance basics, skipping difficult connection and extra sharp movements.

However, the analysis of literature sources states that the question of implementing Zumba Kids into physical education is not investigated enough by domestic scientists, as far as we have noticed lack of detailed researches and methodic developments according to the issue. That is why, we believe, that implementation of Zumba Kids program into physical education lessons for younger pupils is a relevant problematic.

The goal of the work is the optimization process of physical education of elementary school pupils by Zumba Kids tools.

Materials and Methods

The research was performed during the period 2018-2019 years. The level of physical development, functional and physical preparation of children has been investigated in the work and experimentally proved the effectiveness of Zumba Kids program in physical education. The experiment was taken by 54 kids in total, among them are 26 boys and 28 girls. The age of all kids in the beginning of the experiment was 9 years old.

In order to reach the goals such **methods of research** were used:

- theoretical analysis and generalization of literature sources;
- physiologic research methods (to determine cardio-respiratory level of children's functional condition: the pulse of real calm (beats/minute) – measure in sitting position in 10 seconds; pulse of relative calm (beats/minute) – measure right after standing up; the difference in pulse; keeping breath during breathing in (sec) – Stange test; keeping breath during breathing out (sec) – Genchi test;
- pedagogical observation after difficult orientation norms (30 m run, sit-ups test in 30 sec, long jump from place, sit and reach test, shuttle run 4 x 9 m). The norms passing is performed during physical education lessons in school. The results are written down into protocols;
- pedagogical experiment;

- mathematical statistics methods.

Results of Research

The traditional system of physical education become less effective in the questions of health healing, increasing level of pupils' productiveness and requires to update in structure and content.

The implementation of innovative types of motor activity, in particular fitness programs into physical education lessons, promote optimization and modernization of physical education in the educational establishments. Innovative lessons of physical education lessons can increase its emotional component, general and motor intensity of lessons. In the result, the general effectiveness of studying is going to increase as well.

In order to realize the investigating idea, the most attractive, interesting and emotional dancing fitness program Zumba Kids was chosen. It is based on Latina and world modern rhythms. The basis of this direction of aerobic loading are rhythmic movements, that are performed under the music, simplified version of salsa, merengue, cumbia and reggaeton (with mamba, rumba, flamenco and calypso elements). During Zumba Kids is supposed to perform special set of exercises (mini fitness dancing), elaborated specially for all muscle groups. In case of multiple repeat with different rhythms, there appear muscle load and increase of indicators of functional condition and physical preparation. The important specifics of such program is the situation that music rhythm is changing consistently, that is why organism gets load of different level of intensity, without exhausting of central nervous system (Zhdanova, Chekhovska, & Bakhovskiy, 2016).

It worth mentioning that Zumba Kids lessons are quite simplified, comparing with classic Zumba sessions and characterized with lower intensity and load volume, including different choreographic and dancing exercises, that are adapted to specifics of children's organism, skipping difficult connections and sharp movements.

The program is elaborated for 3 months (36 lessons) and is divided into 2 stages: preparation (6 lessons – 4 weeks) and main (30 lessons – 10 weeks).

The task of the preparation stage is to get children acquainted with different definitions of Zumba Kids; teach them to perform basic movements, steps, counts, that are performed under musical accompaniment and to teach sustain realized interest towards physical exercises.

The task of the main stage is to improve level of physical development, functional and physical children's preparation applying Zumba Kids lessons, that consist of choreographic and dancing exercises. Its intensity is regulated by music accompaniment, that is directed on strengthen of musculoskeletal system, cardiovascular and breathing system, on improvement of physical preparation

level, applying Zumba Kids lessons, that facilitate power development, flexibility, endurance and skills coordination.

The program consists of the mix of energetic modern dances connected with aerobics and fitness exercises. Major muscle groups, especially lower body part were loaded during the lessons. There also has been corrected children's posture. A lot of attention was dedicated towards strengthening of muscular corset, whose function is holding the spine. Accordingly, the performing of complex of exercises, that are directed on the development of core muscle (abdominal press) and back power, was provided by the program. The music component consists of rhythms from Latin America, India, Argentina, Spain, Africa and popular worlds' hits. Each lesson includes three parts: *preparation part* of the lesson is about using of dancing movements under music accompaniment in due to prepare the body before the main part of the lesson and also to prevent posture problems. The music tempo in the preparation part is mostly moderate (60-90 music accents/minute). *The main part* of the lesson includes 2 blocks: learning of new dancing elements and dancing part (the very dancing), that consists of 3 fitness dances, that are learning and improved each month. Dancing movements are accompanied with different music temps: slow (40-60 music accents/minute), average (90-120 music accents/minute) and high (fast) (130-160 music accents/ minute). This was directed on forming motor skills, rhythm feeling, increase of the level of physical development, functional and physical preparation. *The closing part* includes stretching and exercises to restore breath and relax muscles. The music tempo in the closing part is generally slow (40-60 music accents/minute).

The effectiveness checkup of the program Zumba kids is performed on the basis of comparison of stated and forming research stages.

Table 1 ***Indicators of functioning of cardiovascular system of pupils from control and experimental groups***

№	Indicators	Before the experiment		After the experiment		p
		CG	EG	KG	EG	
1.	Pulse in sitting positions(beats/minute)	88,7	88,2	86,8	84,0	$p \leq 0,05$
2.	Pulse in standing position(beats/minute)	103,5	103,1	99,6	96,5	$p \leq 0,05$
3.	The pulse difference (beats/minute)	14,8	14,9	12,8	12,5	$p \geq 0,05$
4.	Stange test (sec)	20,4	20,3	23,2	26,4	$p \leq 0,05$
5.	Genchi test (sec)	10,2	9,9	11,6	13,5	$p \leq 0,05$

(n=54)

There was determined the influence of proposed program on the improvement of functional and physical preparation in the process of the experiment. There was performed general checkup of the results of forming experiment and determined the reliability of given data.

The high level of statistical relevance (in the range from $p \leq 0,05$ to 0,01) characterize changes of indicators of cardiovascular system (Table 1).

It also worth mentioning that that all indicators of cardiovascular system have improved among children from the EG and CG, that is explained by children's body biological development. The difference between pulse in sitting position and standing has improved, but its indicator is not reliable ($p \geq 0,05$). It represents natural specifics of 9-years old children. All other indicators got reliable improvements of the result in the experimental group ($p \leq 0,05$). Thus, the results of pulse in sitting position has improved among children from the EG by 4,2 beats/minute and in the CG by 1,9 beats/minute; pulse in standing position by 6,6 beats/minute and 3,9 beats/minute respectively.

The pulse improvement among children from the EG is due to as physiologic children's body development so implementation a huge volume of choreographic and dancing exercises under different variations of music tempos into physical education lessons. It has actual positive influence on cardiovascular and breathing system. The significant improvement of the results in the experiments group with its reliable difference with the control group ($p \leq 0,05$) is observed in the Genchi and Stange tests. The result among pupils from the experimental group in the Stange test has increased by 6,1 sec and in Genchi test by 3,6 sec. In the same time, the analogic test among children from the control group has shown that improvement reaches 2,8 sec and 1,4 sec respectively.

Table 2 **The indicators of physical preparation of students from control and experimental groups**

Indicators	Before the experiment		After the experiment		p
	CG	EG	CG	EG	
30 m run (sec)	6,51	6,48	6,34	5,61	$p \leq 0,05$
Long jump from place (cm)	98,1	98,7	106,2	117,5	$p \leq 0,05$
Sit-ups in 30 sec. (number of times)	13,6	13,7	16,0	25,4	$p \leq 0,05$
Sit and reach (cm)	7,8	7,9	8,3	14,1	$p \leq 0,05$
Shuttle sun 4x9m (sec)	12,13	12,18	11,94	10,63	$p \leq 0,05$

(n=54)

The comparative analysis of the dynamics of physical preparation of children form 4th experimental and control group allows to determine high level of reliability $p<0,05$ (Table 2).

The digest increase in results has shown 9-years-old children in the speed development that is characterized by test exercise “30 m run” and agility in “Shuttle run 4 x 9m”. Thus, in the test exercise “30 m run” the indicator has increased from 6,51 sec to 6,34 sec. However, we have noticed more significant increase among children from the EG – from 6.48 sec to 5,61 sec. The indicator in the test exercise “Shuttle run 4 x 9m” among pupils from the CG has increased from 12,13 sec to 11,94 sec and among pupils from the EG – from 12,18 sec to 10,63 sec. Such improvement of results among children from the EG was resulted by the implementation of a significant number of dancing exercises into classes. The big groups of muscles of lower body part was loaded during these dancing exercises.

The increase in results was occurred also in the test exercise “Sit-ups”. Thus, in the CG the indicator has increased from 13,6 times to 16,0 times. From the contrary, in the EG we have noticed more significant increase in result, particularly from 13,7 times to 25,4 times. Such major improvement of results among children from the EG was caused by purposeful implementation of special fitness exercises into classes. These exercises are directed on forming of muscular corset with purpose to prevent and to correct posture defects.

The indicator in the test exercise “Sit and reach” has significantly grown among pupils from the EG – from 7,9 cm to 14,1 cm. The improvement of these indicators was resulted by implementation of stretching and exercises to relax muscles into the closing part of lessons. However, no significant changes have been found out among pupils from the CG.

The analysis of result, we have got, allows to determine that indicator change of coordination, speed skills and flexibility among pupils from the EG, comparing with pupils from the CG, are characterized with high level of statistical reliability ($p<0,05$). It proves previous scientists researches (Krutsevych, 2016; Moskalenko, 2018; Pangelova, 2017) about sensitive period of development of such qualities among pupils of this age.

The significant increase in results got pupils from the CG and the EG in the development of body muscles that is characterized by test exercise “Body lifting from lying position”. In our opinion, such fact is due to the situation that all exercises are included in the school program from physical education, as required exercises and primary education teachers give enough attention towards it during the physical education lessons and in home tasks. However, the increase among pupils from the EG was more intense that prove the reliability of results difference among pupils from the CG and the EG that reflects Student’s t-criteria $p<0,05$. The common tendency is noticed in the test exercise “Long jump from place” in favor to the EG.

To conclude, after the experiment the difference between indicators among pupils from the EG and the CG was as follows: 30 m run – 0,7 sec; body slope

from sitting position – 5,7 cm; long jump from place – 10,7 cm; shuttle run 4 x 9m – 1,36 sec; body lifting from the lying position – in 9,3 times. Those children, studying according to the experimental program have shown reliably higher results ($p<0,05$) in all types of challenges, comparing to the control group.

Discussion

The development of modern physical education is characterized with education modernization, its transformation with the goal to increase effectiveness on the basis of applying of new types of motor activity (Beliak, Grybovska, & Muzyka 2018; Bulatova & Usachov, 2008; Starchenko, 2014). The main task of specialists is to determine modern approach towards studying process. In other words, the goal is to implement innovative tools of physical education and implement them into classes (Bodnar, Rymar, Solovey, & Datskiv, 2015; Khouli & Frenke, 2004; Sorokolit, Shyan, Lukjanchenko, & Turchyk, 2017).

The optimization of physical education classes can be observed through the implementation of dancing and fitness program Zumba Kids, that will promote as renovation of physical education classes, so will promote health healing, increase of the level of functional and physical preparation.

The results of our research were confirmed and supplemented by scientists' well-known developments from this particular sphere (Bodnar, 2016; Moskalenko, 2018; Pangelova, 2017; Starchenko, 2014; Zhdanova et al., 2016).

In the result of implementation of author program, including Zumba Kids, has credibly improved indicators of functional preparation of younger pupils in the experimental group. The results we have got prove the positive impact of the elaborated methodic.

We have observed the improvement in the indicators of physical preparation in experimental and control groups after the experiment that is a consequence of biological development of children's organism (Bodnarchuk, Rymar, & Solovey, 2018; Butenko, Goncharova, & Saienko, 2017; Sarkauskiene, Noble, & Kardeliene, 2019) and directed pedagogical influence.

The implementation of Zumba Kids into physical education is promote improvement of agility, speed, power-speed and flexibility indicators. It is proved by much higher results of physical preparation among pupils from the experimental group.

Thus, our author program that includes Zumba Kids in the physical education lessons allows to solve the whole variety of tasks from physical education with younger-school-age pupils. In particular, it is about health healing, providing of balanced body development, improvement of functional

indicators, increase of level of physical preparation, including favorable periods of the development of physical qualities and increase of the interest level towards lessons of motor activity.

Conclusion

The performing of the pedagogical experiment from the implementation into practice author program, applying Zumba Kids allows to make conclusions about its benefits, comparing with traditional program. The positive changes of indicators among pupils from the EG have more significant character, comparing with indicators among pupils from the CG.

The checkup of the effectiveness of experimental-investigation work has shown positive influence of suggested methodic according facilitating of functional preparation of younger pupils. We have noticed that after the experiment such positive changes have occurred in indicators of cardiovascular system activity among pupils from the EG: indicators of heart rate have decreased by 4,76-6,40%, Stange tests results have increased by 30,50%; Genchi tests by 36,36%.

The dynamics of physical preparation indicators among the EG pupils is heterochronous in due to general biologic patterns of growth and development of children's body (Bodnar, Petryshyn, Solovey, & Rymar, 2016; Krutsevych & Bezverhniya, 2010; Moskalenko, 2009). The highest increase in results occurred in development of coordination an speed skills among younger pupils. The change of dynamics of these indicators among pupils from the EG, comparing with pupils from the CG is characterized by high level of statistical reliability ($p<0,05$).

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ОТКРЫТЫЕ ПРАКТИКО-ОРИЕНТИРОВАННЫЕ ЗАДАЧИ КАК ИНСТРУМЕНТ РАЗВИТИЯ ИНФОРМАЦИОННОЙ ГРАМОТНОСТИ МЛАДШИХ ШКОЛЬНИКОВ

Open Practice-Oriented Tasks as a Tool for the Development of Information Literacy of Primary School Children

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Abstract. *The article deals with the actual problem of organizing the educational process aimed at developing information literacy in schoolchildren when studying mathematics at one of the most difficult stages of learning - at the stage of transition from primary to basic school. This paper describes some areas of information literacy development in primary school students; the analysis of the main groups of actions, with the help of which the ability of younger students to work with mathematical information can be formed; describes the results of the performance by younger students of a set of tasks aimed at the formation of information literacy based on the work of students with open practice-oriented tasks. The empirical experience of using the proposed methodology and the analysis of the results obtained made it possible to obtain data on the level of mastery of information literacy by younger students.*
Keywords: *Information literacy, open-ended tasks, practice-oriented tasks.*

Введение
Introduction

Актуальность проблемы, рассматриваемой в настоящей статье, обусловлена тем, что развитие в современном обществе информационных технологий, использование цифровых технологий на всех ступенях образования, значительно расширило спектр видов деятельности обучающихся по сравнению с традиционной технологией обучения. Перед педагогической наукой и образовательной практикой ставится задача организации образовательного процесса в условиях применения информационно-коммуникационных образовательных технологий.

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Кроме того, среди основных метапредметных результатов начального образования Федеральный государственный образовательный стандарт начального общего образования выделяет такие универсальные учебные действия, как «использование различных способов поиска, сбора, обработки, анализа, организации, передачи и интерпретации информации…» (FGOS NOO, 2015; 9)

Вышесказанное говорит об актуальности рассмотрения методического оснащения процесса формирования умения учащихся работать с информацией в начальной школе в условиях расширившегося информационного пространства, разработки технологий по раскрытию образовательных возможностей информационной социализации младших школьников, развития информационной грамотности обучающихся.

Решение стоящей задачи развития у младших школьников информационной грамотности связано с такой организацией учебного процесса, при которой особое внимание уделяется обучению учащихся работе с текстом, направленной на понимающее усвоение его содержания.

Цель статьи заключается в теоретическом описании преимуществ использования технологии практико-ориентированного обучения при изучении математического содержания с целью развития у младших школьников информационной грамотности и эмпирическом осмыслении педагогического опыта реализации данной технологии в образовательной деятельности начальной школы.

В статье представлены материалы, полученные с помощью теоретического анализа литературных источников, стандартизированного наблюдения за образовательной деятельностью младших школьников и педагогического эксперимента.

Теоретическая основа темы
The Theoretical Background

Теоретико-методологическую основу использования технологии практико-ориентированного обучения как одного из средств развития информационной грамотности младших школьников составили: исследования в области формирования информационной грамотности обучающихся; концепция практико-ориентированного обучения; исследования, касающиеся изучению работы школьников с учебным текстом.

Смысловую основу понятия «информационная грамотность» составляет понятие «грамотность». До начала 80-х гг. XX в. грамотность понималась как умение читать и писать. С 80-х гг. XX в. расширяется содержание понятия «грамотность». Словарь С. Ожегова определяет

понятие «грамотный» как «1. Умеющий читать и писать, а также умеющий писать грамматически правильно. 2. Обладающий необходимыми знаниями, сведениями в какой-либо области. 3. Выполненный без ошибок, со знанием дела» (Ozhegov & Shvedova,1999).

В конце XX века в педагогике появился термин «новая грамотность». Д.Букингем подчёркивал: «чтобы понимать важные аспекты нашего мира, необходимо новое определение грамотности, определение, которое не привязано к конкретным технологиям или практике, но, скорее, позволяет нам увидеть компетенции, которые необходимы при овладении всеми аспектами культуры и коммуникации» (Buckingham, 1993).

В рамках исследования представляет интерес понятие «мультимодальная грамотность». Р.Карчмер дает следующую трактовку данного понятия: «мультимодальная грамотность подразумевает использование многочисленных моделей передачи какого-либо сообщения. Текст, аудио, графика, видео − примеры цифровых медиа, которые могут быть объединены в мультимодальном сообщении» (Karchmer & Shinas, 2017). Е.Гетманская и М.Токарева трактуют мультимодальную грамотность как «совокупность средств, позволяющих не только воспроизводить, но и создавать собственный информационный образовательный продукт, который объединяет в себе статическую (текст, графику), динамическую (анимацию, музыку, видеофрагменты) визуализацию учебной информации» (Getmanskaya & Tokareva, 2019).

Осмысление литературных источников позволило рассматривать информационную грамотность как «понятие, «включающее содержание, связанное не только с медиаграмотностью, с использованием современных информационных средств. Информационная грамотность включает и умение работать с реальными печатными источниками, произведениями искусства, этнической и национальной культурой, историческими документами» (Vinogradova, 2017).

Поисковый этап экспериментальной работы, включающий стандартизированное наблюдение за включенностью младших школьников в различные виды информационной деятельности в рамках урока математики в начальной школе, позволил сделать вывод о наличии у младших школьников проблем в понимании содержания информационных текстов, что согласуется с позицией ученых (Fullan & Langworthy, 2014; Fullan, 2014; Lompscher, 1999; Martin & Mullis, 2013; Zuckerman, Kovaleva & Kuznetsova, 2011): «наибольший дефицит в понимании информационных текстов был обнаружен в базисных читательских умениях извлекать из текста информацию, сообщенную в явном виде, и делать на ее основе простейшие умозаключения» (Zuckerman, Kovaleva & Kuznetsova, 2011; 127). О подобных трудностях

говорит в своих исследованиях М.Кузнецова: «Основные трудности учащихся связаны с неумением связывать имеющиеся у них знания с прочитанным тестом, определять совпадение и несовпадение этих знаний…» (Kuznecova, 2017).

Проведенное теоретическое исследование выявило причины, затрудняющие развитие информационной грамотности школьников при работе с математическим текстом – формальный характер математической информации; наличие в тексте знаковой символики; отсутствие связи изучаемого материала с окружающей ученика действительностью; отсутствие мотивации чтения; отсутствие интересной, образной информации; однообразие изложения информации в тексте; отсутствие навыков работы с текстовой информацией (Sergeeva, 2018).

В этой связи возникает закономерный вопрос о необходимости разработки методического обеспечения учебного процесса, направленного на развитие информационной грамотности младшего школьника, формирующего познавательный интерес и любознательность учащихся, включающего интересную для школьников «жизненную» информацию.

Мы полагаем, что воспитание информационно грамотного ученика начинается уже в начальной школе с обучение его находить необходимую информацию, прежде всего, в «бумажных» источниках – в тексте учебника, учебных пособиях, тетрадях, словарях; с формирования умения читать и понимать информацию, заложенную в тексте; с умения заполнять таблицу, диаграмму на основе полученных из текста сведений.

Обоснуем возможность использования специальным образом сконструированных открытых практико-ориентированных задач с целью развития у младших школьников информационной грамотности.

1. В методической литературе приводится обоснование использования в начальной школе текстовых сюжетных задач с целью обучения младших школьников применению математических знаний в практических ситуациях. Однако для школьников решение однообразных арифметических задач превращается в трудный, неинтересный процесс. Решение данной проблемы – включение в программу обучения математике практико-ориентированных задач. В.Сериков (Serikov, 1999) определяет практико-ориентированные задачи как задачи, направленные на «простейшие практические потребности человека». В рамках нашего исследования важна выделенная автором особенность задачных ситуаций практико-ориентированных задач – в ней должна быть представлена не придуманная автором, учителем учебная ситуация, основанная на непроверенных данных, а более «целостная жизненная коллизия», сюжет и числовые данные в которых имеют реальную основу. И. Шапиро (Shapiro, 1990) в качестве одного из требований к практико-

ориентированной задаче называл реальность описываемой в условии задачи ситуации, числовых значений данных.

2. Важной в проблематике нашего исследования является мысль, высказанная в работе «Содержание математического образования в контексте формирования функциональной математической грамотности» (Roslova & Bachurina, 2019) о том, что появление в тексте задачи дополнительной, «лишней» для ответа на вопрос, информации, необходимость рассмотрения различных вариантов формулировки вопросов задачи, резко снижает долю тех, кто успешно справляется с решением задачи. Решение данной проблемы – включение в процесс обучения «открытых» задач. Е.Галиулина (Galiullina, 2003) под «открытостью» задачи понимает «размытость» ее условия, приводящую к многовариантности решения, возможность изменения формулировки условия (перечня данных или вопроса), а также с неопределенность метода решения. О целесообразности использования открытых задач пишет А.Гин: «Использовать в обучении открытые задачи; не только давать знания, но еще и показывать их границы; сталкивать ученика с проблемами, решения которых лежат за пределами изучаемого курса…В школе решают «закрытые» задачи (из пункта А в пункт В.…). А какие задачи ставит перед человеком жизнь? Открытые задачи! Имеющие достаточно размытое, допускающее варианты условие …, разные пути решения» (Gin, 2013).

3. Сюжеты практико-ориентированных задач, создаваемые в целях развития информационной грамотности младших школьников, должны быть социально ориентированными.

Исследователи, занимающиеся решением проблемы формирования функциональной грамотности школьников, формулируют тезис, что формирование соответствующих умений нельзя сводить к решению исключительно бытовых проблем (Jablonka, 2003), важным является включение в содержание сюжетных историй, связанных с культурой, искусством, историей для формирования любознательности, познавательного интереса младших школьников.

4. Для более активного включения школьника в работу с информацией (ее поиск, отбор, представление, применение) целесообразно предлагать школьникам так называемые комплексные задания: наличие одного сюжета и вопросов к этому сюжету, которые могут относиться к разным темам курса математики, и даже к различным учебным дисциплинам; задания, требующие отбора данных для ответа на поставленный вопрос; вопросов, вязанных с необходимостью поиска информации в различных источниках для решения поставленной задачи. Примеры таких заданий в пособии для школьников (Hoffer, Leinwand, & Musser, 1991). Как доказал

Итан Бромберг-Мартин, сам поиск информации является для мозга наградой: «мозг побуждает сам себя искать новые стимулы и собирать информацию» (Bromberg-Martin & Hikosaka, 2009).

5. Конструирование открытых практико-ориентированных задач предполагает также возможность включения ученика в процесс выбора формы представления информации – таблица, схема, текст и др., использование цифровых технологий в работе над информационным текстом.

На данном этапе логика научного изложения ориентирует нас на разработку методических материалов, включающих открытые практико-ориентированные задачи, способствующих развитию информационной грамотности младших школьников.

Методы и организация исследования
Methodology and Organization of the Research

Эмпирическая часть исследования заключается в презентации разработанных методических материалов, включающих систему открытых практико-ориентированных задач; анализа результатов проведенной в образовательной деятельности начальной школы апробации предложенных материалов с целью доказательства эффективности использования открытых практико-ориентированных задач для развития информационной грамотности младших школьников.

На основе анализа учебных планов, рабочих программ по математике было разработано содержание и методическая составляющая формирования информационной грамотности учащихся 4 класса с использованием открытых практико-ориентированных задач. Приведем типологию используемых в экспериментальной работе задач.

1. Найти в тексте (в тексте задачи) информацию (числовую, познавательную) для ответа на поставленный вопрос.
2. Восстановить текст (текст задачи), используя информацию в таблице, тексте, на схеме и на диаграмме.
3. Восстановить текст (текст задачи), найдя информацию в учебнике, словаре, энциклопедии, в интернете.
4. Ответить на вопрос, выбрав необходимые числовые данные в тексте условия задачи.
5. Ответить на вопрос, найдя недостающую информацию в учебнике, книге, в интернете.
6. К предлагаемому тексту сформулировать вопрос, используя числовые данные, «подсказанные» учителем.

7. К предлагаемому тексту сформулировать вопросы, выделив для этого необходимые числовые данные в тексте.
8. Заполнить таблицу, построить диаграмму, используя информацию в тексте.
9. Используя информацию в таблице (диаграмме), сформулировать условие и вопрос задачи.

Приведет примеры задач, предлагаемых учащимся в ходе экспериментальной работы.

1. «В 1757 г. купец Иван Федоров сын Руманинов, сын известных по купчей 1761 г.Федора и Анны, купил у бывшего купца, «объезжика» Псковской пограничной таможни, Григория Андреева сына Поклонного тяглое безоброчное белое место с яблоневым садом по соседству с принадлежавшим ему двором «…в Ботановой улице идучи от Петровской дороги от ц. Покрова Богородицы что у Торгу на левой стороне…» Вдоль улицы по направлению к реке Пскове длина купленного участка составляла 8 саж. 1/2 арш., а по противоположной стороне – 9саж. 2 арш., в длину со стороны двора покупателя – 11 саж. 2 арш., а по противоположной стороне – 17 саж. 1 и 1/2 арш.» (Pskov, 2004).

Каков периметр двора, купленного купцом Иваном Федоровым в 1757.г.? Подчеркни числовые данные, необходимые для ответа на вопрос задачи. Какие слова в тексте задачи тебе неизвестны? Подчеркни их. В каких источниках можно найти значение этих слов? Что тебя заинтересовало в тексте? Можно ли отметить место двора на современной карте Пскова?

Для ответа на поставленный вопрос необходимо использовать информации из истории (Кто такие объезжики? Что такое купчая? Что такое «тяглое безоброчное место»? Сколько метров (сантиметров) составляет сажень? Аршин?).

2. «Школьное образование Псковской губернии в начале XX века было представлено различными типами учебных заведений, главное место среди которых занимали министерские и земские школы (в 1901 году – 610 школ) и церковно-приходские (363 школы). Помимо их существовали несколько школ грамоты, 10 лютеранских школ, свыше 20 еврейских хедеров и небольшое количество частных школ. Всего в 1901 году в губернии действовало 1050 школ, в которых обучалось около 55 тыс. учащихся и работало 1329 учителей.

В течение 10 лет (1902-1911) в губернии было открыто 380 новых школ, главным образом усилиями земства. Ряд уездных земств выдвинуло довольно смелую по тем временам идею о введении всеобщего обучения. Главная трудность ее осуществления заключалась в недостатке помещений. В этих условиях предполагалось максимально использовать

наемные здания. Поэтому в 1911 году 2/3 всех земских школ размещались в наемных помещениях». (Pskovskie hroniki, 2001; 129 - 130).

Сформулируй вопросы, задания к тексту. Выбери в тексте числовые данные и сформулируй арифметическую задачу. Найди в тексте слова и словосочетания, значение которых ты не знаешь. Найди значение выделенных слов.

3. Составь диаграмму на основе приведенных данных. Сформулируй на основе представленных данных арифметические задачи.

Динамика роста заработной платы учителей Псковской губернии (Pskovskie hroniki, 2001: 1923/1924 – 204р; 1924/1925 – 336р; 1925-1926 – 384р; 1926/1927 – 444р; 1927-1928 – 526р).

4. «Псковичи любили свой театр. Об этом говорит большое количество зрителей, посещавших его. В 1898 году количество зрителей составило 31 тысячу, в следующем – около 50 тысяч, а в 1900 году – более 61 тысячи. Летом 1902года Народный театр принял 79510 зрителей, из которых на «галерке» смотрело спектакли около ____ тыс. человек, в два раза больше, чем в партере. Театр был массовым, если учесть, что население Пскова насчитывало немногим более 30 тыс. человек». (Pskovskij kraj v istorii Rossi, 2001).

Сформулируй вопросы и задания к тексту. Выбери 2 числовых данных и сформулируй задачу. Что тебя удивило в тексте? Какая информация о Народном театре тебе известна? В каком году открыт Народный театр? Найди информацию о постановках Народного театра этого периода, кто из известных актеров играл на сцене театра?

С целью проверки эффективности разработанных методических материалов мы обратились к эмпирическому исследованию.

Результаты эмпирического исследования
The Results of Empirical Research

Целью эмпирического исследования было показать возможность и целесообразность использования с целью формирования информационной грамотности младших школьников открытых комплексных практико-ориентированных задач.

Был определен диагностический инструментарий для определения уровня сформированности информационной грамотности младших школьников.

Для оценки уровня сформированности информационной грамотности учащимся на констатирующем и контрольном этапах эксперимента было предложено комплексное задание: естественно-научный текст и 4 задания, при выполнении которых оценивалось:

- ✓ умение школьников находить в тексте необходимую информацию, числовые данные для ответа на поставленный вопрос;
- ✓ формулировать вопросы к тексту;
- ✓ находить недостающую информацию в различных источниках – учебниках, словарях, справочниках, энциклопедиях, в интернете;
- ✓ свертывать информацию и представлять ее в виде диаграмм, таблиц.

Результаты диагностики информационной грамотности младших школьников структурированы по трем основным уровням: высокий, средний, низкий.

Разработанные диагностические материалы позволили выявить уровни сформированности информационной грамотности у учащихся 4-го класса МБОУ "Средняя общеобразовательная школа №12 имени Героя России А.Ю. Ширяева» на начало и конец проведения экспериментальной работы. Количественные результаты представим в таблице 1.

Таблица 1. ***Результаты диагностирования уровней сформированности информационной грамотности***
Table 1 ***The Results of Diagnosing Information Literacy Levels***

Уровни	Экспериментальная группа (29 учащихся)	
	До ОЭР	После ОЭР
Низкий уровень	62,1%	17,2%
Средний уровень	27,6%	55,2%
Высокий уровень	10,3 %	27,6%

Анализ результатов диагностики позволил выявить положительную динамику формирования у младших школьников информационных умений: существенно снизился процент учащихся, имеющих низкий уровень сформированности информационной грамотности, – с 62,1% до 17,2%. Количество обучающихся, уровень информационной грамотности которых может быть охарактеризован как средний, возрос с 27,6% до 55,2%; количество обучающихся, имеющих высокий уровень информационной грамотности, возросло с 10,3% до 27,6%.

Для статистической обработки результатов исследования был применен непараметрический критерий знаков. Соотнесение экспериментальных данных с таблицей критических значений позволяет принять альтернативную гипотезу, что свидетельствует о достоверности результатов исследования.

Качественный анализ результатов проведенной экспериментальной работы показал рост самостоятельности обучающихся в работе с учебными

текстам: способность младших школьников самостоятельно формулировать вопросы к тексту (ученики формулировали до 6 вопросов по содержанию представленных текстов, в среднем 2 - 3 арифметические задачи); находить необходимые для ответа на вопрос данные, находить в тексте неизвестную информацию, что говорит о понимающем усвоении информации школьниками; находить информационные источники (справочники, энциклопедии, интернет-источники) и извлекать необходимую информацию.

В целом следует говорить о том, что процесс формирования информационной грамотности младших школьников с использованием открытых практико-ориентированных задач продуктивен.

Обобщение
Conclusions

Проведенное исследование позволило сделать следующие выводы.

Решению задачи формирования у обучающихся начальной школы информационной грамотности будет содействовать включение в учебный процесс решения открытых практико-ориентированных задач. Реализация в практике обучения методики использования открытых практико-ориентированных задач поможет сформировать у младших школьников информационные умения отбирать источники необходимой информации, «извлекать» информацию, представленную в математическом тексте, математической формуле; в таблице, графике, на диаграмме; оценивать соответствие сведений поставленной учебной задаче; формулировать тексты на математическом и естественном языке на основе полученной информации; представлять информацию в доступной форме – в виде таблицы, схемы, чертежа, кластера; использовать полученные сведения для решения как учебных задач, так и задач, возникающих в повседневной жизни.

Согласно цели исследования была разработана система открытых практико-ориентированных задач, выделена методическая составляющая использования задач с целью формирования информационной грамотности младших школьников.

Результаты проведенного исследования показали положительное влияние включения открытых практико-ориентированных задач в образовательный процесс начальной школы на формирование информационной грамотности обучающихся.

Summary

In the context of the informatization of society, one of the urgent problems of modern education is the organization of the educational process aimed at developing information literacy of students. The foregoing determined the relevance of the development of didactic support of the educational process, aimed at developing information literacy of younger students, which includes a methodological apparatus and specially organized educational tasks.

Theoretical comprehension of psychological, pedagogical and scientific-methodological literature made it possible to formulate a position in the use of open practice-oriented problems in mathematics lessons in primary school in order to develop students' information literacy. The main topics for the development of practice-oriented tasks were selected, texts of historical content were selected, questions and tasks for each text were formulated, a methodological apparatus was developed for including the developed open practice-oriented tasks into the lesson.

The results of the study showed a positive effect of the use of open practice-oriented tasks in the educational process of primary school on the development of information literacy of younger students.

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ИЗУЧЕНИЕ ЭМОЦИОНАЛЬНОГО КОМПОНЕНТА ЦЕННОСТНОГО ОТНОШЕНИЯ МЛАДШИХ ШКОЛЬНИКОВ К ЭКОЛОГИЧЕСКИМ СИТУАЦИЯМ РЕГИОНА

Study of the Emotional Component of Primary School Children Value Attitude to Ecological Situations of the Region

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Abstract. *Unfavorable forecasts of environmental scientists regarding environmental changes actualize the problem of environmental values importance in the process of children upbringing.*
The article theoretically substantiates that emotions caused by perception of ecological situations of their region leave unconscious "imprints" in the child's life and therefore can serve as a psychological foundation for the formation of these values in primary school children. For children of primary school age, when they assess environmental situations, circumstances, events they encounter in their lives, the emotional reaction often outstrips the cognitive one, reflects the personal meaning, value attitude of a child towards them.
The aim of the article is to study the emotional component of primary school children' value attitude to the ecological situation of his region in order to introduce core value of "ecological safety" into his/her system of values.
The study was based on the analysis of philosophical, psychological and pedagogical literary sources, testing, interviewing primary school children and pedagogical experiment.
Managing the emotional development of primary schoolchildren can significantly change their value attitude to nature. Under conditions of the experiment, 61% of children began to realize their need for vigorous activity, and 17% of junior schoolchildren became psychologically ready for joint environmental protection activities.
Keywords: *attitude, emotions, environmental safety, primary schoolchild, core values, value attitude.*

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Введение
Introduction

Актуальность исследования данной проблемы обусловлена тем, что Федеральный государственный образовательный стандарт начального общего образования в России ставит задачу формирования у младших школьников «готовности к социальному взаимодействию в отношении улучшения экологического качества окружающей среды, устойчивого развития экологического благополучия территории страны как в общем аспекте, так и региона, в частности» (Prikaz Ministerstva obrazovaniya i nauki RF ot 6 oktyabrya 2009 g., 2009). Психологические исследования показали, что безошибочным индикатором истинного отношения человека к происходящему являются его эмоции, которые «энергетизируют и организуют восприятие, мышление и действие» (Izard, 1991, p. 105).

Выше сказанное выступает обоснованием актуальности настоящей статьи, цель которой состоит в изучении эмоционального компонента ценностного отношения ребенка к экологическим ситуациям своего региона, чтобы иметь возможность педагогически воздействовать на его систему ценностей, а именно, ввести в неё такую терминальную ценность как «экологическая безопасность».

Проведенное исследование основывалось на анализе философских, психологических и педагогических литературных источников, тестировании, интервьюировании младших школьников и педагогическом эксперименте.

Базой для экспериментального исследования выступили обучающиеся 3 классов МБОУ «Средняя общеобразовательная школа №23 с углубленным изучением английского языка» г. Пскова и МБОУ СОШ №24 им. М.Б. Раковского г. Липецка.

Теоретическая основа темы
The Theoretical Background

Теоретико-методологической основой исследования являются аксиологический подход, взгляды на систему ценностей М.Рокича (Rokich, 1973), В.Виндельбанда (Windelband, 1995) и Г.Риккерта (Rickert,1926); положения Дж.Леду (LeDoux, 1998) и Е.П.Ильина (Ilyin, 2001) о роли эмоций в воспитании, работы К.Изарда (Izard, 1991) и А.Я.Чебыкина (Chebykin,1991), в которых исследуются вопросы распознавания эмоций по экспрессивным (поведенческим) признакам и субъективным признакам, отражающим мотивационные, смысловые, энергетические характеристики эмоциональных переживаний.

Результаты теоретического исследования
The Results of Theoretical Research

Достижение поставленной цели исследования и логика изложения его результатов потребовали от нас начать с дефиниции понятия «отношение», которое в настоящее время рассматривается как сложнейшая педагогическая категория.

Мы будем трактовать отношение, то есть внутреннюю позицию личности, как «личностно значимое отражение обучающимся себя самого» (Luzina, 2001, p.55), которое «не имеет прямой разовой и однолинейной формы своего выражения, оно либо проявляет себя в речах, либо в эмоциональных реакциях, либо в действиях, поступках» (Shchurkova, 2015, p.20).

В категории «отношение» доминирует значимая для субъекта направленность на объект. Смысловая характеристика отношения человека к тому или иному объекту, зафиксированная в его сознании, носит название «ценность».

Понятие «ценности» в научный оборот на рубеже XIX и XX вв. ввели немецкие философы В.Виндельбанд (Windelband, 1995) и Г.Риккерт (Rickert, 1926), которые трактовали их как общие принципы целесообразной деятельности, отталкиваясь от которых человек вообще приписывает тем или иным объектам как материального, так и духовного мира определенную значимость для него и принуждающую его действовать и вести себя определенным образом. Г.Риккерт подчеркивал: «О ценностях нельзя говорить, что они существуют или не существуют, но только что они значат (gelten) или не имеют значимости» (Rickert, 1926, p. 21).

Пользуясь в статье термином «ценностное отношение», мы понимаем под ним необходимый и всеобщий фактор жизнедеятельности человека, некую значимость, поскольку человек согласует свое поведение с «терминальными ценностями» (терминология М.Рокича), то есть «целями индивидуального существования, которые с личной точки зрения стоят того, чтобы к ним стремиться» (Rokich, 1973).

«Экологическая безопасность», являясь одной из терминальных ценностей, входит как в область здоровьесберегающих, так и природосберегающих ценностей, которые обусловливают сознательную, целенаправленную организацию жизнедеятельности человеческого сообщества с использованием коллективного разума и воли (на основе общечеловеческой морали).

Неблагоприятные прогнозы учёных экологов на изменения окружающей среды поднимают, говоря словами философа, проблему

«значимости» (Geltung) этой ценности (Rickert, 1926, p.21) в процессе воспитания детей.

По мнению академика Б.Т.Лихачева, именно младший школьный возраст наиболее сенситивен для экологических воздействий. «Дети не отделяют себя от внешней среды и ощущают себя естественной частью природы. Между детьми, животными и растениями устанавливается интуитивное взаимоощущение, взаимовосприятие, поэтому ребенок легко воспринимает и присваивает экологические правила, превращает их в часть своей натуры» (Likhachev, 2001, p.335).

Осознание обучающимися значимости экологической безопасности должно стать одной из целей воспитания, поскольку «меняются ценности - меняются нормы - меняются цели воспитания» (Nikandrov, 1997, p.9). Особенность воспитательных целей на современном этапе развития общества заключается в приобщении школьников к глобальным проблемам человечества, в том числе и экологическим, как основе раскрытия возможностей активного участия в их решении.

Приобщение учащихся начальной школы к экологическим проблемам, на наш взгляд, должно начинаться, во-первых, с экологических проблем их региона, во-вторых, с эмоционального усвоения важности экологической безопасности, под которой понимается «совокупность состояний, процессов и действий, обеспечивающих экологический баланс в окружающей среде и не приводящих к жизненно важным ущербам (или угрозам таких ущербов), наносимым природной среде и человеку» (Horuzhaya, 2002; Kozin & Petrovsky, 2005).

Достижение обозначенной воспитательной цели возможно в результате постоянно организуемого в образовательной деятельности оценивания младшими школьниками экологических ситуаций, обстоятельств, событий, с которыми они сталкиваются в своей жизни, оценивания собственного поведения в природе и поведения других.

Такая важная роль оценивания в воспитании объясняется тем, что оценка (Wertung), является психологическим актом, осуществляемым человеком, результатом которого является воспроизводство ценности и, выступая «в альтернативной форме одобрения или неодобрения...» (Windelband, 1995, p.42), содержит в себе как когнитивный, так и эмоциональный компоненты.

Когнитивная составляющая оценки экологических ситуаций имеет два показателя – сила воздействия и действенность. Если обучающийся оценивает ситуацию как «слабую», то считает её не заслуживающей его серьёзного внимания и - наоборот. Если экологическая ситуация оценивается школьником как «действенная», то у него возникает не только

желание обсуждать вопрос, но и принимать конкретные решения, проявлять активность, действовать.

Эмоциональный компонент оценки отражает личностный смысл, который имеют для младшего школьника воспринимаемые экологические ситуации, воссоздаёт ценностное отношение. Ребёнок «не столько рассуждает, сколько чувствует, и не столько объясняет, сколько оценивает. Когда же процессы когнитивного анализа и имеют место, то находятся под сильным и непрерывным влиянием эмоциональных факторов, вносящих свой вклад в их ход и результат» (Etkind,1981, p.107).

Итак, присвоение значимости экологической безопасности как терминальной ценности может осуществляться младшими школьниками на основе когнитивной оценки экологических проблем и связанных с ними эмоциональных переживаний. Причем, эмоциональная реакция часто опережает когнитивную, предшествуя рациональной, указывая на значимость данной ситуации или событий для ребёнка.

Данный теоретический вывод должен нацеливать педагогов на поиск эффективных способов реализации эмоциогенной функции ценностного отношения младших школьников к экологическим проблемам своего региона, так как «эмоциональные «уроки» могут запечатлеться у ребенка как бессознательные отпечатки его эмоциональной жизни» (LeDoux, 1998) и стать психологическим фундаментом терминальной ценности «экологическая безопасность».

Организация и результаты эмпирического исследования
Organization and Results of an Empirical Study

Цель эмпирической части исследования заключалась в изучении эмоционального восприятия младшими школьниками экологических ситуаций в условиях педагогического эксперимента. Эксперимент проходил в три этапа.

На констатирующем и контрольном этапах младшим школьникам экспериментального 3«Б» класса (f 20 учащихся) МБОУ «Средняя общеобразовательная школа №23 с углубленным изучением английского языка» г.Пскова и контрольного 3«А» класса (f 24 учащихся) школы № 24 им. М.Б.Раковского г.Липецка был предложен модифицированный нами (Solovyeva, 2019) тест Люшера, основанный на предположении о том, что выбор цвета, их сочетание и расположение отражает кратковременные переживания (эмоции), чувства и эмоциональные состояния человека (Luscher test, 1996, p. 13). Данный тест был выбран нами в связи с тем, что «свои и чужие эмоции и чувства слабо осознаются и понимаются детьми. … Исключение составляют базовые эмоции страха и радости, в отношении

которых у детей этого возраста уже имеются четкие представления, которые они могут выразить вербально» (Ilyin, 2001, p.40). Для понимания остальных эмоциональных состояний детей младшего школьного возраста нужны специальные средства, одним из которых и является методика Люшера.

На констатирующем так же, как и на контрольном, этапах опытно-экспериментальной работы детям поочередно предъявлялись по десять фотографий, отображающих как позитивные экологические обстоятельства, так и проблемы окрестностей города, с комментариями к ним (иными словами, ситуация предлагалась визуально и вербально).

Проиллюстрируем диагностические материалы двумя примерами.

Ситуация № 1. *Бобры живут только в чистой воде. Это однозначный вывод экологов. В грязной воде этот грызун жить не станет. На окраине города Пскове на реке Пскова в районе Любятово (улица. Н.Васильева) появились бобры, которые подпиливают деревья и делают из них плотины* (фото).

Ситуация № 2. *Выезжая летом на автотрассу Псков- Санкт-Петербург, в безветренную погоду вы можете обнаружить туман не только утром или вечером (в обычное время для этого природного явления), но и днём в солнечную погоду. Это фотохимический туман, состоящий не из капелек воды, а из продуктов химических реакций выхлопных газов автомобилей. Такой туман сразу вызывает одышку, головную боль, першение в горле и кашель. Важно знать, что он способен негативно отразиться на здоровье не сразу, а через несколько лет, вызывая рак* (фото).

Третьеклассники после восприятия каждой ситуации выбирали два цветных карандаша из следующего списка (красный, синий, зелёный, жёлтый, коричневый, серый, фиолетовый, чёрный) и закрашивали ими поделённый по диагонали небольшой прямоугольник. Обучающимся сообщалось, что они должны выбрать два цвета, соответствующие их чувствам, которые они испытывают, «мысленно помещая себя» в эту ситуацию.

Следуя методике Люшера, были использованы следующие показатели эмоционального отношения детей к экологическим ситуациям на основе сочетания цветов:

А) позитивная оценка ситуации без проявлений активности (*синий и зелёный, красный и синий, красный и жёлтый*);

В) негативная оценка ситуации без проявлений активности (*коричневый и жёлтый, синий и фиолетовый, синий и серый, синий и чёрный, зелёный и чёрный*);

С) оценка ситуации без осознания активности (*синий и красный, красный и чёрный, чёрный и синий*);

D) оценка ситуации с осознанием невозможности проявления активности (*зелёный и фиолетовый, жёлтый и серый, зелёный и коричневый, фиолетовый и зелёный, фиолетовый и красный*);

F) оценка ситуации с осознанием собственной активности (*жёлтый и зелёный, серый и коричневый, красный и зелёный, чёрный и коричневый*);

E) оценка ситуации с проявлением склонности к сотрудничеству, вплоть до коллаборатства, то есть совместной деятельности над одним проектом даже с конкурентом ради выгоды или общей пользы (*жёлтый и коричневый, фиолетовый и синий, коричневый и красный*) (Solovyeva, 2019, p.101-102).

В качестве дополнительного уточняющего диагностического метода использовалось интервьюирование младших школьников.

Объём статьи не позволяет представить качественный анализ результатов эмоционального восприятия испытуемыми десяти предъявляемых им ситуаций на каждом этапе эксперимента.

Для квалиметрической обработки (т.е. количественной оценки качества) полученных данных мы использовали приём шкалирования, содержание которого передано в Таблице 1.

Таблица 1. ***Шкалирование характеристик эмоциональных реакций на экологические ситуации***
Table 1 ***Scaling the Characteristics of Emotional Reactions to Environmental Situations***

Характеристика эмоциональной реакции на экологическую ситуацию	Количество баллов
Эмоциональная реакция на предъявленную экологическую ситуацию (позитивную или негативную) неадекватна	0 баллов
Эмоциональная реакция на предъявленную экологическую ситуацию (позитивную или негативную) адекватна, но без потребности в активности или её неосознанности (A, B, C)	1 балл
Эмоциональная реакция на предъявленную экологическую ситуацию (позитивную или негативную) адекватна, с осознанием невозможности проявления активности (D)	2 балла
Эмоциональная реакция на предъявленную экологическую ситуацию (позитивную или негативную) адекватна, с осознанием потребности в собственной активности (F)	3 балла
Эмоциональная реакция на предъявленную экологическую ситуацию (позитивную или негативную) адекватна, с осознанием потребности в совместной деятельности, вплоть до коллаборатства (E)	4 балла

По завершению контрольного этапа эксперимента, результаты тестирования младших школьников из экспериментальной группы были

проранжированы (см. таблица 2) и статистически обработаны с использованием непараметрического критерия знаков.

Таблица 2. ***Ранжирование результатов исследования эмоциональных реакций школьников на экологические ситуации***
Table 2. ***Ranking the Results of the Study of Emotional Reactions of Schoolchildren to Environmental Situations***

Ранг	Сумма баллов
I	40 - 33
II	32 - 25
III	24 - 17
IV	16 - 9
V	8 - 0

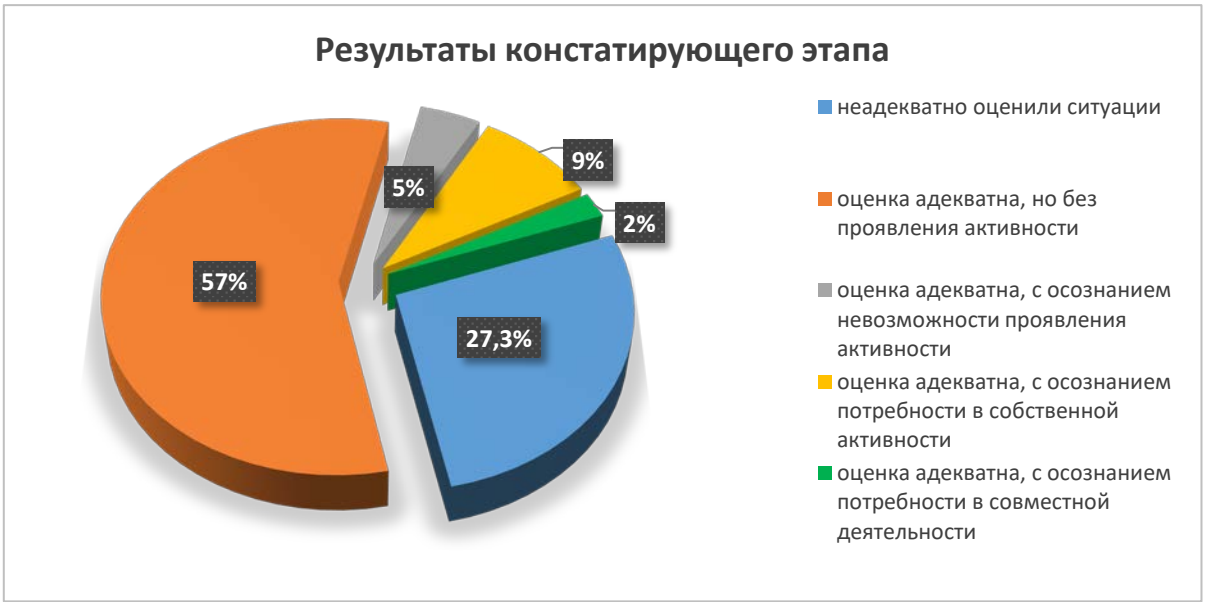

Рисунок 1. ***Диаграмма эмоциональных оценок экологических ситуаций на констатирующем этапе (экспериментальная и контрольная группы младших школьников)***
Figure 1 ***Diagram of emotional assessments of environmental situations at the ascertaining stage (experimental and control groups of younger students)***

Оказалось, что на констатирующем этапе экспериментальной работы (см. рис.1) 27,3% испытуемых третьеклассников из экспериментальной и контрольной групп эмоционально неадекватно оценивали предлагаемые им визуально и вербально экологические ситуации. Результаты диагностики показали, что большинство третьеклассников (56,8%) не испытывали потребности в активных действиях, несмотря на то, что у некоторых из них экологическая обстановка вызывала разочарование, беспокойство, страх.

4,54 % детей посчитали, что они никак не могут изменить или повлиять на сложившиеся в их регионе экологические ситуации. Немногие были готовы обсуждать их (9,09 %) или действовать совместно по их улучшению (2,27 %).

На формирующем этапе опытно-экспериментальной работы для учащихся экспериментальной группы был организован экологический квест. Во время прогулки по Летнему саду Пскова, по дендрарию, а также окрестностям Мирожского монастыря, дети, с помощью приёма «фотографии из будущего», (то есть рассматривая специально созданные фото тех мест, где они находились), визуально воспринимали «экологические беды», с которыми могут столкнуться жители Пскова, если «здесь и сейчас» останутся равнодушными к пагубному поведению окружающих их людей.

С помощью ряда игр (например, «Кто Я и что со мной случилось?», «Передай хрупкий предмет», «Вылечи нашу Землю», «Хорошо- плохо»), разгадывания экологических загадок и решения задач, разыгрывания психоролевых ситуаций во время проведения квеста реализовывалась эмоциогенная функция ценностного отношения детей к природе.

На формирующем этапе также была организована коллективная проектная деятельность третьеклассников. Продуктом её явился журнал «Экология Пскова», странички которого носили названия «Из интервью с Природой Пскова …», «Экологические мифы или правда?», «Вторая жизнь мусору!», «Хорошо бы …», «Я голосую за жизнь Пскова», «Экологический прогноз для жителей Цветочного города из сказки Н. Носова «Незнайка и его друзья» и другие.

Интерес представляет также групповой проект, выполненный третьеклассниками в условиях эксперимента, под названием «Не покупайте первоцветы! Я подарю вам их изображение». На завершающем этапе проекта третьеклассники (в присутствии родителей) предлагали потенциальным покупателям перелески благородной или печеночницы, ветреницы дубравной, ветреницы лютичной отказаться от покупки и принять в качестве подарка открытку, сделанную их руками, на которой было не только изображение и описание цветка, но и подобранные эмоционально трогательные стихи.

Параллельно с внеурочной деятельностью экологическим содержанием насыщались уроки курса «Окружающий мир» и «Математика». На уроках использовались методы «эмоционального взрыва», эмпатии, эмоционально-ценностных контрастов, акцентирования эмоций, приёмы фотосопровождения и звуко-музыкального сопровождения.

Результаты диагностирования учащихся экспериментального третьего класса на контрольном этапе (см. рис.2), с последующей статистической обработкой результатов с помощью Z-критерия, показали эффективность формирующего этапа педагогического эксперимента (при уровне значимости P=0,01).

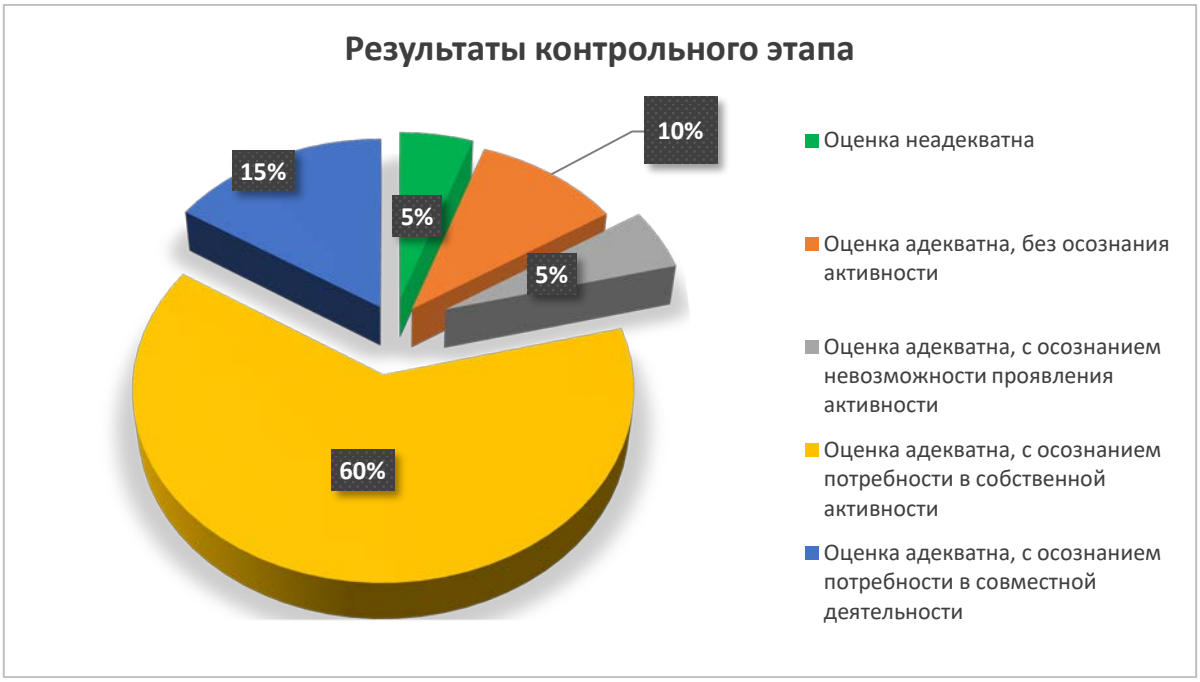

Рисунок 2. ***Диаграмма эмоциональных оценок экологических ситуаций на контрольном этапе (экспериментальная группа младших школьников)***
Figure 2 ***Diagram of Emotional Assessments of Environmental Situations at the Control Stage (Experimental Group of Younger Students)***

Как видно из рисунка 2, лишь у 5% детей экспериментального класса оценка предъявляемых им неблагоприятных экологических ситуаций осталась неадекватной (типа «*ну и что*?»). У 60% детей адекватные эмоциональные реакции уже стали сопровождаться осознанием своей потребности в активной деятельности («*надо что-то делать*»), а 15% младших школьников психологически стали готовы к совместной природоохранной деятельности. На контрольном этапе только 15% учащихся, адекватно реагируя на экологические ситуации, или не осознали потребность в собственной экологической активности, или считали её невозможной из-за возраста.

Обобщение
Conclusions

В системе ценностей младшего школьника должна иметь место такая терминальная ценность как «экологическая безопасность», являющаяся смысловой характеристикой его отношения к природе, зафиксированного в сознании ребёнка. Значимость для школьника этой ценности определяет его способность в дальнейшем спонтанно управлять своим поведением в природе.

Воспроизводство этой ценности для ребёнка может начать осуществляться сначала неосознанно, за счет эмоций при восприятии экологических ситуаций, сложившихся в его городе и регионе.

Эмоциональный компонент оценки опережает её когнитивный компонент и отражает личностный смысл, который имеют для младшего школьника воспринимаемые им экологические ситуации, воссоздаёт ценностное отношение ребёнка к природе.

Без специального управления эмоциональным развитием младших школьников, без «вызова на поверхность» их эмоций при восприятии экологических проблем, 56,8% учащихся начальных классов не испытывают потребности в активных действиях, несмотря на то, что у некоторых из них экологическая обстановка вызывает разочарование, беспокойство, страх. Очень немногие (9,09%) готовы обсуждать экологическое состояние региона, в котором они проживают, или действовать совместно (2,27 %) по его улучшению. 4,54% детей считают, что они в силу своего возраста ничего не могут изменить или как-то повлиять на неё.

Реализация в образовательной деятельности эмоциогенной функции ценностного отношения детей к природе позволяет изменить его (о чём свидетельствуют результаты, полученные в экспериментальной группе младших школьников). В отличие от учащихся контрольной группы, 60% детей стали осознавать свою потребность в активной деятельности, а 15% младших школьников психологически стали готовы к совместной природоохранной деятельности. Таким образом, для младших школьников постепенно становится значимой ценность «экологической безопасности».

Summary

In the value system of a primary school child, there should be such core value as "environmental safety", which is a semantic characteristic of his attitude to nature, fixed in the child's mind. The significance of this value for a schoolchild determines his/her ability to spontaneously control his/her environmental behavior in the future.

Reproduction of this value for a child can begin at first unconsciously, due to emotions when perceiving environmental situations that have developed in his city and region.

The emotional component of the assessment is ahead of its cognitive component and reflects personal meaning that environmental situations perceived by him/her have for a primary school child. It recreates child's value attitude to nature.

Without special management of primary school children emotional development, without "calling to the surface" their emotions caused by perception of environmental problems, 56,8% of primary school children do not feel the need for active action, despite the fact that for some of them the environmental situation causes disappointment, anxiety, fear. Very few (9,09%) are ready to discuss the ecological state of the region in which they live, or to act together (2,27 %) to improve it. 4,54% of children believe that, due to their age, they cannot change anything or somehow influence the situation.

Realization of emotiogenic function of children value attitude to nature in educational activity makes it possible to change their value attitude (as evidenced by the results obtained in the experimental group of primary schoolchildren). In contrast to the students in the reference group, 60% of children began to realize their need for vigorous activity, and 15% of primary schoolchildren became psychologically ready for joint environmental activities. Thus, the value of "environmental safety" is gradually becoming significant for primary school children.

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PAMATSKOLAS MATEMĀTIKAS SKOLOTĀJU METODISKĀS KOMPETENCES PAR PAŠVADĪTĀM MĀCĪBĀM PILNVEIDE LATVIJĀ

Improving Methodic Competence of Primary School Mathematics Teachers on Self-Directed Learning in Latvia

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Abstract. *From September 2020 schools in Latvia gradually started introducing mathematics curricula and approaches in accordance with the new standards of primary education. The changes aim to prepare a competent student who is ready for self-directed learning, who is able and willing to study and solve real problems of the changing world. A competent teacher is needed to manage this individualized learning process. The research aims to find out the typical mistakes and their causes in the results of the 9th grade students' mathematics exam in Latvia, to provide support to teachers for the improvement of methodic competence of self-directed learning. To clarify the situation about mathematics studies, researchers of Daugavpils University carried out an analysis of the results of the mathematics exam in the 9th grade in the years 2015-2019 (the exam did not take place in 2020). After assessing the quality of pupils' knowledge, we can judge for which mathematics topics teachers need methodic help in the self-directed learning process in primary school. In a survey of teachers in 2018 and 2020, we sought their views on the causes of 9th grade students' mathematics exam outcomes, problems in distance learning and suggestions for methodic assistance to teachers in implementing self-directed learning. In this article we give solutions in which directions the methodic competence of primary school mathematics teachers in studies and further education should be improved.*
Keywords: *learning outcomes, mathematical literacy, professional competence of the teacher, self-directed learning.*

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Ievads
Introduction

Eiropas Savienības dokumentos jaunai paaudzei tiek izvirzīta virkne jaunu akcentu: nepieciešamība risināt kompleksas problēmas un radīt jaunas zināšanas; prasība pēc jaunām prasmēm (piemēram, prasme nodrošināt visa veida efektīvu komunikāciju un strādāt gan komandā, gan patstāvīgi; prasmes darbam ar lielu informācijas apjomu tehnoloģijām bagātajā darba vidē); nepārtraukti uzturēt savas prasmes un kvalifikāciju, kā arī būt gatavam pārkvalificēties visa sava darba mūža garumā, u. c. (Organisation for Economic Co-operation and Development, 2017). Tas nozīmē dzīvot ar skatu nākotnē – adaptējoties jaunā vidē, dzīvot un realizēt sevi saskaņā ar sociālo, kultūras, ekonomisko un dabas vidi sev apkārt, prast radoši risināt krīzes situācijas, mācīties pašregulēti. Tiek uzskatīts (Schoenfeld, 1992), ka daudzveidīgu matemātikas uzdevumu risināšana veicina ikdienas dzīvē noderīgu prasmju apguvi. Izglītība ilgtspējīgai attīstībai izvirza prasības, kas rosina cilvēkus ar atbildību rīkoties ikdienas dzīvē, tam nepieciešami lietpratīgi, kompetenti skolotāji (Salīte, Drelinga, Iliško, Oļehnoviča, & Zariņa, 2016). Atbildību veicina arī pašvadītas mācības, kurām skolēni mērķtiecīgi sagatavojami.

2020. gada 1. septembrī Latvijā stājās spēkā pilnveidotais Pamatizglītības standarts, kuru sāk ieviest pamatizglītībā un vidusskolā: 1., 4., 7. un 10. klasēs. Jauno nostādņu īstenošanai matemātikas skolotājiem ir nepieciešami aktualizēt metodiskās novitātes skolēnu pašvadītu mācību atbalstam.

Pētījuma mērķis ir noskaidrot tipiskās kļūdas un to cēloņus 9. klašu skolēnu matemātikas eksāmena rezultātos Latvijā, lai sniegtu atbalstu skolotājiem metodiskās kompetences pilnveidei par pašvadītām mācībām.

Situācijas noskaidrošanai par matemātikas mācībām pamatskolā DU docētāji veica Latvijas skolēnu 9.klašu matemātikas eksāmena (9ME) rezultātu analīzi par laika posmu no 2015. līdz 2019. gadam. Datu analīze parādīja tendenci eksāmenu rezultātu lejupslīdei. Cēloņi nav atkarīgi tikai no skolotāja. Skolēns arī pats vada savu mācīšanās procesu. Tomēr joprojām mācībās būtiska loma ir skolotājam, kurš profesionāli organizē mācību procesu, digitālām prasmēm un labiem mācību un metodiskiem līdzekļiem. Pēc skolēnu zināšanu kvalitātes izvērtējuma varam spriest, kuru matemātikas tēmu apguvei arī pašvadītā mācību (PM) procesā pamatskolā skolotājiem nepieciešama metodiska palīdzība. Pētījumā, anketējot skolotājus 2018. un 2020. gadā, noskaidrojām viņu viedokļus par cēloņiem, kas ietekmē 9ME rezultātus, par problēmām attālinātās mācībās un priekšlikumus par skolotājiem nepieciešamo metodisko palīdzību skolēnu PM īstenošanā. Rakstā piedāvāti risinājumi, kādā virzienā pilnveidojamas pamatskolas matemātikas skolotāju metodiskā kompetence studijās un tālākizglītībā.

Literatūras apskats
Literature Review

Mūsdienīgā mācību procesā uzmanība veltāma ne tikai mācību satura apguvei, bet arī transversālām jeb caurviju prasmēm (problēmrisināšana, kritiska un radoša domāšana, pašvadīta mācīšanās, saziņa, sadarbība, digitālā pratība u. c.) (Goggin, Sheridan, Lárusdóttir, & Guðmundsdóttir, 2019; Langa, 2015). To akcentē arī jaunās pieejas izglītības reformā Latvijā. Autori piekrīt pētījumā (Anspoka & Kazaka, 2019) paustajam viedoklim, ka šīs reformas lielākais ieguvums varētu būt dažādu mācību priekšmetu skolotāju savstarpējās sadarbības uzlabošana, saskaņotu mācību programmu, kā arī mācību un metodisko līdzekļu izstrāde. Dažādi autori kompetenci definē atšķirīgi. Izglītības dokumentos lietpratību jeb kompetenci definē kā indivīda spēju "kompleksi lietot zināšanas, prasmes un paust attieksmes, risinot problēmas mainīgās dzīves situācijās" (Oliņa et al., 2018, p. 7). A. Špona zināšanas, prasmes, attieksmes papildina ar pašpieredzi, jo kompetence ir zināšanās balstītas prasmes, spēja darīt ar pozitīvu attieksmi, kas *rada pašpieredzi* (Špona, 2006). Pašpieredze veidojas pašmotivētā un pašvadītā darbībā.

Matemātikas mācību jomas apguves mērķis ir matemātiskā pratība, kuras sasniegšanas nozīmīgs priekšnoteikums ir PM. Tāpēc skolotāja darbība mācību procesā tiek vērsta uz metakognitīviem paņēmieniem (mācīt mācīties). Mācīt skolēnu pašu formulēt mērķi, novērtēt mācīšanos, dodot un pieņemot atgriezenisko saiti (AS) (Oliņa et al., 2018). Svarīgākais ieguvums no labām PM ir spēja pēc skolas beigšanas bez citu pamudinājuma pašam vadīt savu tālāko mācīšanos, apgūstot profesiju. Mūsdienu globalizācijas, digitalizācijas un negaidīto pārmaiņu laikmetā (piemēram, Covid-19 izraisītās pārmaiņas), PM aktualitāte pieaug. Tātad arī augstskolām ir jāiesaistās šajā procesā.

Skolotāja profesionālo kompetenci raksturo izglītības procesā iegūtā un uz zināšanām, pieredzi, vērtībām un attieksmēm balstītā spēju un pieredzes individuāla kombinācija, kas izpaužas prasmēs un gatavībā pedagoģiskajai darbībai (Maslo & Tiļļa, 2005). Var izdalīt četras skolotāju profesionālās kompetences: komunikatīvā, pašizziņas un izziņas vadības, metodiskā un organizatoriskā (Šteinberga & Kazāke, 2018; Selvi, 2010; Špona, 2006). Skolotāja profesionālās kompetences veidošanos ietekmē dažādi faktori: psiholoģiski, pedagoģiski, sociāli, vides resursi u.c. A.Šteinberga, definējot skolotāja kompetenci, kā pedagoģisko spēju komponenti, akcentē erudīciju, saskarsmes un sadarbības prasmi, prasmes mērķtiecīgi organizēt savu un citu darbību, kā arī augstu emocionālās inteliģences pakāpi (Šteinberga, 2013). Lai vadītu mācīšanos, nepieciešams analizēt un reflektēt (Oliņa et al., 2018), kā arī iesaistīties mācību programmu un mācību līdzekļu pilnveidē (Selvi, 2010; Helmke, 2009). Jaunu mācību materiālu matemātikā izveide un pilnveide tagad ir aktuāla Latvijā, sakarā ar PM attālināto mācību procesā.

Matemātikas skolotāja metodiskās kompetences pilnveidē matemātikas didaktikai jābūt izšķirošai sastāvdaļai (Niss, 2003). Apkopojot dažādo autoru viedokļus, izdalīsim trīs matemātikas skolotāja metodiskās kompetences par PM aspektus: profesionālo, pētniecisko un skolēnu sniegumu vērtēšanas kompetenci. ***Profesionālā kompetence*** ietver sevī pamatzināšanu, prasmju un sasniedzamā rezultāta definēšanu katrai matemātikas tēmai atbilstoši didaktikas un audzināšanas likumsakarībām (Mencis, 1993). ***Pētnieciskā kompetence*** ir saistīta ne tikai ar inovāciju radīšanu un īstenošanu praksē, bet arī ar metodiskās pieredzes veidošanu, risinot kompleksus matemātikas uzdevumus jaunās situācijās un kontekstā (Bohlmann & Benölken, 2020; Selvi, 2010). Skolēni sagatavojami jēgpilni un rūpīgi lietot matemātiskos instrumentus, veikt aprēķinus; apstrādāt datus; lietot figūru īpašības; spriest vispārīgi un matemātiski modelēt; problēmsituācijās izvēlties atbilstošu pieeju/ stratēģiju; apzināties pierādījuma nepieciešamību; veidot pamatotus spriedumus (Matemātika 1.–9. klasei, 2018). Skolēnu sniegumu ***vērtēšanas kompetence*** ietver refleksiju ne tikai par skolēna mācību rezultātu, bet arī par pašu procesu, izvirzīto mērķi, lai veiktu skolēna zināšanu un prasmju korekciju, iesaistot skolēnus savu mācību sasniegumu pašizvērtēšanā, AS gūšanai (Helmke, 2009; Krastiņa & Pipere, 2004).

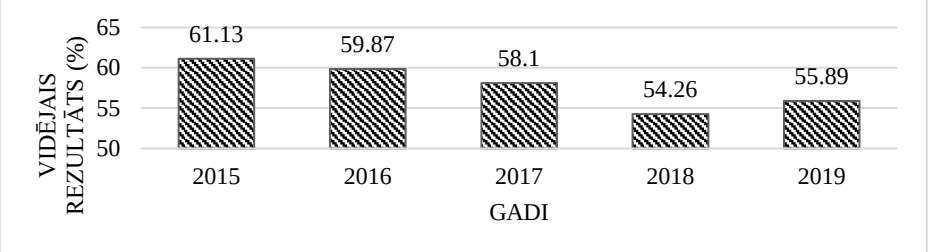
Profesors J.Mencis (sen.) īpaši akcentē mācību grāmatas ietekmi uz matemātikas mācību kvalitāti un skolēnu sasniegumiem (Mencis, 1993), grāmatas ir nozīmīgs palīgs skolēniem ceļā uz matemātikas lietpratību (Krastiņa, Sondore, & Drelinga, 2019). PM aktuāla digitālā pratība un prasme patstāvīgi strādāt ar dažādiem informācijas avotiem. Tas palīdz individualizēt matemātikas mācību procesu, piedāvājot dažāda līmeņa uzdevumus, atgādnes, paškontroles spēles u.tml.. Tiešsaistes mācīšanās ir inovāciju piemērs izglītībā (Serdyukov, 2017). Izglītības un Zinātnes ministrijas 2019./2020. mācību gada noslēguma aptaujas rezultāti liecina (Edurio, 2020), ka attālināto mācību procesa laikā Latvijā divi visvairāk izmantotie informācijas ieguves veidi bija- skatoties skolotāja prezentāciju vai video (52%), lasot digitālus vai ne-digitālus tekstus (49%). Skolotājiem (60%) visvairāk laika aizņem jauno mācību līdzekļu izstrāde un pielāgošana, AS sniegšana un darbu labošana (Edurio, 2020). Tiek izstrādāti navigācijas rīki, lai atbalstītu izglītojamos PM procesā, ņemot vērā skolēnu vēlmes un pašreizējo stāvokli mācībās, sniedzot norādījumus, kā orientēties liela apjoma mācību resursu vidē (Nussbaumer, Fruhman, & Albert, 2010). Tomēr skolotājiem ir izšķiroša ietekme efektīvai digitālo tehnoloģiju izmantošanai matemātikas PM procesā. Mūsdienīgā mācību procesā skolotājam nepieciešama pašrefleksija par vadītām mācību stundām, sava darba rezultātiem, īstenojot savas profesionālās kompetences pilnveidi visa darba mūža garumā (Shandomo, 2010). Īpaša uzmanība akcentējama skolēnu gatavībai PM un mērķtiecīgu metodisko materiālu izstrādei.

Metodoloģija
Metodology of Research

Novērtējuma pētījumā dati tika analizēti kvalitatīvi, bet atsevišķu tendenču atklāšanai tika izmantoti kvantitatīvie rādījumi (Mārtinsone, Pipere, & Kamerāde, 2016). Veicām 9ME Latvijā (2015.-2019.) uzdevumu kontentanalīzi (Mārtinsone et al., 2016). 9ME uzdevumu izpildes rezultātu analīzei izmantojām VISC apkopoto statistiku (Valsts izglītības satura centrs [VISC], 2015; 2016; 2017; 2018; 2019). Pēc skolēnu zināšanu kvalitātes izvērtējuma vairāku gadu griezumā varam spriest, kuru matemātikas tēmu apguvei mācību procesā pamatskolā skolotājiem nepieciešama metodiska palīdzība. Tēmas, kuru apguve skolēniem sagādāja grūtības skolotāju vadībā, ir aktuālas arī PM attālināti. Pilotpētījumam autori sagatavoja jautājumus ar izvēles atbildēm un iespējām papildināt ar savu viedokli. 2018. gadā Latvijas Matemātikas skolotāju apvienības konferences laikā tika veikta Latvijas matemātikas skolotāju- metodisko apvienību vadītāju (n=53) anketēšana. Noskaidrojām pieredzes bagātu matemātikas skolotāju viedokļus par cēloņiem, kas ietekmē 9ME rezultātu un par nepieciešamo metodisko palīdzību. Izmantojot platformu *VisiDati.lv.,* 2020. gada beigās tika veikta Latvijas skolotāju (n=77) aptauja, no kuriem 83 % skolotāju bija ar darba stāžu virs 10 gadiem. Noskaidrojām skolotāju viedokļus par problēmām attālinātā mācību procesa laikā un priekšlikumus par skolotājiem nepieciešamo metodisko palīdzību, lai sagatavotu skolēnus PM. Tas ļauj salīdzināt, nosakot kopīgo un atšķirīgo. Abas aptaujas bija anonīmas un rezultāti izmantoti tikai apkopotā veidā.

Pētījuma rezultāti
Results

Pēdējos gados (2015 – 2019) vērojama lejupslīdes tendence Latvijas 9ME rezultātos, skat. 1. attēlu (VISC, 2015; 2016; 2017; 2018, 2019). 2020. gadā nenotika 9ME Latvijā, sakarā ar attālinātām mācībām. 9ME uzdevumos ietverto pamatprasmu apguve ir kritiskā līmenī 50-64% - tuvu viduvējai vai nepietiekamai apguvei. Pozitīvi, ka 2019.gadā uzdevumu izpilde sākusi nedaudz paaugstināties.



1.attēls ***Uzdevumu izpilde 9ME no 2015.-2019. gadam Latvijā***
Figure 1 ***Academic Achievement of 9ME 2015-2019 in Latvia***

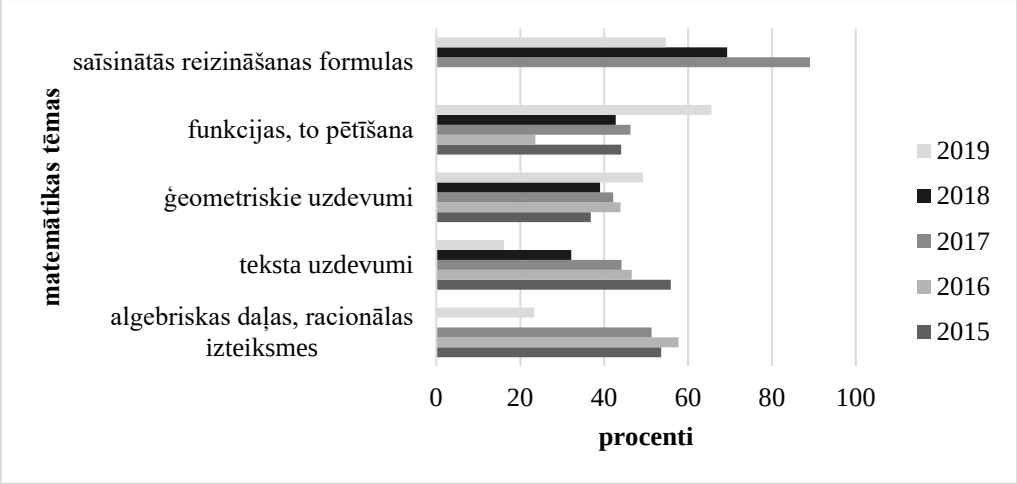
Jau 2018. gada aptaujā noskaidrojām skolotāju viedokļus par cēloņiem 9ME rezultātu lejupslīdei, trīs nozīmīgākie faktori apkopoti 1.tabulā.

1.tabula. ***Skolotāju viedokļu sadalījums par 9ME rezultātu lejupslīdes cēloņiem***
Table 1 ***Distribution of Teachers' Answers about the Reasons of 9ME Results Downslide***

Laika faktors- nepietiek laika prasmju veidošanai	65 %
Psiholoģiskie faktori	
skolēniem nav motivācijas	81 %
skolēniem zems spēju līmenis	56 %
maz uzmanības tiek pievērsts skolēnu vecuma īpatnībām	17 %
Pedagoģiskie faktori	
metodiskā pieeja tēmu izklāstā mācību grāmatās	19 %
mācību materiālu trūkums par konkrētām tēmām	19 %
bieži mainās matemātikas mācību saturs	14 %
eksāmena uzdevumu formulējums ir neviennozīmīgs	14 %
nepietiekama skolotāju metodiskā kompetence	6 %

Citi faktori, kurus nosauca skolotāji: skolēni slikti lasa; pārslogots mācību saturs; skolēni noslogoti ārpusstundu pasākumos un sacensībās; skolotājiem zems atalgojums. Tomēr par galveno cēloni skolotāji uzskata skolēnu zemo mācību motivāciju un laika faktoru. To var ietekmēt ne tikai skolēnu spēju līmenis, bet arī skolotāja profesionālā kompetence, mācību līdzekļu kvalitāte u.c. faktori. Rezultāti liecina, ka svarīgi pievērsties skolēnu pašregulācijas prasmju iedzīvināšanā, lai skolēni paši būtu ieinteresēti savu mācību sasniegumu paaugstināšanā. Laika faktors rosina pārskatīt matemātikas mācību saturu un mācību metodes, kā notiek šī satura apguve.

No 2018. gada aptaujā noskaidrotas grūtākās pamatskolas matemātikas tēmas, kuru apguves nodrošināšanai PM nepieciešami individualizēti mācību materiāli, atgādnes, arī pieredzes apmaiņa tālākizglītības kursos. Pēc skolotāju (60%) viedokļa grūtākās tēmas: teksta uzdevumi (sevišķi daļu, procentu un kustību teksta uzdevumi); algebriskās daļas un racionālās izteiksmes. 40% skolotāju norāda, ka skolēniem grūtības sagādā ģeometrijas tēmas (piemēram, ķermeņa virsmas laukums un tilpums) un tēmas- funkcijas, to pētīšana, pētniecības uzdevumi, kas tiek ietverti 9ME otrajā daļā. Saīsinātās reizināšanas formulas un skaitļošana (darbības ar daļām, negatīviem skaitļiem, kvadrātsaknēm, pakāpēm) arī tiek minētas kā grūtas tēmas. Salīdzinot skolotāju viedokli un 9ME uzdevumu izpildi (VISC, 2015; 2016; 2017; 2018; 2019) par grūtākajām tēmām, var redzēt (2. attēls), ka aptaujas dati apliecina skolotāju viedokļu atbilstību skolēnu mācību rezultātiem. Daļa tēmu nav apgūtas jau līdz 6. klasei.



2.attēls. ***Uzdevumu izpilde (vidējais rezultāts) par grūtākajām matemātikas tēmām 9ME no 2015.-2019. gadam Latvijā***
Figure 2 ***Academic Achievement (percentage) of 9ME 2015-2017 in Latvia for the Most Difficult Mathematics Topics***

Atbildot uz 2018. gada anketas jautājumu, kādu 6.klases jēdzienu izpratne un uzdevumu tipi rada grūtības arī 9ME, skolotāji atkal akcentē kustību uzdevumus (67%); daļu un procentu teksta uzdevumus (60%); tēmas- mērogs, perimetrs, procenti (50%). Tas rosina domāt par jēdzienu izpratnes (Sondore, Krastiņa, Daugulis, & Drelinga, 2016) un uzdevumu risināšanas stratēģiju apzinātas izvēles veidošanu skolēniem jau sākumskolā. Uzskaitīsim nepietiekami apgūtos jēdzienus un prasmes, kuriem pievēršama īpaša uzmanība PM procesā (iekavās dots 9ME gads un vidējais rezultāts, skat. (VISC, 2015; 2016; 2017; 2018; 2019)). *Jēdzienu izpratne*: mērogs (2017, 42%; 2019, 39%); pretēji skaitļi; laukuma mērvienības; kvadrātsakne; loka garums; šķērsleņķi (2016, 39%); mediāna un tās interpretācija (2015, 21%; 2018, 48,1%), apstrādājot datus. *Prasmes*: funkcionālu sakarību pētīšana (2018, 14%); divu funkciju augšanas intervālu salīdzināšana (2018, 31%).

2020.gada aptauja liecina, ka skolotājiem ir digitālās prasmes, taču 32% skolotāju atzīmē, ka pirms pirmās Covid-19 karantīnas nebija attālinātu mācību atbalsta pieredzes. Aptaujā 48% skolotāju norāda, ka vairāk kā 6 stundas dienā pavada pie datora, gatavojot materiālus, vadot tiešsaistes stundas, labojot darbus, rakstot komentārus. Lai motivētu skolēnus aktīvi iesaistīties attālināto mācību procesā, 34% skolotāju dod praktiska satura uzdevumus, 39% skolotāju regulāri izmanto AS skolēnu uzmanības noturēšanai. 23% skolotāji atzīmē, ka AS organizēšana viņiem sagādā grūtības. Daļai skolotāju grūtības sagādā novērtēšana, paļaujoties uz skolēnu pašvērtējuma godīgumu. Vairākums skolotāju (54%) uzskata, ka 2020.gada rudenī, atsākot mācības skolās klātienē,

skolēni ieradās ar ļoti atšķirīgu zināšanu un prasmju līmeni. Tas liecina, ka PM nav pašsaprotamas. Tām skolēni sagatavojami sistēmiski.

Salīdzināsim, kādu metodisko palīdzību skolotāji sagaida. 2018. gada aptaujā (vairāk kā 60% respondentu to atbalsta) ir nepieciešamība organizēt tematiskus seminārus matemātikas skolotājiem par aktuālām tēmām; veidot metodiskos ieteikumus skolēnu tipisko kļūdu novēršanai; iegūt mācību materiālus un norādījumus darbā ar spējīgākiem skolēniem. Bet 2020. gada aptauja apliecina, ka priekšplānā izvirzās PM problēmas. Bez tam skolotāji jūt nepieciešamību iepazīties ar praktiķu, kolēģu pieredzi dažādos ar mācību procesu saistītos jautājumos, apmeklēt meistarklases (kā dažādot tiešsaistes stundas, kā gūt efektīvu AS, utml.), uzlabot digitālo prasmi un angļu valodas zināšanas. Abās aptaujās skolotāji izvirza nepieciešamību pēc mācību grāmatām un citiem mācību materiāliem, kā konkrēta atbalsta PM. Pēdējos gados skolās ienāk skolotāju praktiķu veidotās mācību grāmatas. Ne vienmēr tajās saskatāms sistēmiskums, pēctecība tēmu izklāstā. Tādēļ nepieciešams pārskats par metodiskiem risinājumiem dažādu autoru matemātikas mācību grāmatās. To saskata piektā daļa 2018. gada aptaujāto skolotāju.

Secinājumi
Conclusions

Pētījumā noskaidrotas tipiskākās kļūdas (skaitļošanā, teksta un jēdzienu izpratnē, kā arī funkcionālo sakarību lietošanā) matemātikā, kuru apguve pamatskolēniem sagādā grūtības. Tēmas (teksta uzdevumi, algebriskās daļas, racionālas izteiksmes), kuru apguve skolēniem sagādāja grūtības skolotāju vadībā, ir aktuālas arī PM attālināti.

Par galveno cēloni 9ME rezultātu lejupslīdei metodisko apvienību vadītāji uzskata skolēnu zemo mācību motivāciju un laika faktoru. To metodiskie risinājumi aktualizējami topošo skolotāju studijās un pedagogu tālākizglītībā.

Pamatskolas matemātikas skolotājam profesionālo, pētniecisko, vērtēšanas kompetenču pilnveidē uzmanība akcentējama:

1) sistēmiskiem skolēnu pašvadīto mācību motivācijas un pašorganizētas darbības veidošanas paņēmieniem, veicinot atbildību par saviem mācību rezultātiem;
2) kognitīvo (jēdzienu izpratne) un metakognitīvo (plānošana, paškontrole, pašizvērtēšana) prasmju attīstīšanai; matemātiskās pratības pamatā ir matemātisko jēdzienu izpratne un uzdevumu risināšanas stratēģiju apzināta izvēle.
3) dažādu individualizētu mācību materiālu, digitālo palīglīdzekļu sagatavošanai matemātiskās pratības apguvei; veidojami atbilstoši mācību līdzekļi pašvadīto mācību atbalstam.

Summary

Self-directed learning (SDL) is an important prerequisite for achieving mathematical literacy. Graduates must be prepared to take responsibility for their lifelong learning. However, a teacher who professionally organizes the learning process, digital skills and good study materials and tools still play an important role in teaching.

Evaluation research was performed, the data were analyzed qualitatively, but quantitative indicators were used to detect individual trends. A content analysis of the tasks of the 9th grade mathematics exams (9ME) in Latvia (2015-2019) was performed, but the statistics summarized by the National Centre for Education were used for the analysis of the results of the exams. For the pilot study, the authors organized two surveys. In the spring of 2018, a survey of mathematics teachers- heads of methodic associations of Latvia (n = 53) was conducted, at the end of 2020 another survey of Latvian teachers (n = 77) was conducted. The two surveys make it possible to compare the common and different methodic assistance needed by teachers in the implementation of students' self-directed learning. The study of the results of 9ME in Latvia from 2015 to 2019 shows a downward trend. The most common are errors in computation, comprehension of text and use of functional relationships. It encourages thinking about understanding the concepts and making conscious choices for problem-solving strategies for students already in elementary school. In the 2018 survey heads of methodic associations consider the low motivation of students and the time factor to be the main reasons for the decline in the results of 9ME, the most difficult topics being: word problems, algebraic fractions and rational expressions. Topics that students had difficulty learning under the guidance of teachers are also relevant in the distance SDL. In the SDL process, the teacher should emphasize the understanding of several concepts: scale, opposite numbers, area units, square root, arc length, alternate angles, median (statistics). An improvement of students' research skills in problems on functional relationships is also necessary.

In the 2020 survey, 32% of teachers noted that there was no distance learning experience before the first Covid-19 quarantine. Teachers invest a lot of work in improving their methodic competence for SDL. In the survey 48% of teachers indicate that they spend more than 6 hours a day at the computer, preparing materials, conducting online lessons, correcting works, writing comments. 39% of teachers regularly organize feedback, being aware of the importance of feedback in the SDL process. Some teachers have difficulty performing assessments, relying on the honesty of students' self-assessment. In the autumn of 2020, as found by 54% of teachers, when students resumed full-time education in schools, they came with very different levels of knowledge and skills. This shows that SDL is not self-evident. Teachers and students need to be trained for them systematically. In both surveys, teachers raise the need for appropriate textbooks and other teaching materials as specific support for SDL, teachers also feel the need to get acquainted with the experience of practitioners, colleagues, attend masterclasses.

Therefore, in studies and further education of teachers, the attention of the primary school mathematics teacher in the improvement of professional, research and assessment competencies should be emphasized in the following directions: (1) systemic methods of motivating students to SDL and creating self-organized activities, promoting responsibility for their learning outcomes; (2) development of cognitive (understanding of concepts) and metacognitive (planning, self-control, self-evaluation) skills; mathematical literacy is based on an understanding of mathematical concepts and a conscious choice of problem-solving strategies. (3) for the preparation of various individualized teaching materials, digital aids for the acquisition of mathematical literacy; appropriate teaching aids should be developed to support SDL.

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JŪRNIECĪBAS IZGLĪTĪBA LATVIJĀ VĒSTURISKAJĀ SKATĪJUMĀ

Maritime Education in Latvia in Historical Aspect

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Abstract. *Maritime education occupies an important place in the Latvian education system and has a history of more than 230 years. The aim of the article is to describe the historical development of maritime education in the territory of Latvia and to compare it with the experience of other countries in the field of maritime education. Comparative analysis of maritime education is one aspect of the novelty of the article. In order to conduct research, analyze and evaluate information on the history of the maritime education, the author conducted research in various directions. The methodological basis is formed by the conception of humanism which is implemented in the social constructionism theory approach. Research methods-1) the study, theoretical analysis and evaluation of scientific, methodological literature and different documents (Kennerley, 2002; Manuel, 2017), 2) biographical method, content analysis of documents and biographies. s a result of the research, it has been possible to evaluate Latvian maritime education as an integrated and essential part of the maritime education system of European countries.*
Keywords: *maritime education, navigation schools, study process.*

Ievads
Introduction

Jūrniecības izglītība ieņem būtisku vietu Latvijas izglītības sistēmā. Tā ir viena no senākajām speciālajām izglītības jomām Latvijas teritorijā un tai ir vairāk kā 230 gadu sena vēsture Latvijā. Līdz šim jautājums par jūrniecības izglītības vēsturisko attīstību ir nepietiekami pētīts. Tāpēc tas ir aktuāls pētniecisks jautājums. Lai iegūtu pilnvērtīgu izglītības vēstures attīstību Latvijā, ir nepieciešams izpētīt jūrniecības izglītības vēsturi.

Raksta mērķis ir raksturot jūrniecības izglītības iestāžu darbības tiesisko regulējumu un mācību procesa norisi navigācijas skolās Latvijas teritorijā vēsturiskā aspektā laikā, hronoloģiski no 18.gadsimta līdz 1. pasaules karam, un salīdzināt to ar citu valstu pieredzi jūrniecības izglītības jomā šajā vēsturiskajā periodā. Salīdzinošā jūrniecības izglītības analīze ir viens no raksta novitātes aspektiem. Lai veiktu pētījumu par jūrniecības izglītības attīstības vēsturi laika periodā no 18 .gadsimta līdz 1. pasaules karam, raksta autore veica pētījumus

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sekojošos virzienos. Pirmkārt, ir izmantoti Latvijas valsts vēstures arhīva sekojošu fondu materiāli- Ārējā arhīva par Vidzemes guberņu Rīgas maģistrāta materiāli (Latvijas valsts vēstures arhīvs, b.g.), Rīgas guberņas Skolu direkcijas materiāli (Latvijas valsts vēstures arhīvs, b.g.a), Rīgas maģistrāta galvenās kancelejas materiāli (Latvijas valsts vēstures arhīvs, b.g.b), un Rīgas pilsētas Skolu kolēģijas materiāli (Latvijas valsts vēstures arhīvs, b.g.c), kas atspoguļo jūrniecības skolu dibināšanas cēloņus un rezultātus saistībā ar cariskās Krievijas jūrniecības politiku. Otrkārt, ir izmantoti Krievijas impērijas normatīvie akti ar izglītības jautājumiem par 18. un 19. gadsimtu **(**Polnoye sobraniye zakonov Rossiyskoy Imperii. Sobr. Pervoye. 1649-1825 gg [PSZRI], 1783; 1799).Treškārt, ir izanalizēti nozīmīgākie apkopojošie pētījumi par citu, pamatā Eiropas valstu pieredzi jūrniecības izglītības attīstībā, kas deva iespēju dot salīdzinošu jūrniecības izglītības vēstures raksturojumu. Rakstā izvirzītie sasniedzamie uzdevumi ir sekojoši- sniegts apkopojums par izglītības iestāžu un to tiesiskā regulējuma attīstību Baltijas guberņās laikā no XVIII gadsimta un XIX gadsimta otrajai pusei; rakstā ir apskatīti dažādu līmeņu skolu darbību reglamentējoši likumdošanas akti. Rakstā ir dots navigācijas skolu mācību procesa raksturojums. Pētījuma rezultātā ir izdevies izvērtēt Latvijas jūrniecības izglītību laikā no 18.gadsimta līdz 1. pasaules kara sākumam citu Eiropas valstu jūrniecības izglītības iestāžu sistēmā. Latvijas jūrniecības izglītība šajā periodā ir integrēta Eiropas valstu jūrniecības izglītības sistēmas sastāvdaļu ar reģionālām īpatnībām.

Literatūras apskats
Literature Review

Līdzšinējie pētījumi par jūrniecības izglītības vēsturi Latvijā ir veikti sekojošos aspektos - vai nu jūrniecības nozares attīstības izpētes kontekstā (Bernsone, 1998; Bernsone, 2003; Krastiņš, 2019), vai arī jaunlatviešu, īpaši, Krišjāņa Valdemāra (1825.-1891.gg.) darbības izvērtējuma aspektā (Apals, 2011; Lūsis & Šīmanis, 1997; Šīmanis, 2005). Apskatu par jūrniecības izglītību Latvijā no 18.gs.II puses līdz mūsdienām sniedz atsevišķi darbi (Miklāvs, 1999; Guļevskis, 2011), kuros ir apkopoti fakti par jūrniecības izglītības iestāžu attīstību laikā no 18.gs. II puses līdz mūsdienām. Jūrniecības izglītības izpētes aspektā nozīmīgi ir vispārējie darbi par skolu, zinātnes un izglītības vēsturi (Vičs, 1923; Staris, 2000; Stradiņš, 2009). 18.-19.gadsimtā Latvijas teritorija atradās cariskās Krievijas sastāvā, taču šajā periodā joprojām savu valdošo un priviliģēto stāvokli bija saglabājuši vācbaltiešu muižnieki, kuriem bija pakļauta arī izglītības joma. Pētījumi parāda, ka vācbaltieši apgrūtināja un aizkavēja reformu realizāciju izglītības jomā Baltijas guberņās (Meyer, 1997; Pistohlkorss, 1994; Stradiņš, 1993). Tas skāra arī jūrniecības izglītības jomu.

Lai varētu izvērtēt jūrniecības izglītības attīstību Latvijā būtiska nozīme raksta tapšanā un problēmas izpētē ir E. Kennerlija (Kennerley, 2002) un Fr. Broezes un citu (Broeze et al., 1995) pētījumiem par jūrniecības izglītības historiogrāfiju, akcentējot jūrniecības izglītības attīstības sociālos aspektus, kā arī jūrniecības nozares attīstības multietniskos aspektus. Jūrniecības izglītības iestāžu attīstība Eiropā un arī citos kontinentos sākumā bija saistīta ar jūrnieku biedrību sniegto palīdzību, kas nodarbojās ar labdarību, tādā veidā atbalstot jūrniekus. Jūrniecībai attīstoties starptautiski, jūrnieku biedrību, organizāciju un filantropu mērķis bija vispusīgi atbalstīt jūrniekus. Jūrnieku izglītības izpēte zinātnieku uzmanības centrā nonākusi pārsvarā 20. gs. Paralēli zināšanu sniegšanai par drošu kuģošanu jūrniecības izglītības iestādes kļuva par vietu, kur notika sākotnējā socializācija, tā kā izglītošana jūrniecības profesijā sākotnēji sākās 14 -15 gadu vecumā. Jūrniecības izglītības izpēte parādīja, ka jūras praksēm ir īpaša nozīme un tā ir īpaša mācību metode jūrnieku profesionālajā izglītošanā (Kennerley, 2002). Jūrniecības izglītības didaktiskajā procesā vienmēr tika izmantoti reāli jūras negadījumi, kurus izmanto par piemēru kuģu sadursmju situāciju analīzē, kas ir ļoti līdzīgi mūsdienu jūrniecības izglītības procesam (Manuel, 2017; Oral & Ergun, 2017). Jūrniecība bija un joprojām ir nodarbošanās, kurā sniegums lielā mērā bija atkarīgs no praktiskās pieredzes jūrā. To parāda vēsturiskais diskurss jūrniecības izglītības izvērtēšanā (Oral & Ergun, 2017). Analizējot pētniecību jūrniecības izglītības jomā, ir jāizceļ grūtības apvienot akadēmiskās izglītības principus ar profesionālās izglītības principiem, teoriju ar praksi, studentu zināšanu un prasmju novērtēšanu no pedagogu puses un no jūrnieku profesionāļu puses. Ir jāuzsver nepieciešamību turpmāk pētīt jūrniecības izglītības sākotnējās programmas (Oral & Ergun, 2017).

Metodoloģija
Methodology

Jūrniecības izglītības vēstures izpētes metodoloģisko pamatu veido humānisma koncepcija, kas tiek īstenota sociālā konstrukcionisma teorijas pieejā izglītības attīstībā (Geißler, 2008; Psaltis, Carretero, & Čehajić-Clancy, 2017; Schneider, 2007). Pētījumā ir izmantotas sekojošas metodes :1) zinātniskās literatūras un dokumentu teorētiskā analīze un novērtēšana (Kennerley, 2002; Manuel, 2017); 2) vēsturiskā diskursa metode, lai izvērtētu navigācijas skolās realizēto didaktisko procesu; 3) biogrāfiskā metode, dokumentu un biogrāfiju satura analīze (Līvs, 2014 ; Legzdiņš , 2002), kas dod iespēju izmantot jūrnieku personisko, empīrisko pieredzi, apgūstot jūrnieka profesiju.

Jūrniecības izglītības iestādes veidojās kā mācību iestādes maznodrošinātiem un nepriviliģēto slāņu iedzīvotājiem Latvijas teritorijā, tāpēc tās nodrošināja izglītības ieguves iespējas jauniešiem, kas naudas trūkuma dēļ un

sociālās marginalizācijas dēļ nevarēja apmeklēt cita tipa skolas. Būtiska metodoloģiska nozīme ir vēsturiski loģiskā pieeja pētot jūrniecības izglītības kvalitātes un kvantitātes izmaiņas, kas rezultējās profesionālajās kompetencēs kā mācību procesa gala rezultāts (Kennerley, 2002; Broeze et al., 1995; Miklāvs, 1999; Šīmanis, 2005).

Pētījuma rezultāti
Research Results

Kuģošana bija viens no senākajiem nodarbošanās veidiem Latvijas teritorijā (Sams, 1939). To veicināja ģeogrāfiskie apstākļi, kā arī labi attīstītās amatniecības prasmes, kas deva iespējas uzbūvēt laivas, ar kurām varēja kuģot gar piekrasti un doties jūrā. Vēl pirms vikingu kuģniecības perioda (8.gs.-11.gs.vidus) Baltija jūrā senie latvieši-kurši bija pazīstami kā prasmīgi jūrnieki.

Nākamie ar kuģniecības attīstību saistītie periodi –Hanzas savienības periods (13.-17.gadsimts), Kurzemes hercogistes periods (16.-18.gadsimts) sniedz liecības par kuģniecības attīstību Latvijas teritorijā, taču nav pietiekamu datu par jūrnieku profesionālas apmācības esamību. Līdzīgi kā citu valstu teritorijās, arī Latvijas teritorijā viss pamatojās uz praksi jūrā un praktisko kuģošanas iemaņu attīstību (Sams, 1939; Bernsone, 1998; Kennerley, 2002).

Tāpēc rakstā ir sākts vērtēt jūrniecības izglītību ar 18. gadsimta otro pusi, kad Rīgā 1789. gadā darbību uzsāka pirmā līdz šim zināmā jūrniecības skola ar nosaukumu Navigācijas skola (Guļevskis, 2011). Pētījuma hronoloģiskais periods šajā rakstā tiek noslēgts ar 1.pasaules karu, kas ienesa būtiskas un neatgriezeniskas pārmaiņas jūrniecības izglītībā Latvijas teritorijā.

Pētījuma viens no galvenajiem aspektiem ir saistīts ar jūrniecības izglītības iestāžu dibināšanas un darbības tiesiskā regulējuma izpēti 18.gadsimtā un 19.gadsimtā. Salīdzinot ar citām Eiropas valstīm, Latvijas teritorijā tas bija noticis vēlāk (Kennerley, 2002). Tas bija saistīts ar to, ka Latvijas teritorijā nebija citās Eiropas un pasaules valstīs pazīstamās tradīcijas jūrniecības izglītības attīstībā un kas balstījās uz mecenātismu un filantropiju (Kennerley, 2002). Vācbaltiešu muižniecība, vācu tirgotāji, rūpnieki pamatā neatbalstīja jūrniecības izglītību, pie tam jūrniecības joma nebija vietējo vāciešu tradicionālā nodarbošanās joma (Meisner, 1996; Pistohlkorss, 1994). 1789.gada Navigācijas skolas darbība ir saistīta ar tirdzniecības flotes attīstību cariskajā Krievijā un nepieciešamību pēc kvalificētiem jūrniecības kadriem, kā tas izriet no 1781. gada 23. novembra Upju un jūru tirdzniecības kuģošanas noteikumiem (Ārējā arhīva par Vidzemes guberņu Rīgas maģistrāta fonds, 1220-1917), kā arī ar 1783.gada 27.septembrī Krievijas carienes Katrīnas II izdoto ukazu par navigācijas skolu ierīkošanu (Guļevskis, 2011; PSZRI, 1783). Tajā bija uzdots veicināt jūrskolu ierīkošanu impērijas ostas pilsētās, no kurām dodas ceļā tirdzniecības kuģi (Guļevskis, 2011;

PSZRI, 1799). 1804.gadā šo mācību iestādi pārveidoja par Rīgas 2. apriņķa skolu, un tā darbojās līdz 1820. gadam (Latvijas valsts vēstures arhīvs, b.g.a). Pēc Pēterburgas jūrskolas izveidošanas, katru gadu no Rīgas uz Pēterburgu sūtīja mācīties divus cilvēkus, īpaši svarīgas bija krievu valodas zināšanas. 1839.gadā kapteinis D. H. Foss Rīgā atvēra privātskolu matrožu apmācībai vācu valodā un par maksu. 1844.gadā šo skolu savā pārziņā pārņēma Rīgas biržas komiteja (Bernsone, 1998). Ar 1852.gadu skola sāka darboties kā Rīgas jūrskola (Kalniņš, 1939). Tiesiskais regulējums jūrniecības izglītībā piedzīvoja būtiskas izmaiņas 1867.gada 27.jūnijā, kad tika izdots jauns likums par jūrskolām (Latvijas valsts vēstures arhīvs, b.g.b). Likums, kura izstrādē un pieņemšanā aktīvi piedalījās Latvijas pirmās nacionālās atmodas dalībnieks, jaunlatvietis Krišjānis Valdemārs (1825-1891). Jūrskolas bija sadalītas trīs kategorijās, katra izstrādāja atbilstoši savu nolikumu un tās pakļāvās divām ministrijām- Finanšu un Izglītības ar vistiešāko Jūrlietu ministrijas atbalstu. Galvenais šo skolu darbības atšķirīgais pamats bija tas, ka mācības bija bez maksas un skolēnu dzimtajā valodā (Miklāvs, 1999). Latvijas teritorijā izveidojās un darbojās 10 jūrskolas. To darbu pārtrauca 1.pasaules karš.

Otrs pētījuma rezultāts ir saistīts ar pedagoģiskā procesa jūrskolās izpēti, nodrošinot uz kuģiem strādājošo jūrnieku atbilstošu sagatavošanu. Jūrnieku izglītošanā vienmēr bija pretruna starp teorētisko mācību procesu un jauno jūrnieku praktisko sagatavošanu. Sākot jau ar 18.gadsimta beigām jūrnieku izglītības procesā mācības notika ziemas mēnešos, bet vasaras mēnešos audzēkņi devās strādāt uz kuģiem. Sākotnējā pedagoģiskā procesa prakse bija tāda, ka visus priekšmetus mācīja viens skolotājs (Latvijas valsts vēstures arhīvs, b.g.c). Navigācijas skolas deva pamatu vispārējai izglītībai- te mācīja lasīšanu, rakstīšanu, rēķināšanu, reliģiju, ģeogrāfiju, vēsturi, matemātiku, kā arī speciālos jūrniecības priekšmetus-astronomiju, navigāciju (Latvijas valsts vēstures arhīvs, b.g.c). Mācības notika vācu valodā. Ar 1839.gadu, kad darbu sāka D.H.Fosa dibinātā skola, kuru ar 1853.gadu sāka vadīt kapteinis J.Kaufmanis. Tā bija privātā skola, kur mācības notika vācu valodā (Zeids, 1978). Skola bija pirmā, kas sāka izmantot speciālu mācību grāmatu navigācijā un astronomijā (Kaufmann, 1853). Līdz tam visi jūrniecības priekšmeti tika mācīti pamatojoties uz skolotāja stāstījumu. Šajā skolā tika prasīta iepriekšēja elementārskolā iegūta izglītība. Tāpat tika īpaši uzsvērta prakses nozīme, jo pēc vasaras prakses uz kuģiem bija jāuzrāda kapteiņu izrakstītas liecības par vasaras darbu uz kuģiem. Tas bija obligāts nosacījums mācību turpināšanai skolā (Erdberg, 1912). Arī skolas absolvēšana atšķīrās no cita tipa skolu absolvēšanas. Navigācijas skolu absolventiem bija jākārto kvalifikācija eksāmens pie speciālas komisijas, kurā piedalījās profesionāli jūrnieki. Vēl viena īpatnība mācību procesa nodrošināšanai jūrskolās- tā bija mācību observatorijas nepieciešamība, lai apgūtu jūrniecības astronomiju (Erdberg, 1912). Tāpēc jūrskolu vajadzībām tika būvētas atbilstošas

ēkas. Līdz ar jaunā jūrskolu likuma pieņemšanu 1867.gada 27.jūnijā mācību process tika mainīts. Tas bija humānāks un demokrātiskāks, mācīties varēja vienkārši jūrnieki-praktiķi. Mācības daudzviet notika pielāgotās telpās, piemēram, Ainažu jūrskola, bieži priekšmetus sāka mācīt viens skolotājs. Skolas nodrošināja labu vispārējo izglītību. Šajā jūrniecības izglītības attīstības posmā mācību procesā īpašs uzsvars tika likts uz jūrnieku profesionālo sagatavotību un prakses nozīme izglītības procesā (Miklāvs, 1999). Jūrniecības izglītības mācību procesa organizācija 19.gadsimta otrajā pusē Latvijas teritorijā bija labvēlīga vietējiem latviešu tautības iedzīvotājiem, jo tā norisinājās piejūras mazpilsētās un ciemos, dzimtajā valodā, bezmaksas un mācību ilgums nebija ierobežots. Šīs jūrskolas darbojās līdz 1.pasaules karam.

Secinājumi
Conclusions

Jūrniecības izglītība ieņem būtisku vietu Latvijas izglītības sistēmā. Tā ir viena no senākajām speciālajām izglītības jomām Latvijas teritorijā un tai ir vairāk kā 230 gadu sena vēsture Latvijā. Līdz šim jautājums par jūrniecības izglītības vēsturisko attīstību ir nepietiekami pētīts. Tāpēc tas ir aktuāls pētniecisks jautājums. Lai iegūtu pilnvērtīgu izglītības vēstures attīstību Latvijā, ir nepieciešams izpētīt jūrniecības izglītības vēsturi.

Jūrniecības izglītības process Latvijas teritorijā sāka attīstīties vēlāk kā citās Eiropas valstīs. Tas bija saistīts ar to, ka Latvijas teritorijā nebija citās Eiropas un pasaules valstīs pazīstamās tradīcijas jūrniecības izglītības attīstībā, kas balstījās uz mecenātismu un filantropiju. Vācbaltiešu muižniecība, vācu tirgotāji, rūpnieki pamatā neatbalstīja jūrniecības izglītību, pie tam jūrniecības joma nebija vietējo vāciešu tradicionālā nodarbošanās joma.

Rakstā ir sniegts ieskats par izglītības iestāžu un to tiesiskā regulējuma attīstību Baltijas guberņās laikā no XVIII gadsimta un XIX gadsimta otrajai pusei cariskās Krievijas impērijas sastāvā un pakļautībā; rakstā ir apskatīti dažādu līmeņu skolu darbību reglamentējoši cariskās Krievijas likumdošanas akti. Rakstā ir dots navigācijas skolu mācību procesa raksturojums.

Pētījuma rezultātā ir izdevies izvērtēt Latvijas jūrniecības izglītību laikā no 18.gadsimta līdz 1.pasaules kara sākumam citu Eiropas valstu jūrniecības izglītības iestāžu sistēmā. Latvijas jūrniecības izglītība šajā periodā ir Eiropas valstu jūrniecības izglītības sistēmas sastāvdaļu ar savām reģionālām īpatnībām.

Jūrniecības izglītības mācību procesa organizācija 19.gadsimta otrajā pusē Latvijas teritorijā bija labvēlīga vietējiem latviešu tautības iedzīvotājiem, jo tā norisinājās piejūras mazpilsētās un ciemos, dzimtajā valodā, bezmaksas un mācību ilgums nebija ierobežots. Šīs jūrskolas darbojās līdz 1.pasaules karam.

Summary

Maritime education has an important place in the Latvian education system. It is one of the oldest special education areas in the territory of Latvia. Maritime education in Latvia has a history of more than 230 years. The historical development of maritime education has so far been underexplored and is therefore an ongoing research issue. The methodological basis for exploring the history of maritime education is the concept of humanitarianism, implemented in the approach of the theory of social constructionism in the development of education (Geißler, 2008, Psaltis et al., 2017, Schneider, 2007). Maritime education institutions formed as educational institutions for disadvantaged and non-privileged residents in the territory of Latvia, so they provided educational opportunities for young people who could not visit other types of schools due to lack of money and the lack of social marginalisation. A fundamental methodological approach is the historically logical approach to changes in the quality and quantity of maritime education, which resulted in professional competencies as a result of the learning process (Kennerley, 2002, Broeze et al., 1995; Miklāvs, 1999; Šīmanis, 2005). The first Navigation School in Latvia, Riga, started operations in 1789. Compared to other European countries, this had happened later (Kennerley, 2002). This was due to the fact that there were no traditions known in other European and global countries in the development of maritime education on the territory of Latvia, based on mecanicism and philanthropy (Kennerley, 2002). German nobles, German traders, industrialists did not support education, in addition the maritime sector was not the traditional occupation of local Germans (Meisner,1996; Pistohlkorss, 1994). The legal framework for the operation of maritime education institutions developed under the influence of the development of the caric Russian transport fleet. In the second half of the 19 th century, the Latvian National Awakening was crucial, particularly Krišjānis Valdemārs (1825-1891), who offered a new maritime education model, a new type of maritime schools that enabled local residents to become involved in the maritime. The activities of maritime schools in the territory of Latvia since 1789 developed with breaks, the main difficulties were related to financial problems, insufficient recruitment of pupils to navigation schools, as training took place in German and in charge. The educational process in maritime schools was specific, so between the 18 th century and the 1 st World War, navigation schools can be added to the special training institutions. In the course of the training process, marine practices were selected, without which it was not possible to complete the navigation school successfully. The graduation of the navigation schools was also related to the conduct of a special qualification exam involving not only teachers of general subjects, but the responsibility of seafarers practitioners. A new phase in the development of maritime education institutions started after World War 1, when an independent national state-of-Latvia was formed on 18 November 1918 with a new education policy.

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TEACHERS' ATTITUDE TOWARDS REMOTE LEARNING: ANALYSIS OF LATVIA'S CASE

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Abstract. *The virtual environment has broken into all areas of our lives in the 21st century. Consequently, the issue of using IT at different levels of education, the usefulness or harmfulness of technologies, as well as the readiness of teachers to work with them is becoming more and more important. The Covid-19 pandemic activated the "technology revolution", and Latvia's educational institutions switched to remote learning. Such a transformation revealed the strengths and weaknesses of education, as well as raised the issue of teachers' readiness for work in remote learning and attitude towards rapid change.*
The paper analyzes the data obtained by the State Research Programme "Life with COVID-19: Evaluation of overcoming the coronavirus crisis in Latvia and recommendations for social resilience in the future (CoLife)" on the attitude of Latvia's teachers towards the remote learning process.
Research method: online survey of 559 general education teachers (K-12).
Keywords: *remote learning process, digital competence, teachers, provision of support.*

Introduction

The COVID-19 pandemic created an urgent need for global and unplanned changes in the organization of the education process: remote learning has become a global phenomenon (Hodges, Moore, Lockee, Trust, & Bond, 2020; Sokal, Trudel, & Babb, 2020) and an integral part of general education when a traditional school began to transform into an online and virtual school. The introduction of remote learning raised the issue of the need to identify available and used digital solutions in education and promoted digital transformation in education, which is an important process of change based on changes in content, organizational forms,

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methods, and teaching aidsfor work in the digital educational environment. Both the teacher's knowledge and skills and a positive attitude are important in the introduction of change. Researches on the competence of teachers to organize the remote learning process (Romero-Tena et al., 2020, Kong, Lai, & Sun, 2020; Seufert, Guggemos, &Sailer, 2021) focus on the development of pedagogical digital competence, less analysis is given to attitude that is an important factor for the quality use of technology in the educational process, as it indicates the acceptance of technology and the intention to use it for the implementation of a quality learning process (Scherer &Teo, 2019). Attitude towards change can be seen in 3 dimensions:

1) cognitive responses - teachers' belief in the importance and necessity of change and the extent to which it will benefit them personally and in the organizational context;
2) emotional responses - teachers' satisfaction or anxiety about change;
3) behavioural responses - actions for or against change, i.e. the extent to which teachers support or resist change (Kin &Kareem, 2017).

People who do not believe in the benefits of change are more likely to oppose it. In the case of the COVID-19 pandemic, there were different cognitive responses to the transition to online learning. In Latvia, discussions on remote learning took place in both the first and second waves of the Covid-19 pandemic, which emphasized concerns about quality, possible reductions in the number of teachers, etc.

The aim of the paper: to analyze the data obtained by the State Research Programme “Life with COVID-19: Evaluation of overcoming the coronavirus crisis in Latvia and recommendations for social resilience in the future (CoLife)” on the attitude of teachers towards the remote learning process in Latvia.

Methodology

A survey of general education teachers was conducted to study the attitude of general education teachers towards remote learning. As the survey took place online and in a short period of time, coinciding with the beginning of the school year and the introduction of the competency approach in general education, we assume that the most active teachers and those who are “in good relations” with the Internet participated in the survey. 559 general education teachers (K-12) from all regions of Latvia filled in the questionnaire: Riga - 17%, Kurzeme - 11.4%, Vidzeme - 32.2%, Zemgale - 6.3%, Latgale - 30.1%. 14.7% of respondents work in pre-school education level, 3.5% of respondents work in primary education stage I (Forms 1-6), 24.2% of respondents work in primary education stage II (Forms 7-9) and 26.7% of respondents work in secondary school. 64.8% of respondents have their main job in schools located in regional cities, 18.2% of

respondents work in rural schools, the rest - in Riga. Using the Raosoft calculation (http://www.raosoft.com/samplesize.html), we see that the number of respondents exceeds the minimum recommended size. In turn, the Cronbach's alpha coefficient (α=.955) indicates the internal consistency of the questionnaire and the stability of measurements over time. Respondents were asked to express their views on the proposed statements and answer the open-ended questions. The Likert scale was used to evaluate the statements, where 1 means disagree, 2 - rather disagree, 3 - rather agree and 4 - agree.

The questionnaire included statements (Table 1) that cause teachers' cognitive response (CR) and emotional response (ER).

Table 1 ***Statements that Cause Cognitive and Emotional Responses***

Code		Statement
Cognitive responses	KR_1	Very useful experience for both teachers and children/pupils
	KR_2	Reveals both strengths and weaknesses in the education system
	KR_3	Challenge not only for teachers, but also for parents and pupils
	KR_4	It promotes professional development
	KR_5	Each pupil is provided with an individual approach
	KR_6	It develops the ability to learn
	KR_7	Digital skills of teachers and pupils are improving
Emotional responses	ER_1	Learning process is of lower quality
	ER_2	It is more difficult to organize the learning process (methods and forms of work cannot be changed flexibly)
	ER_3	Pupils develop more independence
	ER_4	It is difficult for a teacher to perceive pupil's emotions
	ER_5	Lower communication quality
	ER_6	More online learning materials are needed
	ER_7	Lack of technical means (computers, etc.)

Results and Their Interpretation

The average evaluations of the statements and the distribution of answers as a percentage are shown in Table 2.

In the results of the statements related to ***cognitive responses***, there were statistically significant differences depending on the respondents' length of service in the assessment of KR_2 statement (p=.028): respondents with a length of service of up to 5 years (Mean 3.51) and 10 to 14 years (Mean 3.33) agree more, respondents with a length of service over 20 years agree less (Mean 3.19). There were also statistically significant differences in this statement depending on the age of the respondents (p=.048): respondents under 25 years of age (Mean 3.52) and from 26 to 35 years of age (Mean 3.42) agree more, respondents in the age from 36 to 45 years (Mean 3.19) and 46 to 55 years (Mean 3.17) agree less.

As the block of questions on attitude used the questions of the surveys of the Independent Education Society (hereinafter - IES), which took place in the end of the school year 2019/2020, comparison was made whether the teachers' answers showed the same tendencies (nra.lv, 03.06.2020).

Table 2 ***Respondents' Attitude Towards Remote Learning***

Code		Average	Percentage			
			Disagree	Rather disagree	Rather agree	Agree
Cognitive responses	KR_1	3,19	2,3	10,0	54,4	33,3
	KR_2	3,25	2,0	11,1	47,4	39,5
	KR_3	3,66	0,7	2,3	27,2	69,8
	KR_4	3,16	3,8	14,5	43,8	37,9
	KR_5	2,48	11,8	41,3	34,3	12,5
	KR_6	2,99	3,0	20,9	49,7	26,3
	KR_7	3,36	1,1	7,5	45,6	45,8
Emotional responses	ER_1	2,69	7,3	34,9	39,7	18,1
	ER_2	2,96	5,5	17,5	52,2	24,7
	ER_3	3,05	2,3	18,6	51,0	28,1
	ER_4	3,9	2,1	10,9	42,9	44,0
	ER_5	3,08	4,7	19,7	38,6	37,0
	ER_6	3,48	2,1	4,8	35,4	57,6
	ER_7	3,22	4,7	14,8	34,0	46,5

In the SRP survey, 39.5% of respondents agree with the statement that remote learning revealed both strengths and weaknesses in the education system, while 47.4% of respondents rather agree with this statement (52.1% and 35.5% in the IES survey, respectively). 69.8% of respondents agree with the statement that remote learning was a challenge not only for teachers, but also for pupils and parents, but 27.4% of respondents rather agree with such a statement (88.6% and 11% in the IES survey, respectively). 45.8% of respondents indicate that they agree that remote learning improved the digital skills of teachers and pupils, 45.6% rather agree with this statement (65% and 33.3% in the IES survey, respectively). Despite the fact that the IES survey was conducted at a different time and responded to by other respondents, we can conclude that the trend persists. Although teachers understand the need for change on a cognitive level, they can resist it emotionally because change creates stress that is intensified by other aspects of the crisis.

In the results of the statements related to the assessment of ***emotional responses***, we see that ER_1 - 57.8%, ER_2 - 76.9%, ER_3 - 79.1%, ER_4 - 86.9% and ER_5 - 75.6% of respondents rather agree and agree with the statements, which indicate dissatisfaction and anxiety about the quality of the

educational process, as well as the level of individual competence for remote learning. Statistically significant differences were also found depending on the age of respondents in the assessments of the statement AR_1 (p=.029). Respondents aged 26 to 35 (Mean 2.91) and those older than 55 (Mean 2.72) agree more with the statement, and respondents aged 36 to 45 (Mean 2.56) agree less.

The assessment of ER_1 shows that teachers feel bad about the quality of their work because: 1) transformation requires the use of new organizational forms, methods, teaching aids, but most of teachers have insufficient experience in this field, since they used technology only to show a video before; 2) teachers, who have proven their professionalism in classroom training, feel confused and concerned about professionalism in the virtual environment; 3) insufficient range of digital learning tools creates stress and additional workload. The level of teachers' personal digital competence causes additional stress and dissatisfaction. In the survey conducted by the Ministry of Education and Science in the spring of 2020, one third of teachers admitted that they have no experience in using digital platforms and systems, and about a quarter of teachers did not teach any lessons online. In addition, 14% of teachers believe that it would take a long time to acquire such knowledge (Šķietniece, 2020). Analyzing the attitude of teachers towards the remote learning process, which was revealed in the open-ended questions, it can be concluded that it was a new form of pedagogical work for most teachers, respondents had no previous experience, which created additional tension. Due to the lack of digital competence, teachers experience so-called *technostress* (Al-Fudail & Mellar, 2008) – a situation where technology has to be used to support the learning process, but the individual faces an internal (e.g. skills and experience in working with digital tools and platforms) or an external barrier (e.g. lack of technical support highlighted by respondents in the open-ended questions). Insufficient technical means also cause stress (80.5% of respondents rather agree and agree with the statement ER_7). This aspect has also been emphasized in other researches (Šķietniece, 2020; Harris, 2020). The lack of technical means, as well as insufficient support for pupils in their use, creates inequalities in the acquisition of content. As the pandemic continues, persistent dissatisfaction with the quality of the learning process, individual digital competence, lack of technical and teaching resources and workload can lead to professional burnout. Teachers who burn out have more conflicts with learners, pupils achieve lower results (Collie & Martin, 2017).

Cognitive and emotional responses affect ***behavioural responses***. The analysis of the open-ended questions shows that teachers inLatvia are determined, ready to accept changes and improve their professional work in the virtual environment: *"Teachers need to learn to feel comfortable in the digital environment, because then, in principle, the possibilities are limitless", "... the attitude must be changed. You cannot just sit and wish, wait for someone to teach,*

provide for, give, etc., you have to start doing it yourself", "...you have to be flexible, understanding and patient. I think the first "crisis situation" was a good experience, and we will all be more prepared in the future".

Answering the open-ended questions of the questionnaire and analyzing the experience during the first wave of COVID-19 and looking for solutions to improve the remote learning process, teachers identify 4 levels that need to be improved: individual, educational institutional, municipal and national (Figure 1).

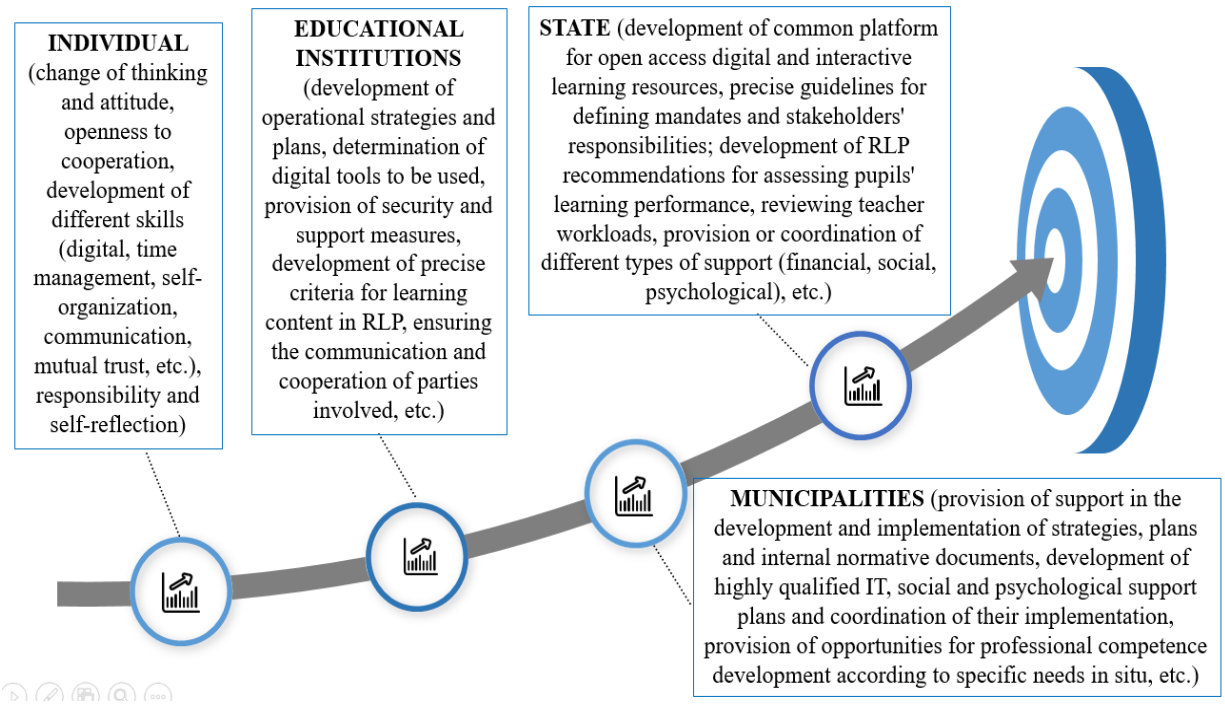

Figure 1 ***Teachers' Vision for the Improvement of the Remote Learning Process***

Conclusions and Recommendations

The remote learning process launched during the Covid-19 pandemic revealed the strengths and weaknesses of Latvian education and was a challenge for all parties involved. The implementation of the teachers' recommendations identified in the survey at the individual level indicates the readiness of teachers for change, implementation at the highest levels (educational institutional, municipal and national level) is support for teachers during changes; the result is the remote learning process of a higher quality.

At the individual level, teachers consider the following actions as the most important:

1. to improve the ability to adapt to the current situation and requirements by changing the paradigm of thinking;

2. to observe consistency and work in accordance with the algorithm and procedure for the implementation of remote learning developed by an educational institution;
3. to develop professional competence (digital, time management, self-organization, assessment, communication, mutual trust, etc.) to personalize the learning process, ensure individualization and differentiation and be able to provide meaningful feedback.

At the level of an educational institution, teachers emphasize the need:

1. for school management representatives to work together as a team, learning and using change management techniques and developing clear algorithms for crisis management, creating a common platform for communication between school management, teachers, pupils and parents, thus ensuring mutual cooperation and quality communication, as well as providing a unified school's approach to ensure the learning process.
2. to define the requirements of teaching sessions and follow their fulfilment, paying attention to the fact that lessons include:
    - a certain form; results to be achieved by a lesson, resources and information to be used, tasks, and evaluation criteria are precisely defined;
    - various activities according to different types of perception (for example, reading, formulation of ideas, debates, group work, writing, animation, audio, video material, etc.);
    - activities for the development of self-directed and learner-centered learning process;
    - emphasis that is placed on research of pupils' own attitudes and values, integrating topics/events relevant to pupils into the content of lessons, their knowledge is facilitated by short tests, thus reducing emotional distance;
    - feedback that is focused on the pupil's self-development; its regularity is updated.

At the municipal level, it is necessary to:

1. create a centralized IT centre for the creation, maintenance and supervision of high-quality technical infrastructure of educational institutions, ensuring data security requirements;
2. develop a mechanism and provide qualified social and psychological support measures to all parties involved. It is important to determine the role of social services during an emergency situation (support for families), how social assistance is provided in educational institutions

and in cooperation with local governments, providing support for low-income and large families (IT support, free lunches, etc.);

3. provide support to educational institutions in the development of remote learning implementation strategies, plans and internal normative documents, manage the technical and management resources of educational institutions and monitor regularly the implementation of remote learning in educational institutions established by a municipality;
4. organize and coordinate the mutual cooperation of the heads of educational institutions in a municipality, the implementation of a unified approach in educational institutions at the municipal level, and the professional development of the heads of educational institutions in change management;
5. strengthen partnerships with higher education institutions by involving their specialists in providing support to teachers of educational institutions, and students - in providing support to pupils, parents and teachers in the implementation of remote learning and participating in the development of methodological and interactive teaching materials.

At the national level, respondents would like to see the following actions:

1. the successful implementation of remote learning requires the cooperation of several ministries (Education, Economy, Welfare, Finance) and public and private sector institutions in order to:
    - reduce regional disparities, find means to improve infrastructure (improve the technical provision of educational institutions, especially in pre-schools, and access to quality Internet, technologies, etc.);
    - address issues related to the educational process (professional development of teachers, development of appropriate materials) effectively and ensure high-quality information flow at the municipal and national level, defining the responsibilities of municipalities, institutions, teachers, parents, etc .;
    - provide psychological, social and technical support to families.
2. it is necessary to provide a secure unified digital free learning platform that would be user-friendly, so that it can be used independently by the 1st stage learners of elementary education without the support of parents, in which:
    - teaching materials would be uploaded in accordance with standards and curricula, as well as in accordance with the specifics of the remote learning process at all levels of education;

- differentiated teaching materials would be included according to the abilities of learners;
- information would be available on secure (including free) websites where applications are available, additional information on the content to be learned and ideas for planning and implementing the learning process, as well as instructions for safe installation and use of various programmes;

3. to provide opportunities to supplement the content of the learning platform with materials developed and tested by practicing teachers regularly, the compliance and quality of which is assessed by a specialist in accordance with the established criteria, respecting copyright and providing financial coverage (royalties) for material developers;
4. to incorporate the remote learning elements into the daily learning process, developing digital skills and adaptability to work in different situations, in order to reduce stress and confusion during a crisis and to improve learners' self-directed learning skills. It is suggested to find an opportunity for educational institutions to determine the number of remote learning days per month for each level of education in which pupils learn remotely. The number of days is increased in proportion to the level of education, for example, 1 day a month in preschool, 2-3 days a month in stage I of primary school, 3-4 days a month in stage II of primary school, and at least 1 day a week in secondary school;
5. the MES should review the workload of teachers and pupils during remote learning, develop regulations on working time, pay, and the amount of compulsory learning content;
6. to evaluate the possibility to develop sample curricula of subjects and/or methodological recommendations for work during emergency situations.

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MEDIA LITERACY IN EXTRACURRICULAR ACTIVITIES

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Abstract. *This research has been set in view of the increasing exposure of children and youth to the media and the challenges of the modern education system. The aim was to establish the existence and representation of extracurricular activities in school curricula aimed at media literacy of students in primary schools in the area of Virovitica-Podravina and Požega-Slavonia Counties in the Republic of Croatia. The data were collected by studying the documentation - analysis of 25 school curricula for the 2020/2021 school year, which are available on websites of the schools. The results are described by the descriptive method and point to the existence of extracurricular activities aimed at media literacy of students, but not in all schools. Such extracurricular activities are more represented in higher grades of primary school (5th -8th grade) and are mostly oriented toward journalism, while in lower grades (1st - 4th grade) the most frequent activities are related to Computer Science or a specific aim set within media literacy education. Finally, this research can be a starting point for other research projects for determining the causal links that led to such results and an incentive to improve educational practice in Croatian schools.*
Keywords: *extracurricular activities, media literacy, school curriculum.*

Introduction

Technological development has created new media that are available to children, every day and throughout the entire day, especially in urban environments. This is the reason why children increasingly learn informally through various media which, as message transmitters, must not be omitted in the formal education system. It is extremely important to educate children and young people about the media, their content and how to use them safely while offering critical reflection on the content and teaching them how to use the information they can find in the media.

In the context of communication sciences, *medium* (from Latin *medium*: middle, means) is a means that mediates the transmission of messages, notices, news, etc. Electronic means, newspapers, the Internet, film, etc. are considered the media. Due to their availability to the wider population, they are called the mass media and can be categorised as print, book, radio, film, television, image, and sound media. Traditional media are connected with computer technology,

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thus creating interactive media and making the term *communication media* increasingly used. Zgrabljić Rotar (2017) divides the newly created media environment into three groups: traditional, converged, and new media. The above division shows changes in the media brought about by digitalisation resulting in the relocation of traditional media content to new platforms leading to numerous multimedia formats (Syvertsen, Enli, Mjøs, & Moe, 2014).

Media literacy was defined in 1992, at the National Leadership Conference on Media Literacy, as "the ability to access, analyse, evaluate and transmit messages via the media" (Aufderheide, 1992 as cited in Zgrabljić Rotar, 2005). Similarly, Livingstone (2003) defines media literacy as "the ability to access, analyse, evaluate and create messages across a variety of contexts". Livingstone and Thumim (2003) highlight that access to media devices is a prerequisite for developing media literacy skills and introduce three stages of media literacy: technical competencies, critical reception practices, and content production. Moreover, Burn and Durran (2007) give a summarized definition of media literacy by describing it as a subset of multiliteracy which is in particular applicable to mass media.

The Importance of Media Literacy in Schools

Friesem, Quaglia Beltran and Crane (2014) state that concerns about media influence started back in the 1960s, but the problem has remained unsolvable even today. In order to overcome this problem, contemporary curricula should ensure knowledge, skills, and competences required by modern man. That is the reason why media education should be an important component of the contemporary education curricula which, according to Previšić (2005), includes "scientific establishment of goals, tasks, content, planning, organisation, and technology of implementation, and various forms of evaluation of effects". Pavičić Vukičević (2019) underlines the continuous need to revise and innovate the curriculum in order to respond to the challenges it faces and the needs of contemporary society, which is why Matijević and Rajić (2015) state that the starting point for every curriculum planning and design should be a modern child belonging to the Internet generation.

The need to put the Internet generation at the centre of attention in curriculum drafting is confirmed by the research results in the USA showing that an average child spends 50 hours a week watching television or interacting with the electronic media (Hattie & Yates, 2014). It is therefore important to bear in mind that students today process information differently from their ancestors (Marc Prensky, 2001 as cited in Hattie & Yates, 2014). Furthermore, more than 35 % of 300 media education experts in the conducted survey highlight the most important aims in teaching media literacy in school: demonstrate an

understanding of the types of media texts and the role of media in democratic societies, recognize the types of media, create media text for self-expression intended for different audiences using appropriate media language, and analyse and critically evaluate media representations of people, subjects, values and behaviour (Fedorov, Levitskaya, & Camarero, 2016). Vrkić Dimić (2014) emphasizes the importance of critical evaluation by claiming that it has become more important than ever so that it reduces the individual's ability to only imitate others and enables him to be innovative.

Media Literacy in Croatian Education System

The concept of media literacy was first mentioned in Croatia in 2014 in the document called *The Strategy for Education, Science and Technology*, stating that media literacy was represented in various degrees within the subject of the Croatian language in its portion on media culture and Computer Science in primary school. There were also many projects within a homeroom class, extracurricular activities, library activities, and various activities in film or journalism clubs. It was also pointed out that children and young people in Croatia in the existing educational system have a partial access to media education in general (Kanižaj & Car, 2015). Although new media (mobile devices, the Internet, etc.) have a prominent place in education, they are still quite omitted in curricula. According to the *Study on Assessment Criteria for Media Literacy Levels*, the purpose of media education should be to stimulate individuals to access all kinds of media in the form of tools for understanding the world and participating in the community because critical thinking and active citizenship depend on the development of media literacy (EAVI, 2009).

Media education is represented in *The National Curriculum Framework for Pre-School Education and General Compulsory and Secondary Education* (MZOŠ, 2011) which Baranović et al. (2015) presents as the basis for continuing education and assessing professional orientation, with the state determining the level and direction of human capital, while Mlinarević and Zrilić (2015) define it as a development document that is the starting point and the basis for all other documents. That is why the focus on media education is extremely important in the national framework curriculum. In the National Framework Curriculum, media education was highlighted in the cross-curricular theme “Use of ICT”, Computer Science subject and in the language and communication section which states the need for media culture and development of the critical approach to media content (MZOŠ, 2011). The most important part of media education is envisaged within the curriculum of Croatian Language – Culture and Media, which follows the *Council Recommendation on Key Competences for Lifelong*

Learning stressing the importance of improving media literacy (European Commission, 2018).

Media Literacy in Extracurricular Activities

One of the important ways of improving media education in Croatia is school curricula. The National Framework Curriculum is a foundation for the development of school curriculum (Sučević, Sakač, & Bulatović, 2013) which Jurić (2005) describes as the basic document of school which envisages the working of a school institution, the way it operates and ultimately evaluates the effects of school on students and teachers. The aim is to stimulate the development of skills and abilities that enable students to overcome everyday life challenges (Buljubašić Kuzmanović & Blažević, 2015), which are reflected in projects, elective courses, and extracurricular activities in accordance with school equipment and needs of the local community whose educational goals can be carriers of media literacy of students of a particular school. Miliša and Ćurko (2010) stress the need to implement media education in order to form instructions and methodology proposals for teaching children critical thinking when it comes to the information they receive through the media.

Extracurricular activities are prescribed by law and are a part of the culture of Croatian schools. Each school has the freedom to choose and implement different extracurricular activities (Svalina, Bistrović, & Peko, 2016) which gives each school the opportunity to organise extracurricular activities aimed at media education. Students engage in extracurricular activities according to their own interests, and by participating in them, they achieve desirable goals arising from those interests and needs. In this way, children fulfil their free time in a quality way (Svalina, Bistrović, & Peko, 2016).

Considering the increasing exposure of children and youth to different media content, and thus the growing need for media literacy, this research aimed to establish the existence and representation of extracurricular activities in school curricula aimed at media literacy of students in primary schools in the Virovitica-Podravina and Požega-Slavonia Counties in the Republic of Croatia. In accordance with the aim, the following research questions were raised:

- Are there extracurricular activities in school curricula aimed at the media literacy of students?
- What are these extracurricular activities aimed at the media literacy of students?
- Which extracurricular activities aimed at media literacy of students are most represented in lower (1-4) grades and which in higher (5-8) grades of primary school?

- What is the representation of extracurricular activities aimed at media literacy of students in relation to the total number of extracurricular activities in schools?

The method of data collection was working on documentation – the analysis of 25 school curricula for the 2020/2021 school year available on websites of primary schools. The results are described by a descriptive method.

Methodology

The non-probability intentional sampling of this non-empirical research consists of the curricula of 25 primary schools for the 2020/2021 school year in two selected counties in Croatia. The school curricula were obtained on the websites of 13 primary schools from Virovitica-Podravina County and on the websites of 12 primary schools in Požega-Slavonia County. The list of primary schools in these counties was obtained on the web portal for schools in Croatia - *skole.h.* The method of data collection was working on the documentation. The instrument of data collection from school curricula was a record sheet. The analysed extracurricular activities in school curricula were all those containing clearly stated goals and ways of realization, as well as stated grades for which these activities are intended all with the purpose of finding answers to the posed research questions. Only extracurricular activities aimed at media literacy of students were singled out. A quantitative content analysis was used in this research and the results were described by the descriptive method.

Research Results and Discussion

The results of the analysis of the primary school curricula point to the existence of extracurricular activities aimed at media literacy of primary school students (Table 1). Out of 25 schools, there are 2 schools that do not have any such activities and there are as many as 9 schools that have only one such activity. These results indicate a lack of media literacy representation in the extracurricular activities of primary schools although schools have freedom to choose extracurricular activities to implement in their curricula (Svalina, Bistrović, & Peko, 2016). Given the constant exposure of children and young people to different media content and devices through which they access them, schools should have extracurricular activities that teach students the skills necessary to safely and purposefully use and create media content.

Table 1 ***Number of Extracurricular Activities Aimed at Media Literacy in Schools***

SCHOOL	NUMBER OF ACTIVITIES	SCHOOL	NUMBER OF ACTIVITIES
No.1	5	No.14	1
No.2	6	No.15	1
No.3	6	No.16	2
No.4	3	No.17	1
No.5	0	No.18	2
No.6	1	No.19	1
No.7	1	No.20	2
No.8	4	No.21	4
No.9	1	No.22	3
No.10	2	No.23	1
No.11	2	No.24	1
No.12	0	No.25	2
No.13	2		

Extracurricular activities that appear in at least two schools are visible, while activities that appear in individual schools are omitted (Table 2). The most prevalent extracurricular activity in 12 schools is focused on journalism. This activity appears in 12 schools only from 5th to 8th grade and never from 1st to 4th grade (Table 2). News and reading literacy is a part of media education which is much represented in Croatia. It provides knowledge about creating news, aspects of journalism etc. (Petranová, Hossová, & Velický, 2017). That may be the reason why there are so many extracurricular activities focused on journalism in the analysed school curricula.

According to the goals stated by schools for journalistic extracurricular activities, students acquire numerous competencies in creating media content for the printed media - newspapers. Those activities include an introduction to basic concepts, analysis and critical overview of media content, field research such as conducting interviews, creating media content in the form of photographs and written texts, publishing their own newspaper articles in the school newspaper and on the school website. Due to the location of publication of these articles, this extracurricular activity can also be associated with the activity that points to the creation of a school newspaper in two schools and activity that points to online journalism in three schools. By linking these three extracurricular activities, there is even more to the point that among all schools, the most represented extracurricular activities are closely related to journalism so there are 17 of them accounting for 68 % of all schools whose curricula were analysed in this research. We can see a great link between the traditional printed media – newspapers and digital media. Students in such extracurricular activities can understand the unbreakable link between traditional and new media because all the media they

encounter in the press are previously created in a digital form. At the same time, it is important that students perceive the possibility of distorting information in certain media texts or rearranging photographs that have been published, which ultimately leads them to understand the importance of a critical overview of the media surrounding them every day and the social responsibility they have as creators of media content. Improving the ability of a critical overview of the media content may lead to improving individual's ability to be innovative (Vrkić Dimić, 2014).

Table 2 ***List of Extracurricular Activities Aimed at Media Literacy of Students***

EXTRACURRICULAR ACTIVITY	**NUMBER OF SCHOOLS**	**NUMBER OF ACTIVITIES**	
		GRADE 1-4	**GRADE 5-8**
Multimedia	2	1	1
Journalism Club	12	0	12
School Newspaper – publishing activity	2	2	2
Website – Online Journalism	3	1	3
Literary Club	3	1	3
Photo and Video	6	2	4
Computer Science	6	3	3
Media Literacy	6	3	5
Literary Journalism Club	3	0	3
Film and Cinema	3	0	3

Regarding the extracurricular activities aimed at media literacy, Table 2 shows that there is a significant difference between lower and higher grades of primary school. In lower grades, the most prevalent activities are related to Computer Science and media literacy. The objectives listed in the curricula for activities related to Computer Science are mainly aimed at developing digital and Computer Science competences, which are important segments of media literacy and without which it is impossible to be “media literate” because knowledge on the use of certain digital devices is essential for accessing media content that provides us with different information. Furthermore, such activities are aimed at acquiring different ICT skills in the form of independent content creation, work, and communication in an online environment, etc. Besides, the second most represented activity in lower grades is media literacy which points to a wide range of competences and skills included in media literacy: grasping of basic concepts, critical view of media messages and their understanding within the social and cultural environment, creating media messages, developing awareness about the importance of understanding the scope of media literacy, safe use of the Internet

and ways of collecting information and their formation into media content closely related to journalism. Such extracurricular activities should provide the most complete media education in which students will acquire skills for a proper approach to different media content, analysis and critical overview of media content, and ultimately the independent and responsible creation of media content.

The results in Table 2 point to a lack of journalistic extracurricular activity in lower grades, indicating that students of younger school age are not considered competent enough for the challenges of journalistic activities. Journalistic extracurricular activities introduced from an early age might have a positive effect on students by providing citizenship education which is very important in the era of globalisation in which we live (Wahyuningsih, Roesminingsih, & Setyowati, 2018). However, activities related to the creation of a school newspaper and participation in the creation of content on the school website are represented in lower grades, which is confusing if we question why students of younger school-age can become involved in creating a school newspaper or website content, but cannot be included in exclusively journalism clubs. This situation raises some questions: Why are journalism clubs focused on higher grades students? Do students of younger school-age actively participate in the creation of school newspaper and website content or are they mostly just passive observers?

The share of extracurricular activities aimed at media literacy in the curricula of all analysed schools is 8.00 % although children and youth are very exposed to the media. The results indicate that such extracurricular activities are 3.76 % more represented in higher grades than in lower grades, which reflects less exposure of younger primary school students to activities liked to media literacy (Table 3). Also, media literacy is in some other countries directed just to higher grades of primary and secondary schools such as Hungary and Austria (Zhang, Zhang, & Wang, 2020) or in even higher level of education such as in Bulgaria, Spain and Slovakia (Petranová, Hossová, & Velický, 2017). But, media specialists are focused on incorporating media education in school curriculum even for lower levels of education (Petranová, Hossová, & Velický, 2017).

Table 3 ***Share of Extracurricular Activities Encouraging Media Literacy of Students in Relation to the Total number of Extracurricular Activities***

	All activities	**Activities aimed at media literacy**	**Share in the total number of extracurricular activities**
Lower grades (1^{st}-4^{th})	306	18	**5.88 %**
High grades (5^{th}-8^{th})	394	38	**9.64 %**
TOTAL	700	56	**8.00 %**

The presented results of this research make a scientific and practical contribution. The scientific contribution is reflected in numerous uninvestigated causal links that can explain these results and then explore the possibilities of making progress in the media literacy of students in Croatia. Furthermore, the practical contribution is reflected in teachers' awareness on the lack of extracurricular activities aimed at media literacy of students, which encourages teachers to engage further towards better education of Internet generations.

Finally, it is important to emphasize the limitations of this research. The conducted research included only 25 schools from two counties and their curricula that were available on the school websites and that met all the requirements for the analysis in order to answer research questions and achieve the research goal. In order to obtain a more accurate overview, such research should be conducted at the national level.

Conclusions

Media literacy is a basis for an active citizenship and critical thinking (EAVI, 2009) which may be an initial point for improvement of individual's ability to be innovative (Vrkić Dimić, 2014). Therefore, it is important to implement media literacy into school curriculum. A way to do it may be designing specialized extracurricular activities aimed to encourage students' media literacy. 25 analysed primary school curricula in this research show that there are extracurricular activities aimed at media literacy of students in primary schools in Virovitica-Podravina and Požega-Slavonia Counties in Croatia, but they are not equally represented in all schools. That contribute to partial access to media education in the Croatian educational system (Kanižaj & Car, 2015). There are even schools that do not have any such extracurricular activity, which is inconsistent with the lifestyle of children and youth nowadays and shows that a starting point for planning and designing some school curricula is not a modern child (Matijević & Rajić, 2015). Moreover, such extracurricular activities have a small share in the total number of extracurricular activities in primary schools and are more represented in higher grades with most activities directed at journalism, while in lower grades the most frequent activities are directed at the very concept of media literacy and are related to Computer Science.

Finally, the results clearly indicate the lack of media literacy of primary school students in offered extracurricular activities given the daily exposure of children and youth to the media. There is a wide range of possibilities in education for progress and further awareness of the importance of media literacy in life and the advancement of a modern man.

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DO PRIMARY SCHOOL STUDENTS LIKE MATHEMATICS?

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Abstract. *Importance of mathematics as a school subject is evident in a fact that it is a constituent part of core curriculum for basic education in all education systems in the world. First few years of education are of crucial importance to the formation of attitudes towards mathematics. Attitudes are important because they navigate our actions and by doing so, influence our reality and our future as well. Research on attitudes towards mathematics has considerably increased over the past few years, since the importance of mathematics is getting continuously more accentuated. In the context of schools and education, it is emphasized how positive attitude towards mathematics influences students' relationship with school-work, studying, confidence and behaviour. The aim of the study was to determine primary school students' attitudes towards mathematics. One hundred and seventy-one students from 3rd to 8th grade from III Primary School Varaždin, Croatia participated in the research. The data were analyzed with t-test and one-way ANOVA for independent samples. The research has shown that there is no statistically significant gender difference in attitudes towards mathematics; however, age difference was confirmed. It was also found that younger students in primary education had a more positive attitude towards mathematics than older students. Practical implications of acquired results could be in providing additional support to 5th and 6th grade students when the change from positive to negative attitude happens.*
Keywords: *age, attitude, gender, mathematics, primary education, students.*

Introduction

Rapid development of science and technology is impossible without mathematics. Mathematical skills and competence are recognized as vital to personal and economic success (Lipnevich et al., 2011). Importance of mathematics as a school subject is evident in a fact that it is a constituent part of core curriculum for basic and also secondary education in all education systems in the world. Zhou et al. (2019) emphasize that primary education is an essential stage and has an important impact on students' learning attitudes throughout the coming school years.

Throughout history, attitudes have been defined in different ways. Krech and Crutchfield (1976) define attitude as permanent organization of perceptual,

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instinctive, emotional and adaptable processes tied to a certain aspect of human life. McLeod (1994) defines them as positive and negative emotional dispositions. Pennington (2001) describes attitude as a construct that is used as a guide to certain mental processes of a person. Aydin defines attitude as "a cognitive, affective and behavioral reaction the individual organizes toward himself/herself or any object, subject or fact around him/her based on information, feelings, and motivation" (2012, p. 334). Attitudes are not inherent; they can change as a result of an experience (Capuno et al., 2019).

Attitudes towards mathematics have been a topic of numerous research projects that have begun in the second half of 20th century. In the last 20 years, these research projects have become even more frequent. Today there is more and more talk about the development of STEM area (Science, Technology, Engineering and Mathematics) and with that, more interest in influences on evolution of mathematics.

Review of the Literature

Zan and Di Martino (2007) point out that an attitude towards mathematics is a construct which plays an important role in mathematics education. Students' attitudes play a vital role in the learning of mathematics (Kele & Sharma, 2014), therefore attitude is a fundamental factor that cannot be ignored (Mazana, Montero, & Casmir, 2019).

Early research about attitudes towards mathematics has shown that positive attitudes toward mathematics play a big role in mathematics education (Neale, 1969). The author classifies attitudes towards mathematics as liking or disliking, diligence or avoidance, good and bad attitudes towards mathematics and also classification by usefulness of mathematics. Students' attitudes towards mathematics are highly associated with their achievement in mathematics (Chagwiza et al., 2013; Tuncer & Yilmaz, 2020). Research also shows that parents have a big role in forming of positive and negative attitudes towards mathematics (Arambašić & Vlahović-Štetić, 2003; Mohr-Schroeder et al., 2017). Prior to formal education, mostly parents influence the formation of attitude towards mathematics, but in school, there are also other factors and influences. Teachers as role models can have a big impact on attitudes of students towards mathematics (Fržop, 2019). Oyedeji (2017) in his research confirms that parents, teachers and peers influence the formation of attitudes of students. Influence of peers on attitudes can also be positive or negative.

Research has so far shown that when children start going to school, they have a positive attitude towards mathematics; however, these attitudes change throughout their education and become more negative (Ma & Kishor, 1997). Throughout education, negative attitude towards mathematics tends to become

more and more negative, while at the same time the importance of mathematics in education and in life after education becomes more emphasized (Arambašić, Vlahović-Štetić, & Severinac, 2005). Failing at grasping mathematical concepts very often generates the feeling of insecurity and students create a negative self-image and feel incompetent (Sherman & Christian, 1999).

Results of studies on gender differences mostly imply that mathematics is either a male-dominated area or that no gender differences were identified, but some studies show that females have a more positive attitude to mathematics than males (Kaldo & Õun 2020, p. 597). Some authors explain that negative attitude towards mathematics in girls is formed in their upbringing through which an idea that mathematics is only for boys is imposed (Hyde, Fennema, Ryan, Frost, & Hopp, 1990). After meta-analysis, Frost, Hyde and Fennema (1994) prove that gender differences in levels of success in mathematics are getting smaller. Despite that, many researchers have shown since that girls have a more negative attitude towards mathematics than boys do (Keller, 2001; Leedy, LaLonde, & Runk, 2003; Arambašić et al., 2005; Else-Quest, Hyde, & Linn, 2010; Markovits, & Forgasz, 2017). Furthermore, most studies show that older students have a more negative attitude towards mathematics than younger ones (Hyde et al., 1990; Mata, Monteiro, & Peixoto, 2012; Mazana, Montero, & Casmir, 2019).

By looking into this issue, it was observed that in Croatia, the development of attitudes towards mathematics was monitored by gender, age, success and motivation and also that in the last 20 years, many studies have been conducted on this topic (Arambašić et al., 2005; Bušac, 2006; Pavlin–Bernardić, Ravić, & Borović, 2012; Novak & Brođanac, 2019). Concerning gender, most studies indicate that females generally have a more negative attitude towards mathematics than male examinees. With that, Vidić (2016) implies that boys have a more positive attitude towards mathematics than girls. It should be noted that not every research has shown the gender difference, for example in a study conducted by Cezner (2016), there was no difference in attitude towards mathematics between female and male students. Concerning age, younger students have a more positive attitude than older students (Pavlin-Bernardić et. al., 2010; Cezner, 2016; Vidić, 2016).

Primary education in Republic of Croatia lasts 8 years and is obligatory for all children from 6 to 15 years of age. During first 4 years of primary education students are taught by only one teacher (excluding foreign languages, religion and computer science). Generally, in grades 5 to 8, every subject is taught by a different teacher (specialized for that subject).

The aim of the study was to determine primary school students' attitudes towards mathematics.

In the study the following research questions are determined:

1) Is there a significant gender difference in the primary school students' attitudes towards mathematics?
2) Is there a significant grade level difference in the primary school students' attitudes towards mathematics?

Methodology

Following hypotheses were set:

H1: There is no significant gender difference in the primary school students' attitudes towards mathematics.

H2: There is no significant grade level difference in the primary school students' attitudes towards mathematics.

Sample of the study

Students (ages 9-15) from 3rd to 8th grade from III Primary School Varaždin, Croatia participated in this study. Research population were students of III Primary School Varaždin (N=292) and from that, non-representative probability sample (N=171) was defined. Students were split in three different age groups:

1. Group - 3rd and 4th grade students (n=57)
2. Group - 5th and 6th grade students (n=58)
3. Group - 7th and 8th grade students (n=56).

The probability sample consisted of 81 girls (47%) and 90 boys (53%).

Procedure of the study

Before conducting the research, an approval from the school principal was received. The participation was voluntary and anonymous. Also, a signed approval was received from every student's parent. The research was conducted in accordance with Ethical Standards for Research with Children. The data were collected through a survey carried out in April during school year 2019/20. The survey took place at the school during agreed classes and in the presence of teachers. The length of the survey was around 10-15 minutes and it was done using pen and paper.

Instrument and Data Analysis

Original instrument *Attitudes Toward Mathematics Inventory* (ATMI) consists of 49 item and the ATMI psychometric analysis revealed sound properties and therefore can be used by researchers and practitioners to measure students' attitudes toward mathematics (Tapia, 1996). An adapted version of the survey ATMI was used and it consists of 40 statements and measures 4 aspects: confidence, importance/usefulness, enjoyment and motivation. Students were asked to choose one of 5 offered levels of agreement on the Likert scale, where smaller values represented smaller levels of agreement with a statement.

The data were collected were analysed in *SPSS* 22 Statistics software. For comparative analysis, t-test and one-way ANOVA was used in order to examine the changes depending on gender and age variables.

Results

Statements that were not answered or had multiple different answers were omitted from the analysis. Before the analysis, statements from the questionnaire where the smallest possible number was the most positive answer were redefined, so that the smallest number also implied the most negative answer. Altogether there were 11 such questions, namely the questions 9, 10, 11, 12, 13, 14, 15, 20, 21, 25 and 28. After that, a composite variable which included all the other variables that measured students' attitude towards mathematics was defined. Afterwards, a descriptive statistic for individual statements from the questionnaire and for the composite variable *"Attitudes of primary school students towards mathematics"* was calculated. The data are presented in Table 1. Skewness is –0.685 which means that the data follow a normal distribution with a negative kurtosis of –0.263.

Table 1 ***Descriptive Statistics of Students' Statements Attitudes Towards Mathematics***

	M	SD	Skewness	S. St Err	Kurtosis	K.St Err
1. Mathematics is a very worthwhile and necessary subject.	4.67	.680	-2.569	.186	7.864	.370
2. I want to develop my mathematical skills.	4.33	.992	-1.668	.187	2.439	.371
3. I get a great deal of satisfaction out of solving a mathematics problem.	3.57	1.127	-.843	.187	.117	.371
4. Mathematics helps develop the mind and teaches a person to think.	4.59	.832	-2.549	.186	7.061	.370
5. Mathematics is important in everyday life.	4.62	.761	-2.666	.186	8.412	.370
6. Mathematics is one of the most important subjects for people to study.	4.36	.907	-1.689	.186	3.072	.370
7. High school math courses would be very helpful no matter what I decide to study.	4.64	.760	-2.851	.187	9.379	.373
8. I can think of many ways that I use math outside of school.	4.21	1.014	-1.406	.187	1.593	.373
9. Mathematics is one of my most dreaded subjects.	3.44	1.511	-.327	.187	-1.408	.373
10. My mind goes blank and I am unable to think clearly when working with mathematics.	3.68	1.433	-.602	.187	-1.039	.371
11. Studying mathematics makes me feel nervous.	3.72	1.427	-.631	.187	-1.105	.371
12. Mathematics makes me feel uncomfortable.	3.95	1.389	-.954	.187	-.573	.371
13. I am always under a terrible strain in a math class.	3.79	1.440	-.750	.187	-.939	.373
14. When I hear the word mathematics, I have a feeling of dislike.	4.17	1.260	-1.281	.187	.348	.373
15. It makes me nervous to even think about having to do a mathematics problem.	3.91	1.394	-.856	.187	-.727	.371
16. Mathematics does not scare me at all.	3.53	1.508	-.558	.187	-1.180	.371
17. I have a lot of self-confidence when it comes to mathematics.	3.53	1.370	-.690	.188	-.724	.374

18. I am able to solve mathematics problems without too much difficulty.	3.62	1.222	-.648	.189	-.539	.376
19. I expect to do fairly well in any math class I take.	3.71	1.308	-.792	.188	-.469	.374
20. I am always confused in my mathematics class.	3.82	1.270	-.677	.187	-.756	.373
21. I feel a sense of insecurity when attempting mathematics.	3.46	1.435	-.362	.187	-1.280	.371
22. I learn mathematics easily.	3.49	1.340	-.478	.187	-.925	.373
23. I am confident that I could learn advanced mathematics.	2.99	1.476	-.092	.187	-1.391	.373
24. I have usually enjoyed studying mathematics in school.	3.70	1.238	-.721	.187	-.439	.371
25. Mathematics is dull and boring.	4.02	1.270	-1.022	.187	-.134	.371
26. I like to solve new problems in mathematics.	3.48	1.341	-.510	.187	-.868	.371
27. I would prefer to do an assignment in math than to write an essay.	3.76	1.602	-.784	.187	-1.078	.371
28. I would like to avoid using mathematics in college.	3.34	1.484	-.254	.187	-1.342	.371
29. I really like mathematics.	3.70	1.269	-.678	.188	-.547	.374
30. I am happier in a math class than in any other class.	2.96	1.247	-.213	.187	-.971	.373
31. Mathematics is a very interesting subject.	3.92	1.172	-.855	.186	-.248	.370
32. I am willing to take more than the required amount of mathematics.	3.50	1.158	-.509	.186	-.547	.370
33. I plan to take as much mathematics as I can during my education.	3.58	1.175	-.577	.186	-.415	.370
34. The challenge of math appeals to me.	3.22	1.356	-.273	.186	-1.088	.370
35. I think studying advanced mathematics is useful.	4.14	1.113	-1.207	.186	.692	.370
36. I believe studying math helps me with problem solving in other areas.	4.13	1.071	-1.297	.186	1.286	.370
37. I am comfortable expressing my own ideas on how to look for solutions to a difficult problem in math.	3.60	1.233	-.578	.186	-.485	.370
38. I am comfortable answering questions in math class.	3.73	1.384	-.778	.186	-.704	.370
39. A strong math background could help me in my professional life.	4.40	.963	-1.910	.186	3.641	.370
40. I believe I am good at solving math problems.	3.62	1.264	-.647	.186	-.581	.370
Attitudes of students towards mathematics **(composite variable)**	154.1	33.314	-.685	.199	-.263	.395

Since further statistical analysis was on the composite variable *Attitudes of students towards mathematics*, the normality of the distribution was verified with the Kolmogorov-Smirnov test ($D(148) = 0.120$ $p > 0.01$). Results show that the variable follows normal distribution and that parametric statistical tests were used for testing the hypotheses.

The first goal was to test if a statistically significant gender difference in attitudes towards mathematics exists. The difference was verified with the t-test for independent samples. It was shown that no statistically significant gender difference in attitudes towards mathematics exists ($t = 0.989$, $df = 147$, $p = 0.324$) and therefore, the first hypothesis is confirmed.

Furthermore, existence of statistically significant age/grade difference in attitudes towards mathematics was tested. The results shown in Table 2 indicate that students in 5th and 6th grade ($M = 148.292$, $SD = 35.106$) and students in 7th and 8th grade ($M = 141.300$, $SD = 33.597$) have more negative attitude towards mathematics than students in grades 3 and 4 ($M = 172.137$, $SD = 22.189$).

Table 2 ***Attitudes of Students Towards Mathematics by Age/Grade***

	N	Mean	Std. Dev.	Std. Error	95% Confidence Interval		Min.	Max.
					Lower Bound	Upper Bound		
3rd and 4th grade students	51	172.1373	22.18920	3.10711	165.8964	178.3781	103.00	198.00
5th and 6th grade students	48	148.2917	35.10589	5.06710	138.0980	158.4854	49.00	200.00
7th and 8th grade students	50	141.3000	33.59741	4.75139	131.7517	150.8483	62.00	196.00
Total	149	154.1074	33.31426	2.72921	148.7141	159.5006	49.00	200.00

In statistical analysis, a one-way ANOVA for independent samples was also calculated. It was shown that there is a statistically significant age/grade difference in attitudes towards mathematics ($F_{2,146} = 13.982$, $p < 0.01$). From this data, we can conclude that the second hypothesis can be rejected. In order to determine the difference, the Turkey post hoc test was used (Table 3). Among students in grades 5, 6, 7 and 8 no difference in attitudes towards mathematics was found ($p = 0.05$).

Table 3 ***Age/Grade Differences in Attitudes Towards Mathematics***

(I) Age/grade	(J) Age/grade	Mean difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
3rd and 4th grade students	5th and 6th grade students	23.84559	6.17935	.000	9.2138	38.4774
	7th and 8th grade students	30.83725	6.11535	.000	16.3570	45.3175
5th and 6th grade students	3rd and 4th grade students	-23.84559	6.17935	.000	-38.4774	-9.2138
	7th and 8th grade students	6.99167	6.20924	.500	-7.7109	21.6943
7th and 8th grade students	3rd and 4th grade students	-30.83725	6.11535	.000	-45.3175	-16.3570
	5th and 6th grade students	-6.99167	6.20924	.500	-21.6943	7.7109

*.The mean difference is significant at the 0.05 level.

Discussion

With this research we wanted to test if there are gender or age differences in primary school students' attitudes towards mathematics.

According to acquired results, there is no statistically significant difference in attitudes towards mathematics between boys and girls, so first hypothesis was confirmed. Many studies have focused on gender differences in attitudes towards mathematics and according to some of them boys have a more positive attitude

than girls (Keller, 2001; Leedy et. al., 2003; Arambašić et. al., 2005; Else-Quest, Hyde, & Linn, 2010; Markovits, & Forgasz, 2017). Results from other studies have shown that there is no statistically significant gender difference in attitudes (Nicolaidou & Philippou, 2003). Possible explanation of our results is that the current primary education system provides adequate support for boys and girls, along with many mathematical activities that are offered and popularize mathematics (e.g. Math Night events, mathematics festivals, Eratosthenes Experiment, international mathematics competition Mathematical Kangaroo, centre for advanced/further mathematics). In all of these projects and activities, boys and girls are equally included and their attitudes towards mathematics are not much different.

Present study does not confirm the hypothesis about no existing age/grade level difference in the primary school students' attitudes towards mathematics. This finding is consistent with past research projects, older students tend to have a more negative attitude towards mathematics than younger students (Hyde et. al., 1990; Pavlin-Bernardić et al., 2012; Vidić, 2016). Our research has shown that students in 3rd and 4th have a more positive attitude towards mathematics than students in grades 5-8. Furthermore, we can see from the data that attitudes of students became considerably more negative in grades 5 and 6. There could be several reasons for that change. Fifth grade students experience many changes in ways that classes are organised and taught. In grades 3 and 4 they still have a single-class-teacher who knows them well and there is a mutual understanding and connection. In grade 5, they get a different teacher for every subject and every teacher works and teaches in a different way. They also have four new subjects and consequently more classes which means they spend more time in school and have more things to learn. Apart from that, it seems that parents expect their children to be more independent and responsible at that age. The acquired result could also be a consequence of peer pressure, students of that age (12-13) are often characterized by dislike for teachers' and parental authority and for schoolwork in general.

This research was conducted on a probability sample of students in III. Primary School Varaždin and because of that, we cannot generalize our results to all primary schools in Croatia, but it would be useful to do the same study in other primary schools in Varaždin and Varaždin County, so that a comparative analysis could be done.

Practical implications of acquired results could be in providing additional support to 5th and 6th grade students when the change from positive to negative attitude happens.

Conclusions

Attitudes are important because they navigate our actions and in doing so, influence our reality and also our future. Positive or negative attitude towards mathematics is probably going to determine the future education path, career and life of our students. Even though students realise the potential and value of mathematics and rate it very high in terms of importance, it is evident that there is a certain anxiety towards it and a low level of satisfaction students get from it.

This research has not confirmed any gender differences in attitudes towards mathematics, while the age difference was confirmed. Younger students tend to have a more positive attitude towards mathematics than older students. That result should be understood as a "pointer" so that students' attitudes could be guided to a more positive direction. Mathematics classes should build bridges between mathematics as a subject and science, not break them. According to our results, it seems that the most negative change happens around the age of 12 and therefore, we should concentrate our efforts on that age group.

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EDUCATIONAL WORK WITH GIFTED CHILDREN THROUGH INTERNET IN CHINA (ON THE EXAMPLE OF COMMUNICATIVELY GIFTED CHILDREN)

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Abstract. *Chinese pedagogical science always had rather complex relationship with the concept of «giftedness» as a social and educational reality because only the person's social success (good position, social and professional demand, maximum compliance with the social ideal of society) was seen as the sign of the person's giftedness in traditional Chinese pedagogy. Online education always considered to be a supporting form of education service in China or a variant of education service providing for special categories of children (hard-to-reach children, children with special physical and educational needs, those who are in difficult life situations: imprisoned, in hospital etc). However the 2020 pandemic situation faced the whole world and China in particular with the need to reconsider views as to the place of distance education. All pedagogical and educational work in the world has been moved online and work with gifted children is of no exception. The article aims to present the Chinese experience of online work with gifted children (especially the communicatively gifted ones) by the means of special education platforms and programs. To write the article, a complex of theoretical and empirical research methods was used (abstraction method, analysis of pedagogical literature, induction and deduction, observation etc.).*
Keywords: *communicatively gifted children; creative education; distance education; education platform; gifted children; online education; socially gifted.*

Introduction

Revealing, development and support of gifted children, ensuring their personal, social self-realization and professional self-determination is a modern social order, which determines “the preservation of the country's national gene pool, the formation of the future highly professional elite in various fields of intellectual and creative activity” (Clark, 2008). The issue of children’s giftedness, educational work with them, development of their abilities refers, on the one hand, to the rather studied ones, on the other hand, it is a subject of ongoing disputes in the pedagogical environment. By the beginning of the XXI

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century the problem of identifying and developing of gifted children, realizing their potential has not lost its relevance, but scientific views on what constitutes children's giftedness, what are its types, methods of identification, pedagogical methods of development, have changed in many ways. New types of giftedness were identified (empathic, leadership, social, communicative, etc.).

The giftedness of children became the subject of the Chinese pedagogical sciences` attention only in the second half of the XX century. Then appeared the system for the selection of children gifted in various fields of activity (science, music, sports, technology) with their further relocation to specialized educational institutions (mainly of the boarding type) for the maximum development of their abilities. Communicatively gifted children present a special category of gifted children as the processes of working with such children goes systematically in the process of obtaining general education and do not imply the exclusion of communicatively gifted children from the primary children's collective for subsequent transfer to specialized internats or classes. The Chinese education system is interested in the early identification and development of such children, since it is them who are subsequently considered as the personnel reserve of the Party and social movements in the country.

Computer technologies today are an integral part of the education systems around the world. Thanks to the good financial support from the state, China today can be considered the flagship in the use of computer programs and the Internet in the educational process. However, the majority of modern computer products, cracking for the development of a certain type of giftedness, bypass the work in the field of communicative giftedness.

In the research we used a complex of pedagogical methods traditional for research of such kind: analysis of pedagogical literature, media materials, documentation on issues of both distance educational work with children in general and the practice of working with communicatively gifted children in particular in the Peoples Republic of China (PR China) and abroad; praximic methods (process analyses of practical activities in this area of education; method of independent characteristics); analysis and synthesis of existing approaches and theoretical ideas; induction and deduction; classification; analogy; comparison; hypothesis making; forecasting. Among the empirical methods that were used while making the research, there can be named observation, pedagogical consulting, studying, generalization and dissemination of typical and advanced pedagogical experience of the PR China in the field of requirements for modern educational IT product.

Literature Review

Since the subject of this article is complex and consists of at least 3 components (the general concept of communicative giftedness, the features of educational work with gifted children in the context of online education and the features of IT product for gifted children's activities in modern China), the characteristics of modern scientific research will also consist of 3 blocks. We have not found studies that would raise the issue of pedagogical work with communicatively gifted children in the context of online education, in particular in the PR China.

Based on the most popular interpretations of the giftedness concept (which came to education from psychology), modern world and Chinese pedagogy see giftedness as:

- qualitatively unique combination of abilities that ensures successful performance of the activity (J. Renzulli and others) (Renzulli, 2016);
- general ability that determines the breadth of a person's capabilities, conditions and originality of his activities (Abraham, 2018);
- mental potential, or intellect; a holistic characteristic of (individual) cognitive and learning abilities (S. Schroth, J. Helfer and others) (Schroth & Heifer, 2019);
- talent, the presence of internal conditions for outstanding achievements and activities (Liu & Barnhart, 2006);
- a high level of development of any abilities (scientific, artistic, creative etc.) (R. Sternberg & K. Sternberg, 2016);
- dominance of a certain trait of a person's character, which determines his /her personality type, behavior, etc. (empathic giftedness, social giftedness, communicative giftedness etc.) (Chenneville & Schwatrz-Mette, 2020).

Most modern scientific works by both Chinese and foreign researchers devoted to the issues of pedagogical work with gifted children in China and the PR China today are mainly devoted to the issues of gifted children selection and training system`s genesis in China with the emphasis on the historical component (Zhang, 2018); comparison of the Chinese and American, British and Russian systems of work with this category of children (Dai, Steenbergen-Hu, & Yang, 2016) and the innovations that the Chinese educational institutions of the informal education use in the practice of working with gifted children (Liu & Barnhart, 2006).

Such researchers as R. Liu (Liu & Barnhart, 2006), X. Zhao (2020) in their publications raise questions about the use of modern IT technologies in education in the PR China, insisting on the point of view that these programs should be a

common product of computer and educational specialists, as well as putting forward a number of requirements for an IT product that can be used for the education sector and what components should be present, if a particular program is positioned as the one to be used in work with gifted children

Results

Understanding of talentness and giftedness at all times was far from ambiguous. The idea of giftedness is influenced by cultural and historical conditions: social structure, social values, social ideology, social stereotypes, as well as scientific views and concepts in a particular country in a particular time. Every society defines giftedness according to its needs, therefore its understanding changes depending on time and place. Various types of human activity require different types of giftedness, types of personal orientation. According to the types of activity and the spheres of the psyche that provide it, the following types of talent are traditionally distinguished:

- General intellectual (encyclopaedic);
- Academic (mathematical);
- Creative;
- Artistic and aesthetic;
- Communicative;
- Psychomotor;
- Practical;
- Spiritual and value (Piechowsky, 2019).

The characteristics and needs of different groups of talented children and youth vary greatly, they need different support programs, the system of events that would be closely related to the main type of the talent the child has.

The communicative abilities of a person occupy an important place in the general structure of human abilities. The level of their development determines how successfully the individual can communicate with others. Communication is one of the key factors in development and socialization of a person; without it, these processes are impossible. Through communication a person assimilates information, knowledge, experience, norms, etc., and also identifies himself/herself as a person.

As modern studies show (Rogers, 2002), success in life is often achieved not by those who have highly developed intellectual abilities, but by the people who can easily enter into communication, establish favorable interpersonal relationships. The basis of success in a social environment largely depends on communicative abilities and giftedness. Communicative giftedness covers a wide area of social relations at the “person - person” level, presupposes the innate

ability of a person to establish contacts, to understand human behavior correctly, to express judgments about people quickly and accurately, to understand and predict the behavior of another person and to build high-quality interpersonal relationships. Communicatively gifted people are characterized by a high level of intelligence, well-developed intuition, understanding of feelings and needs of other people, ability to empathize, a vivid sense of humor that helps them to get in touch with other people and to be liked by them (Smith, 2015). Communicative giftedness is an integral part of leadership as a personal characteristic of a person, which is the subject of special attention for the system of pedagogical work with a child in China.

There are many prerequisites for the development of communicative giftedness during childhood. At this time, self-awareness, the need for communication with adults and peers, the ability to empathize, empathy is actively formed, social emotions and feelings develop. Communicatively gifted children are always leaders in a children's team. They have early leadership qualities that contribute to the unification of the children's microcollective. They are distinguished by their activity, a seen interest in people, and the need for communication. It is precisely the communicatively gifted children who become the initiators of interaction in any group. A communicatively gifted child often takes on the role of organizer of collective games and other group activities. Possessing good speech skills, he/she can tell the teacher or other grown-ups what other children want, as a lot of children find it difficult to express their thoughts. In other words, communicatively gifted children are not afraid of grown-ups at any age, they see them as interlocutors and communication partners. Such children always show a willingness to help their peers with advice or deed, they are able to settle emerging conflicts (Bar-On, 2007). Most of children want to communicate and be friends with communicatively gifted children.

Communicatively gifted children clearly imagine how any game or activity can be organized, they know how to create conditions for games or activity: they choose a place, assign roles, find the necessary toys and tools, determine the content of the game or activity and always bring something new into it (mainly into the procedure or predicted result). Such children participate with interest in conversations on the topic of the upcoming game or activity, ask adults many questions in order to learn something new and are happy to share their impressions with everyone around them. Vivid impressions allow communicatively gifted children to take a more responsible attitude to everything they do. They are inventive in their actions with toys, imitate their voices and conduct conversations with them, their activities are emotional in nature. More often communicatively gifted children willingly take on the main roles and do well with them. They often

show exaggerated demands on their peers, striving for leadership (Smith, 2015; Sternberg, 2015).

The preschool group is the first children's community in which communication and various types of children's activities are formed and developed, a new social role is acquired - a member of a children's group, relationships with peers are formed. The task of the preschool and school education system in the PRC is to identify and monitor communicatively gifted children. In contrast to many Western countries (Israel, Ukraine, France, etc.) where the term "hyperactive" is often used for communicative (socially) gifted children and it is believed that this aspect requires pedagogical (and sometimes medical) correction, in modern China, even in kindergarten, such children become "assistants" of the educator and the development of their communicative giftedness goes on systematically and naturally. The kindergarten charter stipulates that each teacher must have at least 2 assistants from among the children of the group. It is believed that this stimulates the children of the group to self-organization, teaches children to be vertical in the team, etc. In cases when there is no informal leader in the group (a child with a seen communicative giftedness), the teacher must observe the children and, during the first 15 days of their stay in kindergarten, identify children with potential leadership qualities and signs of communicative talent. This type of activity is very important for the education system in the PRC today. Communicatively gifted children, passing from nursery school to elementary one and from elementary school to middle school, receive a special mark in the student's personal card and have bonuses for admission to a pioneer or young communist party organizations, become leaders of social movements and subsequently can make a wonderful career in the spheres of public activity or management (Dai, Steenbergen-Hu, & Yang, 2016).

There is one more thing that should be mentioned while analysing the problem of communicative giftedness of children. The main peculiarity of sensual types of giftedness (which includes communicative) is that it does not imply the process of selecting children for special classes or developing and improving of their giftedness in artificially created additional educational institutions (which include children's clubs, individual and group lessons, etc.). The usual mechanisms traditionally used with other types of giftedness (individual work, specialized clubs and courses mainly in non-formal education) do not work with communicatively gifted children, since they need an audience and the realization of their own leadership ambitions for development (Zhao, 2020).

The Coronavirus pandemic turned up to be a real challenge for without the exception every well-established social schemes and models for organizing life and human activities. On the one hand, protracted quarantine and self-isolation as a social phenomenon showed the vulnerability of existing medicine, economics,

public administration and education as existing systems. However, on the other hand, the need to continue life and work, even in such conditions, led to a sharp appearance or activation of forms that before the Corona were only under development. Currently, there are many programs of artificial intelligence (AI) that help in education, thanks to which students, schoolchildren and teachers get huge benefits. The use of artificial intelligence capabilities in teaching humanitarian disciplines or humanities is today the subject of discussion among methodologists. Today in the pedagogical space there are many programs and methods of teaching various disciplines for students of different ages who use the capabilities of artificial intelligence. However, these programs mainly exist in the field of non-formal education or for individual use to increase the level of knowledge.

However, if online learning and educating techniques are very effective for the development (self-development, improvement) of abilities and those types of giftedness that are associated with knowledge (mathematics, physics, technology, languages, etc.), sufficiently applicable and justified for creative types of giftedness (literary, artistic, musical, etc.), as "sensory" giftedness (empathic, communicative) computer platforms and programs are useless. This fact can be explained as the developers of today's IT products deliberately do not take into account (or technically cannot satisfy) the communicative component, which gives live communication and education in a classroom. The following factors are not taken into account:

1. the child's need for communication;
2. the child's need to form and organise the circle and rules of communication according to his own understanding;
3. the need for leadership and demonstration of their communication skills with the support of adults;
4. a communicatively gifted child needs "time to think" before giving out a result, an answer, etc .;
5. The child gets very upset if the process that he builds on his own, and its predicted result differs from the "ideal" (which is proposed by the program) (Zhang, 2018; Liu & Barnhart, 2006).

However, defining communicative giftedness as a social and educational value, the Chinese education system, even in the conditions of complete online education, managed to maintain an attitude towards the preservation and development of communication skills in children and youth. To resolve this problem in the PR China online education process the following ways were used:

1. A complex of educational IT products that involve the creation of groups of students, self-structuring of such groups, their communication in the virtual space to complete homework and other educational tasks. Such activities being

mandatory allow to satisfy the need of communicatively gifted children in organizing their own and the group`s communication, the need for leadership, in the distribution of roles in the group, etc. Also, this type of activity contributes to the development of linguistic and managerial abilities of communicatively gifted children (Delisle, 1992). Also as certain "know-how" can be considered the grading system in such tasks: the grade is not given to the group as a whole, but a certain number of points should be distributed among all members of the group, depending on the quantity and quality of the work made by the particular member of the group to complete the homework. In upper classes of secondary school and high school programs, the authority to allocate points among the group members belongs to the group leader with the obligatory explanation of his/her point of view. Since all assessment sheets in such programs are usually free to be seen and imply access to them by both the teacher and the rest of the group, this type of activity is quite correlated with such features of communicatively gifted children as responsibility (hyperresponsibility) and leadership as well as neutralizes the factor of personal relationship of the group leader when assessing, fosters in the child a sense of justice and responsibility for their actions.

2. It is generally accepted (Prather, 2018) that the family is the main factor in the development of communicative giftedness at an early age. A favorable atmosphere in the family, trusting relationships with parents and other family members affect the formation of a child's social interest. Communicative giftedness is formed in children in families with a democratic style of adult communication with each other and with children, where personal communication and joint pastime are valued. Children are given the opportunity for independent actions and decisions, but there is also a certain reasonable control over their actions. A number of tasks that are offered today to the Chinese children and schoolchildren (especially in primary school) are aimed at the joint work of parents and children. Many tasks begin with the words: "Ask your parents…», "Find out from older family members…», "Do it with your parents…». A popular type of hometasks is intra-family polls and questionnaires on some specific questions. The child must not only independently create a questionnaire, but also choose the right place, time, form of communication in order to interview parents and other family members (aunts, uncles, older relatives). The Chinese are usually very responsible about the education of children and the tasks given by teachers are seen as an unjustified axiom. Therefore, many relatives usually take part in making these types of school home tasks (using social networks, WeChat significantly facilitate the process of hometask making). These types of tasks teach and activate children's ability to communicate with different age groups, build relationships with them, organize their own time for communication and take into account the situation of other

people and their desire / unwillingness to communicate on a certain topic "here and now." All these actions meet the needs of communicatively gifted children.

3. With the beginning of massive compulsory online education, schools in the PR China received unprecedented financial and technical assistance from the country. This money and opportunities were aimed and spent not only at improving the material and technical situation in educational institutions of the country, but, to a greater extent, at providing the educational process itself. In order to preserve (or preserve as much as possible) all the functions of the educational process, including the communicative one, at the state level support services for the educational process was created. To make it functional and really working, there were involved a large number of technical personnel (computer professionals) and young teachers (who study at the latter course of pedagogical higher and professional educational institutions and those who are undergoing a teaching internship). On average, today, besides the teacher him/herself, 4-6 people take part in the lesson. The work of the technical support specialists, who accompany a lesson, consists in the selection of technical means and technical support of the lesson itself (including such an element as group-working). The task of the junior pedagogical staff (teacher assistants) is «to ensure and stimulate the process of communication between all participants of the educational process, taking into account their individual and personal characteristics» (Smith, 2015). In other words, thanks to high-quality technical support and the involvement of a large number of people into the educational process, in the PR China the educational process was mechanically transferred to the online space with the maximum preservation of all functions of the offline educational one.

It can be said that today the PR China uses the most advanced methods of working with communicatively gifted children, as it sees in them the potential that meets the social order of the Chinese society and the Party for socially active, attractive people who know how to lead, manage and lead the nation.

Conclusions

Today everything that goes on in China is of particular interest for the rest of the world not only because the country in a short period of time (about just a century) has made a great breakthrough in all spheres of life (science and technology, economics, culture and sports, education, and so on), but also because the country presents to the world non-trivial ways of solving problems (including the educational ones), which are invariably distinguished by high efficiency and healthy pragmatism. China is a country that has rapidly approached the socio-economic level of the world's leading nations. This phenomenon can be explained by the high level of specialists` training in all spheres of public life as well as by

rational use of human potential. That is why the question of a detailed study of the Chinese system of work with gifted children, in particular with communicatively gifted ones, to stimulate the development of children's talents in the Chinese state is quite relevant. Communicatively gifted children, as it was repeatedly noted in the article, are seen as a personnel reserve of party and public organizations, social movements in the country. The planned and natural development of communicative giftedness is the part of modern education system`s tasks in China. The transition of the education system to the online format set the task for the Chinese teachers to preserve all the functions and tasks of the education system (including the identification and development of communicative giftedness in children). In this regard, appeared a complex of methods that correspond to the current technical, material and pedagogical capabilities of the country at the present time, and the product of its implementation meets the social and state demand for the education system as much as possible.

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МЕДИАЦИЯ В ОБРАЗОВАНИИ И РАЗВИТИЕ КОНФЛИКТОЛОГИЧЕСКОЙ КОМПЕТЕНТНОСТИ ПЕДАГОГА

Mediation in Education and Development of Conflictological Competence of the Teacher

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Abstract. *The history of mankind confirms: both harmony and conflict are characteristic of communication in society. This article is devoted to the problem of conflicts in education. Unfortunately, conflict interaction occurs in school life, therefore, teachers need to learn how to apply innovative technologies in resolving conflicts, focus on respecting the rights and freedoms of all participants in the educational process, and act in accordance with the interests of the parties. The article discusses the technology of mediation, which orients the participants in the interaction towards cooperation in the conflict with the help of a mediator. The implementation of mediation practice requires special training of teachers, the formation of completely new competencies and, first of all, conflict management, which should be developed within the framework of continuous pedagogical education, using interactive training technologies and role-playing games. The authors present the experience of implementing the advanced training program "successful strategies of behavior in conflict and the development of a teacher's resistance to conflict".*
Keywords: *conflict, mediation, conflictological competence, teacher training.*

Введение
Introduction

В последние годы в современной психолого-педагогической науке растёт интерес к проблеме гармонизации взаимоотношений, поиску

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условий снижения уровня конфликтности в образовательной среде. На фоне общего культурного упадка и утраты морально-нравственных ориентиров все более отчетливо проявляется кризис школьного и семейного воспитания, который порождает противоречия, обусловленные коммуникативными, поведенческими, ценностными, структурными факторами.

Образовательный процесс сопровождается интенсивным эмоциональным общением его участников и требует своевременного предупреждения и компетентного разрешения возникающих противоречий. Это обусловлено не только значительным ростом числа конфликтных ситуаций в школьном образовании, но и их высокой эмоциональностью, стремительной динамикой, деструктивными последствиями для процесса обучения и воспитания школьников. В конфликты, развивающиеся между школой и семьей ученика, нередко вовлекаются внешние институты (органы управления образованием, полиция, прокуратура, СМИ). Иногда стороны забывают о своих истинных интересах, их действия перестают быть разумными, а отношения друг с другом становятся враждебными. Все это снижает вероятность реализации стратегии сотрудничества и может отрицательно сказаться на процессе и результатах обучения и воспитания ребенка.

В сложившихся условиях необходимость совершенствования системы профилактики и внедрения комплексных инновационных технологий в сфере урегулирования конфликтов в образовании приобретает особое значение.

Медиация как способ урегулирования школьных конфликтов стала популярной, благодаря массовому внедрению инновационных технологий в образование (Boulle & Nesic, 2016). В то же время как любая инновация медиативная теория и практика воспринимаются некоторыми педагогами скептически. Часто встречаются как ошибочное понимание сути медиации школьными специалистами, так и формальной подход внедрению данной инновации, сомнение и страх перед неизвестной технологией, которую необходимо осваивать. Всё это приводит к поспешным выводам о неэффективности медиативного подхода, к разочарованию в медиации, её обесцениванию.

Существуют и объективные трудности внедрения медиативной технологии: так, отсутствие нормативно-правового обеспечения школьной медиации и проработанного регламента межведомственного взаимодействия при урегулировании конфликтов с несовершеннолетними рождает вопрос о законности вмешательства медиатора в ряде случаев, где уже задействованы полиция и комиссия по делам несовершеннолетних. Остаются дискуссионными вопросы инициирования медиации,

организации документооборота, статуса медиатора в школе и реализации принципов добровольности, конфиденциальности, нейтральности, равноправия. Особенно сложной, безусловно, остается проблема подготовки кадров.

Мы видим решение большинства из названных проблем в обучении школьных педагогов основам медиации и развитию у них конфликтологической компетентности на базе нашего Университета.

Теоретические основы исследования
Theoretical Substantiation of the Problem

Часто педагог оказывается в роли участника, свидетеля или посредника в межличностных конфликтах. Его компетентное поведение, направленное на минимизацию деструктивных проявлений конфликта, является профессионально важным качеством.

Профессиональный стандарт педагога предполагает наличие умений:

- анализировать реальное состояние дел в учебной группе, поддерживать в детском коллективе деловую, дружелюбную атмосферу;
- защищать достоинство и интересы обучающихся, помогать детям, оказавшимся в конфликтной ситуации и/или неблагоприятных условиях;
- владеть технологиями диагностики причин конфликтных ситуаций, их профилактики и разрешения.

Иными словами педагог обязан осуществить компетентное вмешательство в возникшую конфликтную ситуацию. Для этого ему надо знать структурные, функциональные и динамические особенности педагогических конфликтов, владеть разными способами разрешения конфликтов, в том числе - основами медиации (Koryakovtseva, Yuferova & Bugaychuk, 2017).

В развитие концептуальных основ разработки проблемы школьных конфликтов и способов их урегулирования свой вклад внесли такие российские исследователи, как Г.И. Козырев (Kozyrev, 2001), М.М. Рыбакова (Rybakova, 1991), Е.И. Степанов (Stepanov & Banykina, 2006) и др. Изучением вопросов конфликтологической компетентности также нашло отражение в многочисленных исследованиях российских учёных: Г.Г. Бекмаганбетовой (Bekmaganbetova, 2007), М.В. Башкина, М.М. Кашапова (Kashapov & Bashkin, 2020), Т.Р. Саралиевой (Saraliyeva, 2011), А.А. Вербицким, О.И. Щербаковой (Verbitskiy & Shcherbakova, 2012).

Вопросы же урегулирования конфликтов и организации служб медиации, особенно в школьном образовании очень подробно рассматривались в трудах зарубежных специалистов: D. Hoffman & R. Wolmann (2014), J. Winslade & M. Williams (2012), T. Whatling (2012).

Медиация – это переговоры конфликтующих сторон с участием нейтрального посредника. Классиками отечественного подхода в медиации по праву можно считать О.В. Аллахвердову (Allakhverdova, 2007), Е.Н. Иванову (Ivanova, 2012), А.Д. Карпенко (Karpenko & Osinovskiy, 2016), которые в 90-е гг. первыми в России освоили зарубежную теорию и практику медиации, адаптируя её к российской культуре. Теоретические изыскания и богатый практический опыт этих и других специалистов позволили оформиться той парадигме, которая обеспечивает эффективность применения медиации. Во-первых, это соблюдение принципов добровольности участия сторон, их равноправия, нейтральности медиатора и конфиденциальности переговоров, во-вторых, следование чёткому алгоритму – последовательности этапов, на каждом из которых решаются определённые цели и задачи (Allakhverdova, 2007), в-третьих, использование техник и приёмов медиации, адекватных этапу переговоров, их содержанию и эмоциональному состоянию конфликтующих сторон (Ivanova, 2012).

Важной составляющей успешной медиации является позиция медиатора, который создаёт на переговорах атмосферу уважения и защищённости, чтобы каждый участник почувствовал себя услышанным и понятым, выразил эмоции, осознал свои истинные интересы, принял активное участие в поиске взаимовыгодного решения. Медиатор не оценивает действия сторон, не советует, не осуждает, напротив, в процессе переговоров он создаёт единое информационное пространство, в котором факты старается отделить от субъективных интерпретаций участников, задаёт открытые вопросы.

Школьная медиация позволяет достигать как краткосрочных, так и долгосрочных целей. Она помогает взрослым разрешать свои конфликты и конфликты детей более конструктивно, а школьников учит договариваться и общаться, участвуя в переговорах и выступая медиаторами в конфликтах своих сверстников. Данная практика способствует развитию социальной компетентности, созданию позитивной культуры разрешения конфликтов, воспитывает чувство ответственности за собственные решения, поскольку в медиации ответственность за принятие и исполнение решения лежит на самих сторонах конфликта. Участие в медиативных процедурах детей, делает их более самостоятельными и приспособленными к окружающему миру, а умение договариваться начинает цениться ими все выше. Это важно, как для грамотной ориентации будущих профессионалов в деловой

сфере, так и для построения устойчивых общественных и семейных отношений.

Таким образом, школьная медиация способствует реализации компетентностного подхода, который предполагает усиление практической направленности образования с целью успешной интеграции личности в обществе, а её успешное применение возможно только при системном развитии конфликтологической компетентности школьных учителей в рамках непрерывного педагогического образования. Отсюда, цель нашего исследования – изучение особенностей развития конфликтологической компетентности педагогов школ г.Ярославля.

Материалы и методы исследования
Materials and Methods

ЯГПУ им. К.Д. Ушинского реализует Проект, цель которого - разработка и совершенствование системы профилактики конфликтов в образовательных организациях посредством развития и поддержки школьных служб медиации г.Ярославля с использованием институциональных ресурсов (Yuferova, Koryakovtseva, Bugaychuk, & Strelova, 2018).

Создание Служб медиации в образовательных организациях требует комплексного подхода, рассчитанного на долгосрочную перспективу, а также системной подготовки кадров и повышения их квалификации в этом направлении.

Это достаточно трудоемкий процесс, преследующий следующие цели:

- краткосрочные (интервенция): преодоление актуальных конфликтов, достижение консенсуса и взаимопонимания в школьном коллективе;
- среднесрочные (решение конфликтов): продвижение конструктивного подхода к конфликтам;
- долгосрочные (превентивность): развитие социальных компетентностей, создание позитивной культуры разрешения конфликтов.

Школьная служба медиации по своему характеру – это волонтерское движение. Она состоит из команды кураторов (взрослых медиаторов из числа педагогических работников) и учащихся-медиаторов.

Деятельность школьной службы медиации направлена как на практическое урегулирование конфликтов, так и на создание новой культуры взаимоотношений (и в рамках образовательной организации, и в будущей взрослой жизни школьников).

Поэтому, наше исследование было представлено двумя основными блоками. Первый блок – это аналитический, он был связан с выявлением трудностей у учителей в процессе урегулирования школьных конфликтов и определением эффективности проводимых в рамках исследования мероприятий. Основные методы, которые были использованы – это опрос через анкетирование и беседу с педагогами. Также был проведён анализ уровня конфликтологической компетентности с помощью диагностических методик: тест «Незаконченные предложения»; опросник «Профессиональное (эмоциональное) выгорание» (MBI), адаптация Н.В. Водопьяновой.

В исследовании конфликтологической компетентности педагогов общеобразовательной школы города Ярославля приняли участие 24 испытуемых в возрасте от 24 до 66 лет, со стажем работы от 1года до 45 лет.

Второй блок исследования связан с развитием у педагогов конфликтологической компетентности. Освоение и реализация школьниками переговорных и медиативных технологий в школе являются эффективными, если представители администрации школы, педагоги, родители знают, понимают и приветствуют медиацию как способ урегулирования школьных конфликтов, поэтому важной составляющей нашего инновационного проекта было конфликтологическое просвещение педагогов в формате социально-психологических тренингов, курсов повышения квалификации, участия в областных педагогических советах (Yuferova, 2020). Также нами были подготовлены просветительские лекции на канале youtube, которые вызвали у педагогов интерес к деятельности школьных служб медиации.

Результаты и их обсуждение
Results and Discussion

Наш опыт организации деятельности регионального ресурсного центра «Развитие кадрового потенциала школьных служб медиации» на базе МОУ «Средняя школа № 66» г. Ярославля, а также многолетний опыт проведения медиации позволил прийти к выводу, что педагог чаще всего в конфликте находится в экспертной позиции, он оценивает ситуацию, высказывает своё профессиональное мнение о ней, решает, кто виноват, советует, порицает или хвалит, заставляет извиниться виновного, призывает к совести.

У 90% педагогов – слушателей курсов повышения квалификации по программе «Организация деятельности школьных служб медиации», проведённых в ЯГПУ им. К.Д.Ушинского с 2017 по 2020 гг., - на вопрос

анкеты «Что было сложным для Вас в освоении медиации?» самыми частыми ответами были: «удержаться от советов и собственных оценок конфликтной ситуации» и «сохранять нейтральность по отношению к проблеме и сторонам». Педагогу привычно и понятно при посредничестве в конфликте выступать в роли «арбитра», авторитетного лица, который выносит решение. Однако, если такое решение принимается поспешно, без тщательного анализа ситуации, под влиянием субъективных стереотипов, то учитель может быть обвинён в потере нейтральности, равнодушии, категоричности и оказаться сам вовлечённым в дальнейшее конфликтное взаимодействие, но уже в качестве стороны конфликта.

Дело в том, что межличностные конфликты, несмотря на типичные эмоциональные и поведенческие проявления сторон, обладают уникальными характеристиками, связанными с историей отношений и контекстом развития событий, мотивами, потребностями, ценностями участников, поэтому каждая конфликтная ситуация требует тщательного изучения, для чего познающий её субъект должен обладать достаточным временем, желанием, личностными ресурсами.

Особая роль в развитии конфликтологической компетентности педагогов принадлежит разработанной и реализуемой в нашем университете программе «Успешные стратегии поведения в конфликте и развитие конфликтоустойчивости педагога». Интересно, что основным принципом развития конфликтологической компетентности преподавателя на занятиях по данной программе является органическое вплетение ситуации передачи знаний в процесс практической деятельности (то есть, знание как ответ на реально существующий и осознаваемый запрос педагога). Только в условиях такого сотрудничества возможно взаимное понимание и эффективное психологическое просвещение педагогов, особенно по вопросам, связанным с его конфликтологической грамотностью.

Учебный план программы повышения квалификации «Успешные стратегии поведения в конфликте и развитие конфликтоустойчивости педагога» включает в себя 4 раздела: «Понятие о конфликте. Основные подходы к изучению конфликта», «Особенности конфликтов в образовательной среде», «Эффективное поведение и коммуникативная компетентность преподавателя в конфликте», «Управление конфликтом. Переговоры и медиация как альтернативные способы разрешения конфликта». Для развития конфликтологической компетентности педагога необходимо обладать знаниями о конфликте, особенностях его развития в образовательной среде, признаках конфликтного поведения обучающихся и коллег, основных конфликтогенах, о стратегиях поведения в конфликтах,

а также – уметь выбирать эффективные стратегии и управлять конфликтом.

Формирование конфликтологической компетентности педагога связано с преодолением разнообразного рода трудностей как внутреннего, так и внешнего плана. Например, к таким проблемам можно отнести наличие субъективных барьеров, в частности - элементов профессиональной деформации. Так, в исследовании М.А. Юферовой установлено, что высокий уровень эмоционального выгорания педагога становится препятствием для всесторонней оценки конфликтной ситуации, способствует выбору педагогом стратегии одностороннего выигрыша в конфликте (Yuferova, 2020). Но авторитарное поведение, подавление или, напротив, приспособленчество не удовлетворяет интересы той или иной стороны конфликта и может рассматриваться лишь как временная мера. Значит только профилактика и коррекция симптомов эмоционального выгорания педагогов может способствовать сохранению и расширению репертуара поведенческих стратегий педагога в конфликте, в частности демократического и творческого стилей и стратегии сотрудничества, что позволит оптимизировать общение участников образовательного процесса.

Заключение
Conclusions

Таким образом, становится очевидным, что конфликтологическая компетентность преподавателя как владение системой знаний о педагогическом конфликте создает предпосылки для формирования мотивации к применению полученных знаний в профессиональной деятельности, для решения проблем в конфликте, а также для личностного и профессионального самосовершенствования.

Наша практика показала, что компетентное вмешательство медиатора-переговорщика возможно на любом этапе развития конфликта, даже если ситуация зашла в тупик и стороны исчерпали имеющиеся ресурсы.

Положительный эффект имеет многосторонняя медиация в школе. Как правило, в таких переговорах принимают участие родители ребенка, пострадавшего в результате драки или психологического давления со стороны других учеников, и родители виновных в инциденте детей, а также - классный руководитель, завуч, социальный педагог. Подобные встречи с участием медиатора очень полезны. Они позволяют участникам восполнить недостающую информацию о случившемся, отреагировать эмоции, поговорить о том, что беспокоит каждого; посмотреть на конфликт с разных позиций.

Важной составляющей в медиации является возможность проговаривания сторонами своих убеждений, интересов и ценностей, что способствует переосмыслению конфликта. Часто такие встречи проходят эмоционально, однако четкое использование медиатором специальных коммуникативных технологий, соблюдение правил переговоров, своевременное восстановление баланса сил и адекватная реакция на манипуляции позволяет достичь на переговорах атмосферы доверия и сотрудничества и выработать соглашение, отвечающее интересам сторон. Медиация создает эталон межличностных отношений, в которых человек может защитить свои интересы, не ущемляя интересов другой стороны конфликта. Медиация способствует не только урегулированию конфликтной ситуации, но и сохранению отношений сторон, ответственному подходу к дальнейшему взаимодействию друг с другом.

Также важно отметить, что конфликтологическая подготовка педагогов общеобразовательных учреждений является одним из актуальных направлений современного педагогического образования. В результате исследования мы констатировали как сам факт необходимости разработки и реализации программы формирования конфликтологической компетентности педагога, её когнитивного, эмоционального, мотивационного и поведенческого компонентов, так и предложили эффективную программу развития конфликтологической компетентности педагогов «Успешные стратегии поведения в конфликте и развитие конфликтоустойчивости педагога», в которой сделан акцент на практическую отработку конфликтных ситуаций, систему профилактики и коррекции симптомов эмоционального выгорания педагогов, повышение уровня рефлексивности, мотивации конструктивного поведения в конфликтных ситуациях и снижение уровня эмоциональных помех в коммуникации.

Summary

The problem of high conflict in the educational environment, a change in society's attitude towards the teacher, who in modern conditions is becoming increasingly limited in the implementation of educational functions, the use of legitimate disciplinary methods in school conflicts is relevant. The teacher's ability to act constructively in conflict situations allows him to successfully solve functional problems and ensure productive interaction with students. The successful implementation of the fundamental principles of mediation is possible only if the teacher's conflictological competence develops, including through specialized advanced training courses. The development of personal and professional competencies of the teacher will become the basis for the successful implementation of the possibilities of mediation in the settlement of interpersonal conflicts in the educational environment.

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ПРОБЛЕМЫ РОССИЙСКОГО ШКОЛЬНОГО ОБРАЗОВАНИЯ В КОНТЕКСТЕ PISA

Problems of Russian School Education in PISA Context

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Abstract. *The article based on the research which aim is to clear, how common teaching practices in Russian schools affecting the decline in the results of students when performing tasks of the Programme for International Student Assessment (PISA). The authors of the article try to understand why teachers so often prefer quite old training technologies. In the course of study these problems, members of research team conducted interviews and discussions with school teachers from the Moscow region who were trained in advanced training courses at the Academy of Public Administration. Intensive interaction with teachers helped the authors to draw a conclusion that the avoiding more effective contemporary training technologies is due to certain conditions in which the teacher works. Another conclusion made in the article: teachers fail in teaching students not because they do not have enough knowledge of modern technologies and techniques or because they underestimate the importance of developing critical thinking, anthropological imagination, knowledge of meta-subject connections, the skills to understand texts and work with heterogeneous information, but because they are not ready to accept the changing social role of the school.*
Keywords: *anthropological imagination, critical thinking, hybrid learning, meta-subject connections, PISA, reading literacy, school teachers.*

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Введение
Introduction

Российские школы принимают систематическое участие в различных международных мониторингах качества образования, практикуемых в странах ОЭСР.

Актуальность темы «Проблемы российского школьного образования в контексте PISA» предопределяется тем, что в 15-летнем возрасте российские школьники при прохождении международного мониторинга качества образования “Programme for International Student Assessment” (PISA) демонстрируют более скромные результаты, чем в предшествующем возрасте в рамках других международных мониторингов качества образования. Соотнесение нежелательной возрастной динамики результатов качества образования с распространенными практиками обучения в российской школе помогает выявить их слабые стороны и принять действенные меры по улучшению школьного образования.

Предлагаемая статья знакомит с результатами исследования, разработанного группой преподавателей вузов Московского региона и проведенного на базе Академии социального управления. **Цель исследования** - установить, что из распространенных практик обучения российских школьников негативно влияет на результаты прохождения мониторинга PISA. Из этой цели вытекали задачи выявить и соотнести факторы, побуждающие учителей отдавать предпочтение тем или иным методикам и приемам обучения. **Методика исследования:** при конструировании исследования мы опирались на критерии качества образования мониторинга PISA, позволяющие оценить функциональную грамотность учащегося в различных ситуациях. Нами использовались доступные публикации на эту тему (Primery otkrytyh zadanij PISA, 2020), (Kovaleva, Krasnovskij, Krasnokutskaja, & Krasnjanskaja, 2020). За методологическое основание был взят системно-деятельностный подход - наиболее понятный российским учителям из ориентированных на достижение результатов обучения, высоко оцениваемых мониторингом PISA. Первоначально планировалось провести исследование методом фокус-группы. Перевод курсов повышения квалификации учителей из оффлайна в онлайн смешал наши планы: пришлось собирать материал в ходе онлайн дискуссий с учителями, а некоторые полемические вопросы прояснять при помощи экспертных интервью, взятых по окончании курсов у наиболее мотивированных учителей. Исследованием было охвачено свыше 85 школьных учителей из Подмосковья (Балашиха, Химки, Щелково, Мытищи и др.). Исследование носило пилотажный характер, что

не помешало найти ответы на многие поставленные вопросы, касающиеся взаимосвязи между распространенными практиками ведения занятий в школе и оставляющими желать лучшего результатами мониторинга PISA.

Результаты исследований
Research Results

Первое, на что мы обращали внимание учителей, когда речь заходила о невысоких результатах учеников, выполнявших задания мониторинга PISA - слабая заинтересованность 15-летних школьников в его успешном прохождении. По словам учителей, ученикам явно не до мониторинга PISA, по крайней мере, в то время, когда уже приходится заниматься подготовкой к ЕГЭ, от которого действительно может зависеть дальнейшая судьба.

Предлагая учителям прокомментировать высказывание: «лучший мотиватор – это самооценка», мы подводили их к разговору о стимулах, при помощи которых можно побудить школьников старательно решать задания мониторинга PISA и побудить учителей активизировать работу по формированию у учащихся знаний и умений, необходимых для успешного участия в мониторинге. Оказывалось, что учителя, несущие на себе груз ответственности за успешное прохождение учениками ЕГЭ и ОГЭ, реализацию проектных работ, излишнюю бюрократическую отчетность (Osipov, 2020), не находят стимулов для серьезной подготовки учеников к этому мониторингу. К слову сказать, один из принципов мониторинга PISA – внезапность. Польза от подготовки к нему окажется ощутимой лишь в том случае, если плодотворность такой подготовки будет выходить далеко за рамки успешного прохождения одного конкретного мониторинга, к примеру, научит решать жизненные проблемы или хотя бы поможет повысить готовность к ЕГЭ (Kovaleva, Krasnovskij, Krasnokutskaja, & Krasnjanskaja, 2020).

Несмотря на наметившееся сближение критериев оценивания в рамках ЕГЭ и мониторинга PISA, критерии оценки последнего до сих пор не очень ясны для многих учителей.

Ответы учителей наводят на мысль о том, что невнимательное отношение к целому ряду навыков и умений, требуемых для успешного прохождения мониторинга PISA, как раз и обусловлено внесением их в отечественные образовательные стандарты без обеспечения реальных условий культивирования, и это приводит к имитации приобретения таких компетенций. Отсюда и при знакомстве с международными мониторингами у учителей схожее восприятие проверяемых навыков и

умений не как реально востребованных, а скорее, как искусственно привязываемых к старой знаниевой модели. Здесь можно провести осторожную параллель со многими компетенциями, усердно вносимыми в программы теоретических курсов российских вузов. Нет сомнений в том, что специалисту с высшим образованием по большей части нужны упоминаемые компетенции, но они вырабатываются не столько после знакомства с самим курсом, сколько после применения полученных знаний на практике (Zaia, 2016). И когда проходящим теоретический курс студентам вуз не предоставляет соответствующий шанс апробировать знания на практике, преподавателю остается просто имитировать приобретение желаемых компетенций на базе теоретического курса, создавая, тем самым, иллюзию соответствия используемой программы обучения лучшим мировым образцам.

Следуя новым ФГОСам, учитель-предметник должен дать ученикам довольно обширные предметные и метапредметные знания. Но реально выделяемого времени на проведение занятий явно недостаточно для воплощения всего, что намечено в программе. Лучшие по наполняемости программы, вызывающие гордость чиновников, сумевших повысить формальную планку образовательного стандарта, вовсе не обязательно оказываются удобными в практическом применении. В итоге содержательная избыточность программ ставит учителя перед необходимостью самому отдавать предпочтение тем или иным знаниям, которые, предположительно, спросят с учеников в первую очередь (Sinel'nikov, 2018). Учителя также исходят из того, что знакомство учеников с предметными знаниями проще распределить по времени, а затем и проще контролировать усвоение подобных знаний.

В процессе исследования многие учителя негативно реагировали на утверждение, будто неудачи при прохождении мониторинга PISA вытекают из слабой проработки метапредметных связей. По-своему, учителя были правы. Ведь они действительно знакомят учеников с метапредметными связями, но обычно делают это в рамках традиционных уроков, опять же, в первую очередь из-за дефицита времени, хотя для видения учащимися метапредеметных связей и осознания возможностей применения знаний в повседневной жизни гораздо более эффективны нетрадиционные формы урока, интерактивные методы обучения (Manujlova, 2015). Собственно, высоко оцениваемая в рамках мониторинга функциональная грамотность и есть умение применять полученные знания на практике. К примеру, многие задания, содержащиеся в программе мониторинга, легко воспринимаются учениками, обучавшимися с использованием метода кейс-стади, к которому в России нередко

прибегают в вузах, но, к сожалению, почти не обращаются в школах. В работе учителей прослеживается тенденция игнорировать методики, не исключающие перспективу нахождения более чем одного удачного решения задания. Кроме того, ряд заданий мониторинга PISA казался значительной части учеников непонятным, причем вовсе не потому, что они не решают подобные задачи по существу, а потому, что формулировки заданий были непривычными, непохожими на те, что встречаются на традиционном уроке. Учителя предпочитают формулировать задачу так, чтобы описываемые в ней условия являлись необходимыми и достаточными. В мониторинге PISA встречаются задачи с лишними условиями. И это вполне уместно, ведь жизнь во всем ее многообразии ставит нас в сложные ситуации, в которых надо уметь отобрать непосредственно то, что приведет к, возможно, не единственно правильному, но все же одному из оптимальных решений возникшей проблемы.

Разбирая с учителями задания мониторинга PISA, нам приходилось констатировать, что под термином «метапредметные связи» порой подразумевается не совсем одно и то же. Мы обычно говорим о метапредметных результатах обучения, выражающихся в умении видеть перспективы совместного использования знаний из разных предметных сфер, невозможного без систематизации знаний. Но на школьных уроках учителя традиционно зациклены на использовании метапредеметного знания для решения научных или академических, учебных задач, лишь изредка допускающих погружение в прозаические проблемы повседневной жизни. Последние как бы оказываются «недостойными» для рассмотрения на уроках, которые по инерции мыслятся учителем-предметником подготовкой к будущей научной деятельности в своей предметной области. Для связей между предметными знаниями и знаниями, требуемыми в обыденных ситуациях, сегодня все чаще используют отдельный термин – «внепредметные связи» (Sinel'nikov, 2018). Думается, что более низкие результаты прохождения мониторинга PISA в определенной мере связаны с тем, что в старших классах ученики оперируют абстракциями, разрешая сложные задачи, а не отслеживая их применимость к ситуациям повседневной жизни, тогда как в младших классах такой уровень абстракции еще невозможен, и ученики, успешно справляющиеся с заданиями другого международного мониторинга, учатся на задачах, имеющих понятную, осязаемую связь с реальными ситуациями, скажем, рассчитывают время, затраченное на дорогу из одного города в другой, или решают, как разрезать яблоко на равные доли для нескольких человек. А в мониторинге PISA встречаются задания,

требующие овладения и метапредметными, и подзабытыми российскими учениками к 15-летнему возрасту внепредметными связями.

В ходе дискуссий с учителями нам пришлось выслушать по данному поводу немало возражений, причем, в первую очередь, от учителей, имеющих многолетний стаж работы, чья педагогическая карьера начиналась еще в советское время. Приведем типичное высказывание учительницы с многолетним стажем: «Почему мы должны ориентироваться на критерии оценки качества образования, заложенные в мониторинге PISA, и отдавать предпочтение нетрадиционным формам урока, если те методики, которых я продолжаю придерживаться с советского времени, позволяли мне когда-то вносить вклад в подготовку кандидатов и докторов наук, инженеров-изобретателей. Сегодня результаты обучения по данным методикам, очевидно, не радуют, но это уже не моя вина как учителя (уровень моего профессионализма с годами только рос), а последствия изменившихся условий социализации и плохой подготовки обучаемого в школе контингента».

С того времени, о котором вспоминает учительница, изменилась не только обучаемая аудитория, живущая теперь в совершенно иной культурно-информационной и коммуникативной среде, но и роль самой школы. Школа осталась важнейшим институтом социализации, призванным форматировать личность, обучая всему, что необходимо для осуществления внеконтекстной коммуникации, но даже и в этом монополия школы сегодня не выглядит неоспоримой. Благодаря происходящим в обществе быстрым изменениям, сопровождающимся сменой ценностных приоритетов, а также быстрому развитию информационных технологий, придавших новое дыхание масс-медиа, и, наконец, благодаря демографическим сдвигам, выразившимся в социокультурной разнородности семей учеников, школа больше не обладает у них тем незыблемым авторитетом, которым обладала в прошлом. Нужную информацию ученики могут почерпнуть, причем довольно быстро, не только на школьных занятиях и из школьных учебников, но и блуждая по интернет сайтам или войдя в социальные сети.

Школа, в ее нынешнем виде, остается ступенью в подготовке будущего специалиста, но и эта функция тоже ослабевает. В советское время, о котором вспоминала учительница, государство было заинтересовано в высоких внутрипредметных и метапредметных знаниях выпускников. Продолжая образование, они становились специалистами в какой-либо конкретной сфере и работали в учреждениях, принадлежавших государству, координировавшему процессы образования и трудоустройства. Теперь же приоритеты школы смещаются в сторону

формирования типа выпускника, проще адаптирующегося к меняющейся ситуации не за счет неординарных достижений, а за счет оптимального применения полученных знаний на практике, усвоения метапредметных и внепредметных связей. Станет выпускник в дальнейшем высококвалифицированным дипломированным специалистом или нет? – это, скорее, уже его личное дело, а также дело его семьи, готовой или не готовой к дополнительным временным и материальным затратам на образование. Ведь можно просто больше времени посвящать освоению конкретных предметов, нанимать репетиторов, оплачивать курсы довузовской подготовки и т.п.

Такое положение дел не способствует повышению доверия учеников к учителю, чей престиж и без того ставится под сомнения в силу упомянутых выше особенностей современной культурно-информационной и коммуникативной среды, а также невысокой доступностью для учителя ценных, по меркам современного общества, ресурсов (Brushkova, Gavrov, Zaia, Gevorkyan, & Manuilova, 2020).

Понятно, что традиционный урок несколько десятилетий назад мог быть несравненно более эффективным, чем сегодня. Сейчас учителю в школе и преподавателю в вузе приходится затрачивать огромные усилия на поддержание интереса к учебе. Современные школьники воспринимают информацию иначе, для них привычна ее быстрая сменяемость, они живут в мире, отвлекающем яркими визуальными образами и интригующими компьютерными играми. При желании они могут довольно просто найти в электронном виде ту информацию, которую раньше получали, внимательно слушая учителя. Да и сама информация во многих случаях быстро устаревает. Ее не стоит запоминать в тех же объемах, что прежде. Ее нужно уметь анализировать, оценивать, комбинировать и сопоставлять с другой информацией. Упростив процесс извлечения знаний, информационные технологии обрушили на человека такие информационные потоки, в которых разобраться очень сложно. Учить этому следует на нетрадиционных занятиях, развивая навыки критического мышления и социологического воображения, именуемого в российской традиции социальной зоркостью.

В мониторинге PISA задания рассчитаны на оценку читательской, математической и естественнонаучной грамотности, причем, упомянутые изменения в обществе побудили в последних мониторингах больше внимания уделять читательской грамотности. Характерно, что именно вопросы формирования читательской грамотности в контексте мониторинга PISA чаще вызывали дискуссии с учителями.

Учителя полагают, что сегодня ученики слишком много работают не с бумажными, а с электронными текстами. Доминирование визуальных образов уже было шагом к снижению критического мышления. Человеку свойственно критически осмысливать вербальную информацию, побуждающую задействовать способности воображения, и некритически воспринимать визуальные образы (увиденное не подвергается сомнению, и это интенсивно эксплуатируется в коммерческой рекламе и политической пропаганде) (Gavrov, 2017). Но работа учащихся с электронными текстами усугубила ситуацию. По ключевому слову можно легко найти релевантную информацию, скопировать ее и вставить в требуемом месте. При этом скопированная и отвечающая поисковому запросу информация оказывается не пропущенной через сознание учащегося. У ученика, собственноручно писавшего шпаргалки, информация хотя бы частично откладывалась в памяти. Отбирающий фрагменты электронного текста ученик выступает в роли потребителя информации, предпочитающего не то, что лучше отвечает собственному мнению, а то, с чем проще, удобнее, выгоднее работать.

Реальность такова, что не только на уроках, но и в повседневной жизни мы нуждаемся в использовании значительных объемов информации, которую уже невозможно полностью освоить, но необходимо правильно оценить и применить.

Российские ученики привыкли, что в школе от них требовали строгого математического обоснования, и это само по себе весьма ценно. Но при решении некоторых математических заданий мониторинга PISA, российские ученики за выделенное время не успевали дать строгое математическое обоснование, и в итоге отбрасывали само задание. Ученики из других стран, отталкиваясь от своего опыта школьного обучения, не пытались привести строгого математического обоснования, и лишь указывали на способ решения задания. И в таком виде оно принималось экспертами мониторинга PISA как выполненное. Сегодня человек живет в очень сложной искусственной среде, имеет место узкая специализация, научно описывать все, с чем специалисту приходится иметь дело хотя бы только в профессиональной деятельности одному человеку подчас уже не под силу. Важны стратегические знания, позволяющие укладывать в единую концепцию знания и технологии, получаемые из различных источников. В информационной сфере широкое распространение получили пакетные технологии: пользователь обрабатывает информацию по заранее разработанной кем-то последовательности, самостоятельно не вмешиваясь в саму обработку. Будучи стратегически грамотным, пользователь выбирает для своего

случая оптимальную технологию. Даже если он сам окажется способным разработать все недостающие звенья реализуемой технологической цепочки, временные и материальные затраты едва ли будут оправданными.

Не вызывает сомнений, что разобраться в сложной информационной ситуации сможет лишь тот, кто обладает умениями анализировать различные по формату, жанру и иным параметрам источники информации, сопоставляя и интегрируя содержащуюся в них информацию для решения поставленных задач. Востребованное умение оперировать сплошными, несплошными, смешанными и составными текстами высоко оценивается в заданиях мониторинга PISA, где представлены тексты всех перечисленных форматов. Разнородность текстов вызывала дополнительные трудности у российских учащихся. Однако учителя искренне настаивали на том, что не видят в работе со всеми этими текстами ничего принципиально нового. И здесь нам удалось выяснить, что присутствие такого рода текстов на уроках еще не означает их использование в том же ключе, в котором это помогает подготовиться к заданиям высокой сложности мониторинга PISA. Скажем, на уроке истории ученику предлагают сделать определенные выводы на основе текста из учебника, сохранившегося в архиве официального документа, воспоминаний современника изучаемого события, рассуждений размышлявшего над ним писателя, статистических данных, имеющих непосредственное отношение к теме и т.д. Все на первый взгляд действительно вроде бы подтверждает утверждение учителей. Но разница в том, что мы концептуально подбирали все эти тексты, заранее предполагая, к какому единственно правильному выводу на их основе должен придти ученик.

В сложных заданиях мониторинга PISA разноформатные тексты далеко не всегда подбираются с прицелом на продуманный единственно правильный вывод. Вполне вероятно, что в реальной жизни нам предстоит решать те или иные вопросы, опираясь на, вовсе не обязательно удачно для нас кем-то подобранные, источники информации. И тогда на первый план выйдет не подразумеваемое российскими учителями умение делать широкие обобщающие, далеко идущие выводы, а способность оптимально использовать доступную информацию в конкретной нестабильной ситуации.

Одно из преимуществ мониторинга PISA заключается в том, что его задания каждый раз обновляются с учетом проблем повседневной жизни, которые могут в ближайшее время подтолкнуть к самостоятельному оцениванию других актуальных грамотностей, включаемых вместе с читательской, математической и естественнонаучной в понятие функциональной грамотности. Сегодня все более актуальным выглядит

развитие креативного мышления и навыков социального прогнозирования, распространение финансовой, экологической, здравоохранительной грамотности и многое другое.

Выводы
Conclusions

Российские учителя в целом знакомы с методиками и приемами, при помощи которых можно приблизить уровень подготовки учеников к требованиям, заложенным в мониторинге PISA.

Для успешного применения этого методического арсенала учителям надо осовременить свое философское видение целей и задач института среднего образования, чему будет в немалой степени способствовать осмысление критериев оценки мониторинга PISA. Почти половина контактировавших с нами учителей с трудом описывала критерии оценки читательской грамотности, применяемые в рамках данного мониторинга.

Основная проблема заключается в бюрократической «зарегулированности» российской системы образования, не отвечающей динамичности современной жизни, что мешает учителям реализовывать свой потенциал. Желание чиновников сделать ФГОС включающим избыточные предметные и метапредметные знания мешает полноценному переходу от знаниевой к компетентностной модели образования, побуждает учителей прибегать к имитации того, что невозможно осуществить в условиях ограниченности ресурсов.

В практике школьного образования нетрадиционные уроки и интерактивные средства обучения используются явно недостаточно. Опыт нашего исследования показал, что лишь учителя иностранного языка систематически практикуют нетрадиционные формы урока. Между тем, быстрые изменения информационной среды влияют на восприятие учениками информации. Прежние представления об устойчивых возрастных психических особенностях восприятия информации отчасти устаревают у нас на глазах вследствие развития информационных технологий и воздействия на детей все новых гаджетов. Интерактивные формы обучения позволяют учителю отслеживать специфику восприятия информации школьниками различных возрастов, предопределенную меняющимися условиями социализации. Учителя нуждаются в консультациях по вопросам ведения интерактивных занятий в режиме онлайн. В этом призналось более 60% участвовавших в исследовании учителей.

Другими существенными причинами сложности подготовки учеников к прохождению мониторинга PISA следует назвать приниженный социальный статус учителя и недостаточную социокультурную адаптированность некоторых заданий мониторинга к специфике российских условий, прежде всего, к условиям российской глубинки.

Summary

Our research group, consisting of teachers from different Russian universities, tried to understand why, according to various international monitoring of the quality of school education including PISA there is a decrease in the results of Russian students by the age of 15. To clarify this problem, we conducted a study of teachers in the Moscow region (Khimki, Balashikha, Shcholkovo, Mytishchi etc.) based on discussions and expert interviews and focused on common teaching practices for older schoolchildren.

We came to the following conclusions presented in the article: social factors (mainly low teacher's social status) and working conditions (first of all, red tape and as a consequence the contradiction between the time allocated for reading the subject and the rich content planned in the subject program based on the standards of the Ministry of Education) prevent teachers from using advanced educational technologies more widely. In addition, teacher's work is negatively affected by their unwillingness to recognize the contemporary changing role of the school, which requires a major change in teaching style. To achieve this goal, it is important to inform Russian teachers about the different international knowledge assessment systems, first of all, about the assessment system of PISA.

It should be added that the study was conducted at a time when, due to the pandemic, some schools went on vacation or worked offline, and school teachers were stressed and expressed dissatisfaction with the prospect of a hybrid learning model, which could have little impact on the results of our study.

Taking into account the differences in living conditions in most OECD countries and in Russian megacities in comparison with the living conditions in some Russian provinces, it is quite predictable that not all of PISA's tasks were successfully adapted for students from Russian provinces.

Our results are suitable for comparing school teaching practices in different countries and will be useful to develop recommendations for improving learning processes in Russian schools.

We are grateful to all the teachers from the Moscow region who took an active part in our research. We also express our gratitude to the Academy of Public Administration, on the basis of which general part of our research was conducted.

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PIRMSSKOLAS PEDAGOĢIJA

Preschool Pedagogy

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ИСПОЛЬЗОВАНИЕ ПОТЕНЦИАЛА КНИЖКИ-ИГРУШКИ В ПОДГОТОВКЕ СТУДЕНТОВ-БАКАЛАВРОВ В ОБЛАСТИ МАТЕМАТИЧЕСКОГО ОБРАЗОВАНИЯ ДЕТЕЙ ДОШКОЛЬНОГО ВОЗРАСТА

Using the Potential of a Toy Book in the Preparation of Bachelor Students in the Field of Mathematical Education of Preschool Children

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Abstract. *The article outlines the problem of using the potential of toy books in preparing bachelor students for purposeful work on the formation of mathematical concepts in preschool children and suggests the idea of organizing the creative activity of students to design toy books with mathematical content.*
The article contains an overview of classifications of toy books, pedagogically characterized and methodically described examples-constructs of various types of toy books created by bachelor students. The pedagogical potential of these constructs allows us in this work to consider a toy book as a means of mathematical education for preschool children.
The purpose of the study is a theoretical description and empirical understanding of the advantages of using the potential of a toy book with mathematical content in the educational activities of a university for the development of creative thinking of future preschool teachers. To achieve the goal, the following methods were used: theoretical analysis of literary sources, Internet resources, analysis of statistical data and a pedagogical experiment.
The results of the study showed difficulties in mastering the method of designing a toy book with mathematical content, revealed the preferences of future educators-educators in choosing one or another type of toy book that dominates in its content a mathematical topic and methodological features of its implementation in the presented design form.
The conducted research and analysis of the results allowed us to obtain data on the importance of including in the process of training future teachers-educators a creative technique - the design of toy books with mathematical content.
Keywords: *construction of toy books; children's math education; develop teachers' creative thinking; soft skills of bachelor students; typology of toy book.*

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Введение
Introduction

В последнее десятилетие изменились нравственные устои, взгляд на природу, историю, космос и самого человека. Следовательно, к образовательной системе в современном мире также предъявляются новые требования.

Актуальность проблемы исследования определяется наличием противоречия между вызовами времени и существующей системой подготовки будущих педагогов.

На наш взгляд, у современного педагога важно формировать компетенции, связанные с развитием soft skills.

Вопросы содержания и формирования soft skills рассматриваются в научных трудах последних лет отечественных и зарубежных авторов (Klaus, 2007; Mikidenko, 2017; Sonmez, 2014; Berkovich, Kofanova, & Tikhonova, 2018; Yarkova, 2016; Dalibozhko, German, & Krakovetskaya, 2018).

В работе М.И.Беркович, Т.А.Кофановой, С.С.Тихоновой представлены шесть базовых групп «мягких» компетенций, среди которых есть группа «концептуальные компетенции», подразумевающая формирование навыков мышления: сбор и обработка информации, решение проблем, планирование и организация, умение учиться и развивать навыки, творческое и системное мышление (Berkovich, Kofanova, & Tikhonova, 2018). Данная группа актуальна для нашего исследования, поскольку включает развитие творческого мышления.

На наш взгляд, одним из приемов развития творческого мышления студентов бакалавриата является конструирование книжек-игрушек разного содержания.

Цель статьи заключается в теоретическом описании преимуществ использования для развития творческого мышления будущих педагогов дошкольного образования потенциала книжки-игрушки с математическим содержанием в образовательном процессе вуза и эмпирическом осмыслении педагогического опыта реализации приема конструирования книжки-игрушки в образовательной деятельности вуза, осуществленной с целью развития творческого мышления студентов-бакалавров.

В статье представлены материалы, полученные с помощью теоретического анализа литературных источников, Интернет-ресурсов, анализа статистических данных и педагогического эксперимента.

Эмпирическая часть исследования заключается в осмысления педагогического опыта использования потенциала познавательной

книжки-игрушки при подготовке студентов бакалавров в области математического образования в педагогической практике вуза.

Теоретическая основа темы
The Theoretical Background

Причин выбора приема конструирования книжек-игрушек будущими педагогами несколько.

Во-первых, игровая деятельность – ведущая в дошкольном детстве. Студенты должны уметь организовывать игровую деятельность с детьми, в том числе, используя потенциал книжек-игрушек: удерживание внимания ребёнка с помощью игровых элементов и конструктивных решений; возможность использовать для развития ребенка данный вид изданий с самых ранних лет.

Во-вторых, общаясь с книгой ребенок вводится в мир книги. Книжки-игрушки являются своеобразным «мостиком» для перехода от игрушек к книге. На современном этапе это актуально, поскольку происходит снижение интереса к чтению, которое влечет снижение интеллектуального, нравственного и творческого потенциала человека.

Современный информационный мир скорее похож на информационный хаос. Чтобы защититься от перегрузок наш мозг пошел по пути клипового мышления. Комиксы, картинное восприятие знаний, которое отучает ребенка сосредотачивать внимание, решать любые задачи, пагубно влияет на смысловое понимание, оставляет дитя на уровне наглядно-образного мышления и препятствует развитию воображения, которое становится невостребованным. Текст же в печатной книге учит ребенка размышлять, запоминать, воображать.

В-третьих, прием конструирования книжки-игрушки позволяет педагогу развивать способности воспринимать, чувствовать, понимать прекрасное в жизни и в искусстве, приобщает к художественной деятельности и развивает творческие способности. В дальнейшей профессиональной деятельности будущие педагоги смогут приобщить к созданию книжек-игрушек и родителей.

В-четвертых, книжку-игрушку можно наполнять разным содержанием, в том числе и математическим, обеспечивая усвоение математического материала в процессе игры с книгой.

Книга в одном из своих значений – это один из видов печатной продукции. Существует мнение, что электронные книги со временем вытеснят бумажные носители, и книга в конструкторской форме книги-кодекса превратится в раритет. Однако издательское дело процветает, а

«выживает» книга и конкурирует с цифровыми носителями только благодаря преобразованиям и особенно в области изданий для детей и юношества. Сопоставляя данные Российской книжной палаты (Russian Book Chamber) с 1991 по 2019 г.г. можно наблюдать рост числа изданий книг для детей (рис. 1).

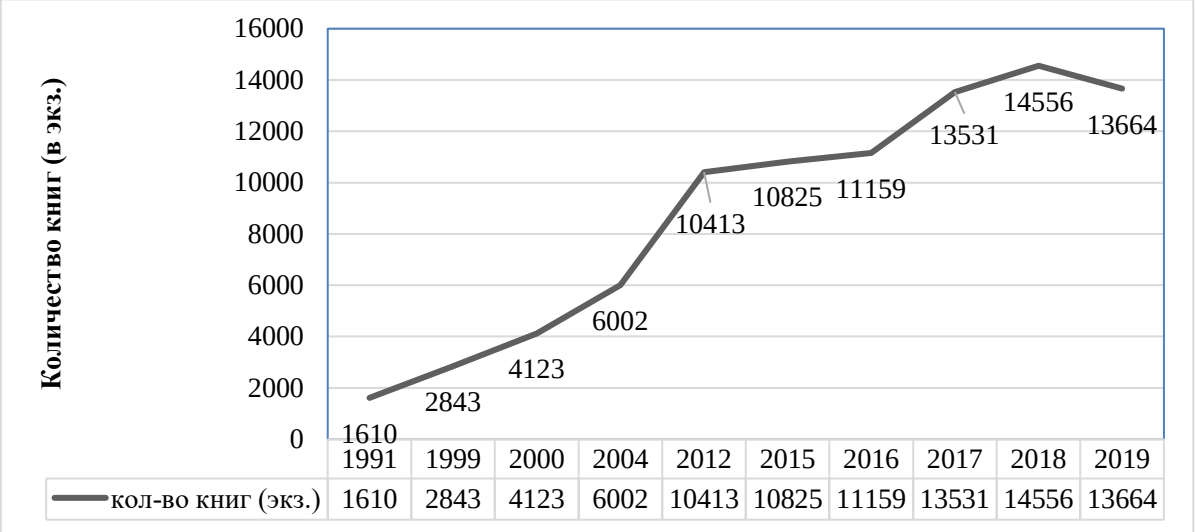

Рисунок 1. ***Данные сопоставительного анализа числа изданий для детей и юношества в РФ*** *(Российская книжная палата)*
Figure 1 ***Data of a Comparative Analysis of the Number of Publications for Children and Youth in the Russian Federation*** *(Russian Book Chamber)*

Детские книги издаются в классическом варианте (книга-кодекс) и в нетрадиционном дизайн-решении. С точки зрения нестандартных конструктивных решений детские книги могут быть следующих видов книжки-картинки: книжки-рассказки, книжки-расскраски, книжки-стикерсы (с наклейками), книжки-поделки и книжки-игрушки. Самая крупная группа – это книжки-игрушки.

В России книжки-игрушки были переводными и появились 1826 году в конце XVIII. Первых по времени издания отечественная книжка-игрушка «Новая игра для детей и картины природы и искусств, с присовокуплением нравственных стихотворений» издана в Москве русским писателем и журналистом С.Н.Глинкой. В XIX в. М.О.Вольф известный петербургский издатель польского происхождения активно печатал для детей России книжки-игрушки. Советский период не отличается разнообразием книжек-игрушек и развивается это направление книгопечатания очень медленно. В XXI веке у книгоиздателей «открылось второе дыхание» и у современных детей есть уникальная возможность читать, рассматривать и играть с прекрасными книжками-игрушками, в которых гармонично сочетаются

традиционные подходы и новаторские идеи. Мир книжек-игрушек сегодня обширен. За последние 10 лет вместе с развитием общества, его представлениями о детях и воспитании, книге и игрушке, чтении и игре значительно увеличилось количество книжек-игрушек и изменилось их качество.

В 1999 году Н.Н.Светловская в своем учебном пособии выделяет 7 разновидностей книжек-игрушек (Svetlovskaya & Piche-ool, 1999). В 2008 году согласно ГОСТ 7.60-90 «СИБИД. Издания. Основные виды. Термины и определения» выделяются уже 9 разновидностей книжек-игрушек (GOST 7.60 90. Editions. The main types. Terms and Definitions). В 2018 году М.В.Норенко согласно ГОСТ 7.60-2003 «СИБИД. Издания. Основные виды. Термины и определения» и данным книжных интернет-магазинов выделяет 16 видов книжек-игрушек (Norenko, 2018). Книжка-игрушки появляются благодаря появлению: во-первых, новых конструктивных решений, во-вторых, включению игровых элементов.

Итак, на основе анализа литературы и Интернет-источников можно назвать следующие разновидности книжек-игрушек: две книжки в одной, книжка-стикерс (с наклейками), книга-игрушка с картонным клапаном и отверстиями или прорезями (с окошками), книга-игрушка подвижными элементами (с картонными, текстильными или пластмассовыми), книжка с игровым замыслом, книжка-фигура, виммельбух, книжка-тренажер (с завязками, со шнурками, с застежками), книжка с трафаретами, книжка с фланелеграфом, книжка-затея, музыкальная книжка, книжка с сопроводительным материалом (с CD-диском), 3-D книжка, книжка-панорама, книжка-погремушка, книжка-пищалка, книжка-театр (магнитный, картонный, теневой, с пальчиковыми куклами), книжка-пазл, pop-up книга, книжка с объемной игрушкой, книжка-лото, мягкая книжка, книжка-сумочка, книжка со сквозным окном (с тоннелем), книжка с оптическими эффектами (книжка с очками, с голограммами), книжки-раскладушки (гармошки), книжка-обнимашка, книжка-качелька (неваляшка), книжка в кармашек, книжка с кармашками, мини-книжка, книжка-кубик, книжка с клипсами, книжка с вырубкой по контуру, книжки-пышки, книжка-веер, книжка-вертушка, книжка-репетитор, книжка с деревянным планшетом и т.д.

Достаточно полный перечень составить сложно, т.к. ежегодно, благодаря творчеству современных издателей, появляются все новые и новые конструкции книжек-игрушек. Существует ряд классификаций книжек-игрушек, однако, полной и однозначной не существует до сих пор. Разработка полноценной типологии книжек-игрушек, даст педагогам

ориентиры для более глубокого понимания особенностей данного типа книг и эффективного их применения в образовательной деятельности.

В процессе анализ ряда исследований мы пришли к выводу, что книжки-игрушки являются предметом изучения многих ученых. Так, дизайнеры изучают книжку-игрушку с точки зрения ее конструкции (Grechneva, & Karavaitseva, 2019; Mala, 2019; Popova, 2015; Rabotnova, 2017; Tuisina, 2017); библиографы и издатели рассматривают разновидности изданий книжки-игрушки, историю ее возникновения, репертуар детских книг (Vakhrusheva, 2011; Mzhelskaya, 2005); педагогам важен дидактический потенциал книжки-игрушки, ее функции и типология (Zabolotnikova, 2018; Kozlyuk, 2019; Zimina & Zhestkova, 2018; Norenko, 2018; Saygusheva, 2018; Maksimova, 2018; Tyulyukina, 2018; Sherwood, 2015; Usoltseva, 2018)

Книжки-игрушки позволяют решать разнообразные дидактические задачи: развивать, обучать и воспитывать детей, причем делать это в игровой форме, незаметно для самого ребенка (Maksimova, 2009).

В нашем исследовании в большей степени сделан акцент на познавательную функцию, поскольку наполнять книжку-игрушку студенты будут математическим содержанием. Для младшего дошкольного возраста приоритетными являются такие темы, как количественные представления (на основании сравнения множеств «больше-меньше»), ориентировка в трехмерном пространстве («ближе-дальше»), геометрические фигуры (круг, квадрат, треугольник). Книжки-игрушки для средней группы могут содержать материал по вопросам формирования представлений о числе и цифре от 1-го до 5-ти; о геометрических фигурах, ориентировке в двухмерном пространстве. Для дошкольников старшего возраста предпочтение следует отдавать заданиям, направленным на счет до 10-ти, формирование умения ориентироваться на плоскости. В подготовительной к школе группе наряду с перечисленными темами стоит более детально остановиться на ознакомлении с арифметическими действиями, отработке умения ориентироваться во времени по часам.

При разработке дидактических книжек-игрушек с математическим содержанием со студентами необходимо определить возраст детей, исходя из которого, выбрать математическую тему, затем определить тип книжки, далее продумать количество страниц, содержание обложки (на ней обязательно должно быть заглавие книги и автор), разработать макет: отбирать наглядный (создание эскизов иллюстраций в книге) и дидактический материал, сконструировать задания, продумать последовательность расположения данного материала в книге, выбрать материалы, из которых будет сделана книга (бумага, ткань, клеенка,

фанера и пр.) и инструментов для создания книги (ножницы, клей, краски, карандаши, фломастеры, нитки, иголки и пр.), затем уже книга оформляется: осуществляется иллюстрирование, оформление обложки, оглавления, выходных данных и титульного листа, если текст на страницах книги не предполагается, то необходимо вложить его в карман или конверт, прикрепленный к книге. В итоге осуществляется презентация книги (выставка, фотоотчет, видеоотчет).

Итак, прием конструирования книжки-игрушки является одним из педагогических условий, способствующих развитию творческих качеств личности студентов-бакалавров, как-то: творческая активность, оригинальность, способность и стремление к внесению новизны, наличие развитого воображения, эмоциональная отзывчивость, упорство, высокая самоорганизация и работоспособность. Прием конструирования книжки-игрушки нацелен на создание чего-то нового, а создание нового – это и есть творческая деятельность, в процессе которой формируется творческая личность.

Методы и организация исследования
Methodology and Organization of the Research

Для эмпирического осмысления педагогического опыта использования потенциала познавательной книжки-игрушки при подготовке студентов бакалавров в области математического образования в педагогической практике вуза было проведено экспериментальное исследование.

Проведенное исследование включало в себя:

- рекогносцировочный этап, целью которого являлся анализ рабочей программы учебной дисциплины «Теории и технологии математического развития дошкольников», изучаемой студентами по направлению, профилям подготовки, выбранными в качестве базы исследования с целью оптимизации процессуальной составляющей конструирования познавательной книжки-игрушки математического содержания; выведение методических особенностей разработки познавательных книжек-игрушек различных типов, наполненных математическим содержанием и созданных в процессе организации творческой деятельности студентов бакалавров при освоении ими дисциплины «Теории и технологии математического развития дошкольников»;

- констатирующий этап, цель которого заключалась в анкетировании студентов института образования и социальных наук Псковского государственного университета для определения их первичной готовности к конструированию и использованию в дальнейшей профессиональной деятельности познавательных книжек-игрушек как инструмента математического образования детей дошкольного возраста; определения отношения студентов бакалавров к потенциалу данного педагогического инструмента, используемого в математическом образовании детей дошкольного возраста.

В экспериментальном исследовании приняли участие студенты 3-го (14 человек) и 4-го (13 человек) курсов, обучающиеся по направлению подготовки 44.03.05 Педагогическое образование (с двумя профилями подготовки: «Дошкольное образование и Социальная педагогика»). Базой исследования стал институт образования и социальных наук Псковского государственного университета.

На основе анализа рабочей программы по обозначенной учебной дисциплине было разработано содержание и методическая составляющая разработки студентами бакалаврами познавательных книжек – игрушек, используемых при ознакомлении детей младшего и старшего дошкольного возраста с образовательным содержанием различных математических разделов, а именно:

- ✓ определены такие основные темы, предметно-математическая сущность которых может быть использована для создания познавательных книжек-игрушек, как: количественные представления (число, цифра), пространственно-временные представления, геометрические фигуры и формы, арифметические действия;
- ✓ отобран по каждой из заявленных тем практико-ориентированный материал, определены такие методические особенности конструирования математического содержания познавательной книжки-игрушки как: опора на зрительный и осязательно-двигательные анализаторы дошкольников в процессе обследования ими интерактивной дизайн-формы книжки-игрушки; включение в содержание познавательно-логических заданий; развитие конструкторских, графических умений детей дошкольного возраста, топологическая и координатная направленность иллюстративного материала; актуализация функций внутренней и внешней речи ребенка-дошкольника в процессе выполнения математических заданий.

С целью оптимизации технологической (процессуальной) составляющей творческой деятельности студентов бакалавров по конструированию познавательных книжек-игрушек с математическим содержанием был проведен анализ студенческих работ и выявлены предпочтения будущих педагогов-воспитателей в выборе того или иного типа книжки-игрушки, доминирующей в ее содержании математической темы и методических особенностей ее воплощения в представленной дизайн форме.

Педагогически охарактеризуем и методически опишем созданные студентами-бакалаврами конструкты различных типов книжек-игрушек, предназначенные для математического образования детей дошкольного возраста.

Следует отметить, что по тематическому наполнению разработанные конструкты носили интегративный, полифункциональный характер. Преобладающими типами книжек-игрушек, представленными в студенческих конструктах, были мягкие, тактильные книжки; книжка-пазл с вырубками, окошками; книжка-раскраска.

Мягкие, тактильные книжки, выполненные из разнообразных тканевых материалов, с вшитыми рельефными математическими элементами из картона, поролона, бумаги, инициируют у детей, как младшего, так и старшего дошкольного возраста работу зрительного и осязательно-двигательного анализаторов в процессе обследования эргономичной и в то же время объемной дизайн-формы познавательной книжки-игрушки.

Так для формирования у старших дошкольников представлений о количественном составе чисел в пределах десяти из единиц книжка-игрушка по теме «Посчитай-ка. Поиграй-ка» содержала страницы в вшитыми полосками-ниточками, на которых расположены подвижные предметные наглядности (бусинки, цветы, бабочки, ягоды и т.д.). Образовательная функция задания сопряжены с выполнением дошкольником осязательно-двигательных операций.

Полифункциональность математического содержания данной страницы обеспечивается выполнением старшими дошкольниками приема присчитывания по одному, получая и называя последующее при счете число, уточнением знаний о свойствах натурального ряда чисел первого десятка, актуализации функции внутренней и внешней речи ребенка (рис.2).

Включение в содержание мягкой книжки-игрушки познавательно-логических заданий может быть проиллюстрировано страницей интегрированного математического задания на логическое соотношение

одинаковых по форме, цвету фигур и предметов, основывающееся на установлении взаимно-однозначного соответствия одного объекта другому, представленной в книжке игрушке на тему «Я учусь». Выполнение полифункционального задания осуществляется посредством передвижения дошкольником фишки-посредника (к примеру, пуговицы) по пришитой к геометрическим фигурам резинке (рис.3).

С понятием овальной, треугольной формы младшие дошкольники знакомятся на страницах мягкой книжки-игрушки «Тимка» посредством выполнения задания по сбору пирамиды, состоящей из 4-х разноцветных овалов, расположенных по сериационному принципу уменьшения размера, треугольной детали на верху пирамиды, выполненных из фетровой ткани, скрепленной липучками (рис.4).

Потенциал познавательной мягкой книжки-игрушки в развитии конструкторских умений детей старшего дошкольного возраста продемонстрируем примером страниц-заданий с часами-конструкторами, требующими от старших дошкольников выполнения действий по моделированию длительности временных интервалов (рис.4).

Рисунок 2 ***Числа от 1 до 10***
Figure 2 ***Numbers from 1 to 10***

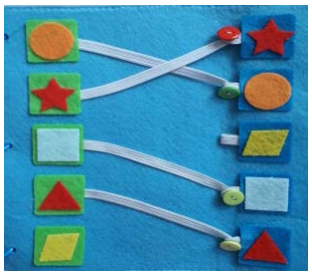

Рисунок 3 ***Фигуры и формы***
Figure 3 ***Shapes and Shapes***

Рисунок 4 ***Временные и геометрические представления***
Figure 4 ***Temporal and Geometric Representations***

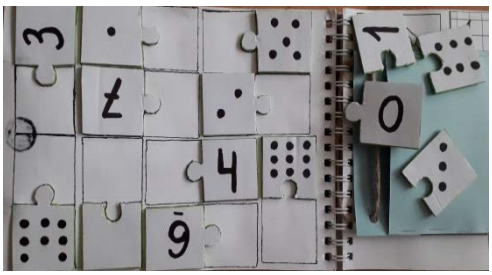

Рисунок 5 ***Количественные представления***
Figure 5 ***Quantitative Representations***

Методическое описание и наглядная иллюстрация математического содержания мягких книжек-игрушек, представленные выше позволяют нам перейти к раскрытию методических основ конструирования книжки-

пазла, созданной из листов картона, содержащих вырубки, окошки, небольшие пазлы.

Визуальным примером данного конструкта может служить книжка «Учись. Играй. Считай», предназначенная для математического образования дошкольников подготовительной к школе группы. Поясним сказанное примерами страниц, сочетая их демонстрацию с педагогическим анализом.

Интерактивный дизайн книжки нацеливает детей 6-7 лет в процессе ознакомления с числами первого десятка на выбор «количественного пазла» числа (множества точек), соответствующего его составу, нахождении образца печатной цифры и назывании количественного числительного, опираясь на зрительный и осязательно-двигательные анализаторы (рис.5).

На страницах анализируемого студенческого издания широко представлены познавательно-логические задания на материале темы «арифметические действия». Так, к примеру, отработка старшими дошкольниками табличного случая «прибавления по частям» может быть реализована при выполнении задания на подбор ключика с ответом к замку с математическим выражением (4+3, 1+1, 5+4, 2+2, 3+2).

Математическая интерпретация познавательных книжек-раскрасок будущими педагогами воспитателями нашла отражение в создании наглядно-иллюстративных конструктов, требующих от дошкольников графического выполнения заданий с помощью комплекта цветных карандашей, фломастеров, прикрепленных к книжке-игрушке данного типа посредством конверта.

Результаты эмпирического исследования
The Results of Empirical Research

Констатирующий этап эмпирического исследования предполагал выявление первичной готовности будущих педагогов-воспитателей к конструированию и использованию в образовательной деятельности дошкольной образовательной организации (далее ДОО) познавательных книжек-игрушек как инструмента математического образования детей дошкольного возраста, выяснение отношения студентов бакалавров к потенциалу данного педагогического инструмента.

В связи с поставленной целью была разработана анкета, состоящая из преамбулы, основной части (12-ти вопросов, распределенных по трем ступеням) и демографического блока, состоящего из вопросов,

характеризующих самого респондента, его сферу профессиональной деятельности.

Первая ступень анкеты содержала закрытые вопросы, направленные на выяснение заинтересованностью будущих педагогов-воспитателей проблемой разработки и использования в образовательной деятельности ДОО познавательных книжек-игрушек. Респондентам было предложено ответить на вопросы, направленные на выяснение их осведомленности о таком педагогическом инструменте как познавательная книжка-игрушка, его типах и видах; о значимости использования в образовательной деятельности ДОО книжки-игрушки; наличии личного опыта разработки и использования книжек-игрушек (на период педагогической практики); частоте его применения.

Ответы испытуемых на первую ступень вопросов показали, что большинство студентов осознают значимость обозначенной проблемы. Так, 65% опрошенных отметили, что им известны типы и виды познавательных книжек-игрушек, некоторые примеры которых уже были ими разработаны в период педагогической практики. Однако 46% респондентов несмотря на согласие с необходимостью конструирования и включения в образовательную математическую деятельность ДОО данного педагогического инструмента не обладают достаточными теоретическими знаниями и практическими умениями для создания данных конструктов и, как следствие, не имеют соответствующего педагогического опыта.

Вторая ступень вопросов включала как закрытые, так и открытые вопросы, направленные на выявление готовности будущих воспитателей к практическим действиям по разработке и использованию в образовательной деятельности ДОО познавательных книжек-игрушек.

От опрашиваемых требовалось сформулировать либо выбрать из предложенных вариантов ответы на вопросы практического характера.

Количественный анализ ответов на данные вопросы представлен в таблице 1.

Как видно из таблицы 1, преобладающим основанием для использования конструктов познавательных книжек-игрушек по математическому развитию дошкольников являются программные требования, предъявляемые к освоению респондентами содержания учебной дисциплины «Теории и технологии математического развития дошкольников». Однако была обнаружена группа опрашиваемых, готовых разработать конструкт книжки-игрушки по личной инициативе.

Кроме того, отраженные в таблице 1 показатели свидетельствуют о том, что студенты отдают предпочтение оригинальным методам и приемам разработки книжек-игрушек. Тем не менее достаточный процент

респондентов готов разработать книжку-игрушку с использованием традиционных методов и приемов.

Таблица 1. ***Результаты анкетирования студентов 3 и 4 курсов по второй ступени вопросов***
Table 1 ***The Results of the Questioning of 3rd and 4th Year Students on the Second Level of Questions***

Вопросы	*Показатели анализа*	Процентное соотношение
Вопрос «Что является основанием для использования в образовательной деятельности ДОО книжек-игрушек?»	Личное желание педагога разработать конструкт книжки-игрушки	30%
	Программная необходимость конструирования книжек-игрушек по математическому развитию дошкольников	70%
	Наличие готового конструкта книжки-игрушки	-
Вопрос «Какие методы, приемы разработки книжек-игрушек вы используете?»	Традиционные	37%
	Оригинальные	63%
Вопрос «Какие затруднения в разработке книжек-игрушек вы испытываете?»	Недостаточность методической литературы	-
	Отсутствие практических умение по разработке	43%
	Большой объем времени для разработки книжек-игрушек	55%

Вместе с тем, данные таблицы 1 показывают, что ключевым затруднением конструирования познавательных книжек-игрушек является большой объем времени, необходимого для разработки конструкта. Среди затруднений студенты так же указывают отсутствие у них практических умений по разработке книжек-игрушек.

Третья ступень анкеты была направлена на детализацию индивидуальных ответов респондентов на вопросы предыдущих частей и включала безусловные и косвенные вопросы. Анализ результатов показал, что личное мнение 87 % опрошенных соответствует общепринятым положениям, отраженным в содержании трех ступеней анкеты. У 13 % участников опроса были обнаружены разногласия в выражении индивидуального мнения по вопросам, содержащимся в последней ступени анкеты по отношению к ответам, предложенным респондентами в начале анкетирования.

Обобщение
Conclusions

Проведенное исследование позволило сделать следующие выводы.

Решению задачи формирования у будущих педагогов «мягких» навыков будет содействовать прием конструирования познавательной книжки-игрушки с математическим содержанием. Реализация в практике обучения данного приема поможет развития творческого мышления студентов.

Согласно цели исследования было теоретически описаны преимущества использования для развития творческого мышления будущих педагогов дошкольного образования потенциала книжки-игрушки с математическим содержанием в образовательном процессе Псковского государственного университета.

Результаты проведенного исследования показали трудности в овладении приемом конструирования книжки-игрушки с математическим содержанием, выявлены предпочтения будущих педагогов-воспитателей в выборе того или иного типа книжки-игрушки, доминирующей в ее содержании математической темы и методических особенностей ее воплощения в представленной дизайн форме.

Дидактический потенциал книжек-игрушек не вызывает сомнений у педагогов, в отличии от литературных критиков. Учителя и воспитатели видят в них оригинальное дидактическое средство, способное повысить эффективность процесса обучения ребенка, сделать его приятным и увлекательным, соответствующим возрастным особенностям детей.

Summary

The conducted research allowed us to draw the following conclusions.

The solution of the problem of shaping soft skills in future teachers will be facilitated by the method of constructing an educational toy book with mathematical content. Implementation of this technique in teaching practice will help the development of students' creative thinking.

According to the purpose of the study, the advantages of using the potential of a toy book with mathematical content in the educational process of Pskov State University for the development of creative thinking of future preschool teachers were theoretically described.

The results of the study showed difficulties in mastering the method of constructing a toy book with mathematical content, revealed the preferences of future teachers-educators in choosing one or another type of toy book that dominates in its content a mathematical topic and methodological features of its implementation in the presented design form

The didactic potential of toy books does not raise doubts among teachers, in contrast to literary critics. Teachers and educators see them as an original didactic tool that can increase

the effectiveness of the child's learning process, make it pleasant and exciting, corresponding to the age characteristics of children.

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LOGOPĒDISKĀS KOREKCIJAS PAŅĒMIENI VERBĀLĀS KOMUNIKĀCIJAS VEIDOŠANAI NERUNĀJOŠIEM BĒRNIEM PIRMSSKOLAS VECUMĀ

Methods of Correction by Speech Therapy in Establishing of Verbal Communication for Non-verbal Children in Pre-school Age

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Abstract. *According to the experience of many speech therapists, lately, there is a growing number of non-verbal children. Such a tendency is observed not only in special pre-school education institutions but also in general pre-school institutions. These children need the help of a speech therapist who can determine the speech therapy conclusion and choose the methods of correction.*
The goal of the research is to explore and analyze the effectiveness of the methods of corrections by speech therapy in the creation of verbal communication for non-verbal children in pre-school age.
The correction activities consist of several stages, and as a result, children learn the skills of verbal communication and according to their abilities, use this type of communication in their daily life.
Conclusions. The corrective work by speech therapy is done in a way that the speech disorder in pre-school age is eliminated or minimized. The complex impact can bring optimal results in the correction of speech disorders.
Keywords: *correction by speech therapy, creation of verbal communication, non-verbal children.*

Ievads
Introduction

Cilvēka dzīve nav iedomājama bez komunikācijas. Mums apkārt ir dažādas skaņas, dabas parādības un dzīvas būtnes ar savām balsīm. Visiem priekšmetiem un eksistences pierādījumiem tiek doti savi nosaukumi, kurus cilvēks saprot un uztver ar valodas palīdzību, caur valodas funkcijas prizmu. Turklāt cilvēks eksistē sabiedrībā, kur jau no dzimšanas brīža bērnam sākas komunikācija ar apkārtējo pasauli.

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Komunikācija ir sociāla parādība bez kuras nevar iedomāties cilvēku savstarpējās attiecības. Cilvēks kā sabieLūdrības sastāvdaļa visu laiku ir iesaistīts komunikācijas procesā, daloties ar informāciju, vai saņemot informāciju no citiem cilvēkiem. Var apgalvot, ka valodas un runas attīstība ir neatņemams cilvēka kā sabiedrības būtnes eksistences pamats. Runa ir sociālā forma, kas ļauj realizēt sazināšanos, izmantojot skaņu formas un balstoties uz valodas likumību (Kornev, 2006). Jau no pirmās dienas, kad bērns ir piedzimis, viņam veidojas nepieciešamība komunicēt ar cilvēkiem, kas ir viņam apkārt. Pakāpeniski bērns apgūst valodas normas un ir spējīgs verbāli sazināties ar pasauli. Normas robežās šis process – no runas saprašanas līdz runas praktiskai lietošanai – aizņem noteiktu laiku – ap viena gada vecumu bērnam parādās pirmie vārdi, vēlāk – frāzes un teikumi, bet četru piecu gadu vecumā bērna runa jau ir skaidri artikulēta un tuvojas semantiski pareizai runai (Gillen, 2003; Zhukova, Mastjukova, Filicheva, 2011). Bet, ir tādi bērni, kuri līdz trim, daži līdz četriem gadiem nevar apgūt dzimtās valodas likumsakarības tā, lai sāktu verbāli komunicēt ar apkārtējiem.

Balstoties uz statistiskā krājuma "Bērni Latvijā" datiem, 2017./18. gadā bija 4756 bērni ar speciālām vajadzībām, no kuriem 2660 bērni – ar valodas attīstības traucējumiem (Centrālā statistikas pārvalde, 2019). Savukārt 2019. gadā no 4102 bērniem ar speciālām vajadzībām ar valodas traucējumiem bija 2455 bērni (Centrālā statistikas pārvalde, 2020). Minētie bērni apmeklēja speciālās pirmsskolas izglītības iestādes, vai speciālās grupas vispārizglītojošajā pirmsskolas iestādē, ņemot vērā bērnu specifisko traucējumu. Statistikas pārskatā netika iekļauti dati par bērniem ar speciālām vajadzībām, kuri apmeklēja pirmsskolas grupas vispārizglītojošajās skolās, interešu izglītības iestādēs, privātajās pirmsskolas izglītības iestādēs.

Pētījuma mērķis ir izpētīt un izanalizēt logopēdiskās korekcijas paņēmienu efektivitāti verbālās komunikācijas veidošanai nerunājošiem bērniem 3 – 4 gadu vecumā.

Pētīšanas metodes: teorētiskā zinātniskās literatūras un avotu analīze, bērnu logopēdiskā izpēte, novērošana, pedagoģiskā izmēģinājuma darbība.

Logopēdiskās korekcijas nepieciešamība verbālās komunikācijas veidošanai nerunājošiem bērniem pirmsskolas vecumā
The Necessity of Correction by Speech Therapy in Establishing of Verbal Communication for Non-verbal Children in Pre-school Age

Bērna runa attīstās pakāpeniski no dzimšanas; pieaugot nepieciešamībai komunicēt, sadarboties verbāli ar citiem cilvēkiem, būt saprastam, mainās runas kvalitāte, kas ir atkarīga no fiziskās, psihiskās, emocionālās bērna attīstības. D. Markus norāda, ka "viena no valodas funkcijām neapšaubāmi ir sazināšanās funkcija. Par to, cik ļoti mēs vēlamies izteikt savas domas, kaut ko pastāstīt,

apspriest, pārliecināt citus, saņemt informāciju, dalīties pieredzē, izkliegt dusmas, čukstēt noslēpumus, liecina jau maza bērna pirmie centieni kaut ko pavēstīt pārējiem cilvēkiem" (Markus, 2003, p.12). Logopēdijas terminu skaidrojošajā vārdnīcā var atrast šādu "runas" definīcijas skaidrojumu: "runa – cilvēku pārveidojošās darbības process, vēsturiski izveidojies specifisks sazināšanās veids, ko īsteno ar valodas palīdzību; runa ir galvenais domāšanas mehānisms; ārpus runas nav iespējama apziņas attīstība" (Lūse, Miltiņa, Tūbele, 2012).

Attīstoties atbilstoši vispārīgām valodas attīstības normām, vidējā vecuma bērns (ap/no 4 gadiem) sazinās ar vienaudžiem un pieaugušajiem verbāli (Volkova, 2009; Krauze, 2012). Ja bērnam līdz šim vecumam nav izveidojusies runa, vecākiem jāatrod iespēja saņemt konsultāciju pie speciālista. Šiem bērniem logopēda palīdzība ir būtiska. Skolotāji logopēdi, sastopoties ar vidējā vecuma nerunājošu vai slikti runājošu bērnu, pēc padziļinātas runas un valodas attīstības pārbaudes, bieži diagnosticē tādam bērnam valodas sistēmas nepietiekamu attīstību (VSNA), dalot šo traucējumu vairākos runas attīstības līmeņos (Tūbele & Lūse, 2012; Miltiņa, 2008; Volkova, 2009; Zhukova et al., 2011; Nishheva, 2009; Krauze, 2012; Kornev, 2006).

Valodas sistēmas nepietiekama attīstība (VSNA) ir dažādi sarežģīti runas traucējumi, kad ir nepietiekami attīstīti visi valodas sistēmas komponenti: fonētika, fonemātika, leksika, gramatika, saistītā runa, bet ir saglabāta dzirde un intelekts (Lūse et al., 2012; Volkova, 2009). VSNA izdala trīs runas attīstības līmeņus, daži zinātnieki norāda uz četriem runas attīstības līmeņiem (Korņev, 2006; Krauze, 2012). Ja bērns ir nerunājošs, logopēdiskais slēdziens viņam ir VSNA I runas attīstības līmenis, kas nozīmē, ka:

- sazināšanas līdzekļi ir ierobežoti;
- savā runā bērns lieto atdarinājumus un skaņu kompleksus;
- plaši izmanto norādāmos žestus un mīmiku;
- aktīvais vārdu krājums ir ļoti mazs;
- pasīvais vārdu krājums ir plašāks par aktīvo;
- fonētiska nenoteiktība;
- gandrīz nav priekšmetu un darbību diferencējošo apzīmējumu;
- gramatikā nav morfoloģisko elementu;
- vārda zilbju sastāva uztveres un reproducēšanas iespējas ir ierobežotas (Tūbele, 2019).

Lai nerunājošam bērnam veidotos runa, ir nepieciešami vairāki priekšnosacījumi. Jābūt attīstītai kustību jomai, kā arī sociālajai jomai, kas rezultātā noved pie zīmju sistēmas apguves. Ja tiek apgūta zīmju sistēma, tad var veidoties lingvistiskā joma, kura ietver motoro un sensoro komponentu, ar nosacījumu, ka bērnam nav kustību traucējumu un tiek attīstīta sociālā joma (Evans, 2007; Hoff, 2009; Ewig, Callow, & Rushton, 2016).

T.Vizeļa piedāvā sazināties ar nerunājošu bērnu, izmantojot žestus, mīmiku un minimālu vokalizāciju, pēc iespējas mazāk runāt un pievērst uzmanību taktilām sajūtām. Uzsākot logopēdisko korekciju ar bērnu, kam ir komunikatīvās, proprioceptīvās grūtības, vajadzētu "spert soli atpakaļ" – sākt ar to, kas bērnam jau labi padodas, lai nostiprinātu jau esošās prasmes, un uz tās pamatā veidot jaunas iemaņas. Neverbālās komunikācijas izmantošana korekcijas darba sākumā var būt liels atbalsts un tilts, kurš savienos neverbālās komunikācijas prasmes ar verbālās komunikācijas rašanos (Vizel', 2005; Vizel', 2016). Šo korekcijas paņēmienu atbalsta arī citi zinātnieki un atzīmē *sensorās attīstības* nepieciešamību bērniem ar VSNA I runas attīstības līmeni (nerunājošiem vai slikti runājošiem bērniem), kas nākotnē palīdzēs bērniem apgūt runas prasmes (Lüke, Ritterfeld, Grimminger, Rohlfing, Liszkowski, 2020). Logopēdi un neirofiziologi uzsver, ka taktila uztvere nerunājošiem vai mazrunājošiem bērniem ir saglabāta. Tas adekvāti jāizmanto runas attīstīšanai (Rowe, Özçaliskan, and Goldin-Meadow, 2008; Cartmill, Hunsicker, Goldin-Meadow, 2014; Eriksson, 2018; Rohlfing, 2019). Logopēdam jāpievērš uzmanība bērna dzirdes, redzes un atmiņas veicināšanai. Šim nolūkam izmanto vingrinājumus, kur ekspresīvā runa tiek minimizēta, un aktīvi izmanto neverbālus komunikācijas paņēmienus. Bērnam piedāvā klausīties dažādas skaņas – gan dabas un dabas parādību skaņas, gan mūzikas instrumentu skaņas, gan sadzīves skaņas, dzīvnieku, putnu balsis, cilvēku balsis. Plaši tiek izmantota mīmika un žesti, atdarinot skaņu pasauli (Kornev, 2006; Krauze, 2012; Gajazova, Sultanova, Shavalieva, 2014).

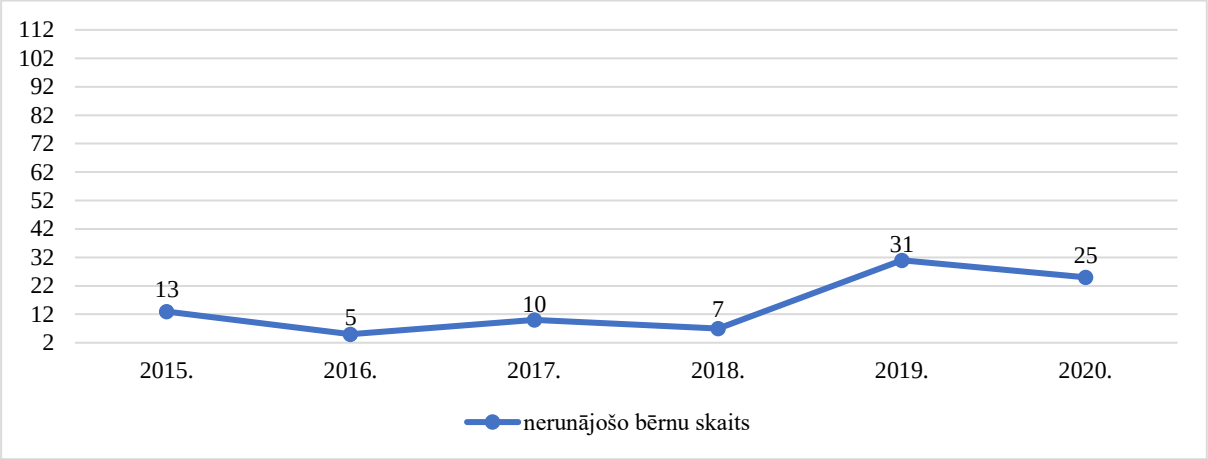
Pakāpeniski logopēdiskās korekcijas laikā bērniem tiek pilnveidota impresīvā runa, aktivizēta ekspresīvā runa, fonemātiskā uztvere, minimizēts runas negatīvisms. Notiek psihiskās attīstības procesu pilnveidošana.

Metodoloģija
Methodology

Lai uzsāktu koriģējoši attīstošo darbību ar nerunājošiem bērniem, tika veikta runas un valodas attīstības līmeņa pārbaude, tika noskaidrots impresīvās un ekspresīvās runas attīstības līmenis, pārbaudīta psihomotorā un kognitīvā attīstība, sensorās spējas, izmantojot neiropsiholoģiskās diagnostikas metodi, kura tika izstrādāta Bērnu neiropsiholoģijas zinātniski pētnieciskajā centrā pasaules slavenās neiropsiholoģes Žannas Glozmanas vadībā, (Glozman, Potanina, Soboleva, 2008) un bērnu individuālām īpatnībām pielāgoto valodas sapratnes testu impresīvās runas attīstības līmeņa noteikšanai, kuru izstrādāja Dzirdes centra speciāliste Daiga Kalinka Eiropas Sociālā fonda projekta "Izglītojamo ar funkcionāliem traucējumiem atbalsta sistēmas izveide" ietvaros (Kalinka, 2013). Neiropsiholoģiskās diagnostikas metode ir izstrādāta bērniem sākot no 2 gadu vecuma, pētījuma diagnostikai tika ņemti rādītāji, kuri ir paredzēti 3 – 4 gadus

veciem bērniem. Savukārt valodas sapratnes tests ir piemērojams bērniem no 3 līdz 5 gadu vecumam, lai kvalificēti pārbaudītu bērna impresīvās runas attīstības līmeni.

Pētījumā tika iesaistīts trīsdesmit viens 3 – 4 gadus vecs nerunājošs bērns no speciālās X pirmsskolas izglītības iestādes bērniem ar runas un valodas traucējumiem. Kopējais bērnu skaits ar dažādas etioloģijas runas traucējumiem ir 112. Pēdējo piecu gadu laikā maksimālais nerunājošo bērnu skaits tika novērots pētījuma norises laikā – 2019. gadā 31 bērns, kurš neizmanto komunikācijai verbālo runu (1.attēls).



Bērnu skaits pirmsskolas izglītības iestāde
n=112

1.attēls. ***Nerunājošie bērni pirmsskolas izglītības iestādē***
Figure 1 ***Non-verbal Children in Preschool Educational Institution***

Bērni apmeklēja četras dažādas grupas, kur katrā grupā ir savs logopēds. Pirms pētījuma uzsākšanas skolotāji logopēdi izstrādāja vienotu korekcijas plānu nerunājošiem bērniem, kuru īstenoja savā profesionālajā darbībā.

Pētījums norisinājās no 2019.gada septembra līdz decembrim. Bērnu vecāki ir devuši piekrišanu bērnu dalībai pētījumā un tika informēti par pētījuma datu publicēšanu.

Pētījuma rezultāti
Results

Septembra pirmajās divās nedēļās visiem bērniem tika veikta padziļinātā valodas un runas prasmju izpēte, citu kognitīvo procesu izpēte, sociālās attīstības līmeņa, neirodinamiskā un regulatorā attīstības līmeņa pārbaude, sīkās un lielās motorikas pārbaude. Visiem pārbaudes kritērijiem tika noteikti rādītāji, uzdevumu skaits un vērtējuma sistēma. Katrs uzdevums tika vērtēts pēc skalas no 1 līdz 3 ar

nozīmi: 1 – bērns nespēj veikt uzdevumu; 2 – uzdevumu veic ar palīdzību; 3 – uzdevumu veic patstāvīgi. Summārais vērtējums varēja būt: 30 – 45 punkti – bērnam ir VSNA I runas attīstības līmenis; 46 – 65 punkti – bērnam ir VSNA II runas attīstības līmenis; 66 – 84 punkti – bērnam ir VSNA III runas attīstības līmenis; 85 – 90 punkti – runas norma (1. tabula).

1.tabula. ***Pārbaudes kritēriji***
Table 1 ***Testing Criteria***

Kritēriji	**Uzdevumu skaits/iegūtie punkti**	
	minimāli	maksimāli
Sociālā attīstība	5	15
Neirodinamiskā un regulatorā attīstība	3	9
Sīkā un lielā motorika	4	12
Kognitīvie procesi	7	21
Impresīvā runa	11	33
Kopā:	**30**	**90**

Sociālās attīstības pārbaudē ietilpst šādi rādītāji: komunikatīvā attīstība, emocionālā attīstība, pašapkalpošanās prasmes, kopējās zināšanas, prasme spēlēties.

Neirodinamiskās un regulatorās attīstības līmeņa pārbaude sastāv no: kopējās aktivitātes izpētes procesā, uzvedības rādītājiem, metodes "Arhitekts" vērtējuma (bērnam jāizveido konstrukcija no klučiem, ievērojot noteikumus).

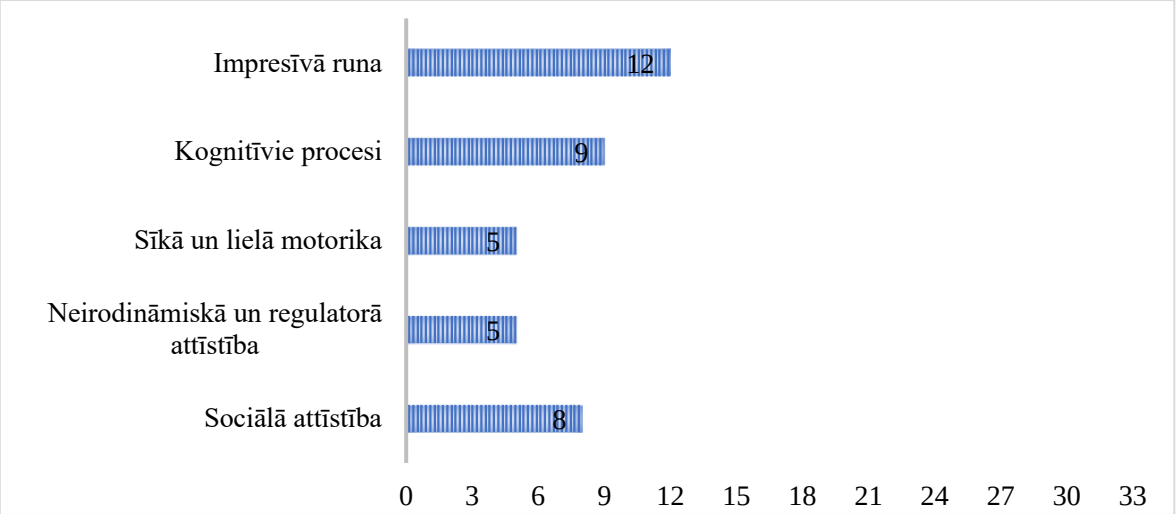
Sīkās un lielās muskulatūras attīstības līmeņa pārbaude dalās uz: lielās motorikas pārbaudi, sīkās motorikas izpēti, sukcesīvu kustību izpēti (dinamiskais praxis) un reciprokālu kustību koordināciju (tests ir veikts ar bērniem no 4 gadu vecuma).

Kognitīvie procesi sastāv no: vizuālās uztveres, akustiskās uztveres, telpiskās uztveres, impresīvās runas pārbaudes, ekspresīvās runas pārbaudes, atmiņas un intelekta izpētes.

Lai papildus izpētītu *impresīvās runas* attīstības līmeni, tika izmantots valodas sapratnes tests (Kalinka, 2013), kurā ietilpst šādi rādītāji: bērns parāda galvenās ķermeņa daļas; kombinē divus lūgumus ar vienu objektu; saprot vietniekvārdus: "mans", "tavs", "viņa", "mēs"; parāda pazīstamus priekšmetus; saprot darbības vārdus; saprot izmēra atšķirības; saprot prievārdus "uz", "zem"; sāk saprast vienības (daudz, viens); atpazīst objekta daļu; saprot, kas ir pazudis?; saprot vienkāršus nepaplašinātus teikumus.

Pārbaude tika veikta mazās apakšgrupās un individuāli, ņemot vērā katra bērna psihoemocionālo stāvokli izpētes laikā. Viens sesijas ilgums bija atkarīgs no bērna vecuma un gatavības sadarboties (minimāli 5 – 10 minūtes, maksimāli

20 minūtes). Lai iegūtu bērnu pilnu attīstības līmeņa raksturojumu, katrs bērns tika diagnosticēts vairākas reizes divu nedēļu laikā.



2.attēls. ***Bērnu attīstības līmenis 2019.gada septembrī***
Figure 2 ***Level of Development in Children in September 2019***

Novērtējot nerunājošo bērnu runas attīstības un runas sapratnes līmeni, kā arī psihisko procesu attīstības īpatnības, tika apzināta bērnu runas traucējuma smaguma pakāpe. Pēc pārbaudes rezultātiem visiem bērniem tika noteikts valodas sistēmas nepietiekamas attīstības (VSNA) I runas attīstības līmenis, kurš ir parādīts 2. attēlā kā vidējais rādītājs pētāmo bērnu grupā (skat. 2.attēlu). Diviem bērniem tika konstatēta dažādas pakāpes vājdzirdība, par ko ir dokumentāls apstiprinājums anamnēzē. Vienam bērnam ir dzirdes aparāts vienā ausī, otram ir dzirdes aparāti abās ausīs. Pārējiem bērniem dzirde ir saglabāta, bez traucējumiem.

Uzsākot koriģējoši attīstošo darbību ar nerunājošiem bērniem, pētījuma autore kopā ar citām pirmsskolas izglītības iestādes logopēdēm izstrādāja korekcijas plānu, kurš sastāv no sešiem posmiem. Par pamatu tika ņemts Maskavas Psihoanalīzes institūta T. Vizeļas lekciju kursa "Neirologopēdija" saturs (Vizel', 2018).

Katrā posmā ir dažādu kategoriju uzdevumi, kam tika pievērsta īpaša uzmanība korekcijas darbā (skat. 2.tabulu). Korekcijas elementu apguvei atvēlētais laiks ir norādīts procentos. Korekcijas elementu procentuālais apjoms katrā posmā bija atkarīgs no korekcijas mērķa un varēja mainīties, ņemot vērā konkrētā bērna vajadzības.

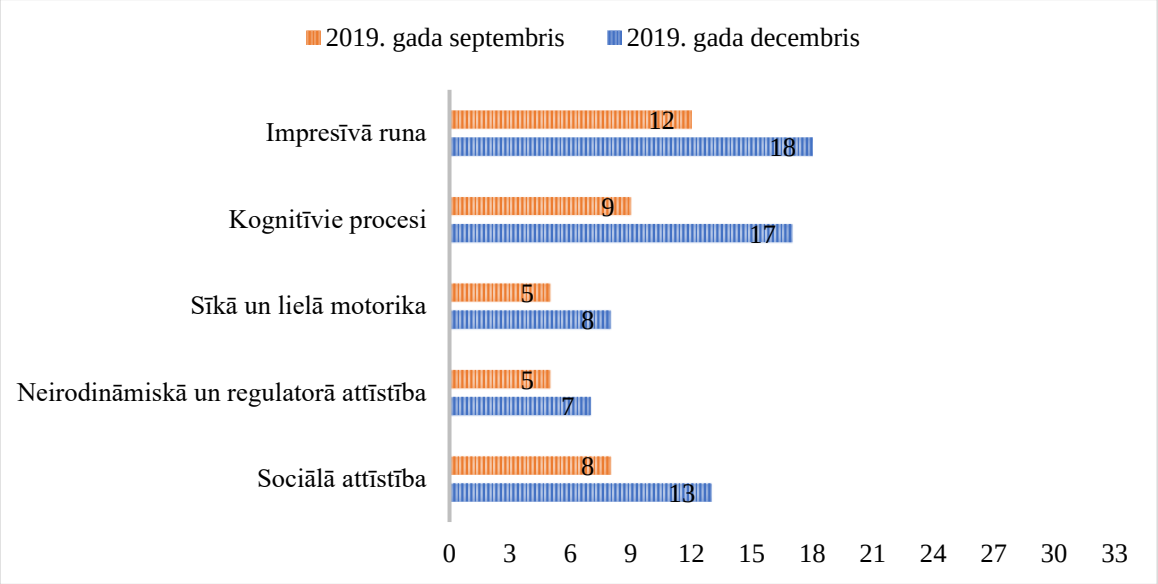
2. tabula. ***Logopēdiskās korekcijas posmi un elementi***
Table 2 ***The stages and Elements of Speech Correction***

Korekcijas posmi	**Korekcijas elementi**					
1. posms	sensorā attīstība 70%	lielā un sīkā motorika 5%	runas negatīvisma pārvarēšana 15%	dzirdes un redzes uzmanība 5%	impresīvā runa 3%	ekspresīvā runa 2%
2. posms	sensorā attīstība 35%	lielā un sīkā motorika 5%	runas negatīvisma pārvarēšana 35%	dzirdes un redzes uzmanība 15%	impresīvā runa 5%	ekspresīvā runa 5%
3. posms	sensorā attīstība 25%	lielā un sīkā motorika 5%	runas negatīvisma pārvarēšana 25%	dzirdes un redzes uzmanība 10%	impresīvā runa 10%	ekspresīvā runa 25%
4. posms	sensorā attīstība 15%	lielā un sīkā motorika 5%	runas negatīvisma pārvarēšana 20%	dzirdes un redzes uzmanība 30%	impresīvā runa 20%	ekspresīvā runa 10%
5. posms	sensorā attīstība 10%	lielā un sīkā motorika 5%	runas negatīvisma pārvarēšana 15%	dzirdes un redzes uzmanība 35%	impresīvā runa 20%	ekspresīvā runa 15%
6. posms	sensorā attīstība 5%	lielā un sīkā motorika 5%	runas negatīvisma pārvarēšana 10%	dzirdes un redzes uzmanība 35%	impresīvā runa 20%	ekspresīvā runa 25%

Korekcijas posmiem tika noteikts šāds iedalījums (obligātie korekcijas elementi):

- sensorā attīstība;
- lielās un sīkās motorikas attīstīšana;
- runas negatīvisma pārvarēšana;
- dzirdes un redzes uzmanības attīstīšana;
- impresīvās runas pilnveidošana;
- runas aktivitātes/ekspresīvās runas attīstīšana (skat. 2. tabulu).

Koriģējoši attīstošās darbības pamatā tika ievērotas bērna runas attīstības īpatnības un noteiktas bērna stiprās puses, kas palīdzēja sekmīgi apgūt jaunas prasmes. Katru nedēļu bērni apmeklēja 5 nodarbības apakšgrupās pa 15 – 20 minūtēm, kā arī individuālās nodarbības divas līdz trīs reizes nedēļā pa 10 – 15 minūtēm. Pēc logopēdiskās korekcijas visiem bērniem tika novērota pozitīva dinamika ne tikai runas attīstībā, bet arī citās attīstības jomās (skat. 3. attēlu). Attēlā tiek norādīts vidējais rādītājs pētāmo bērnu grupā. Rezultāti liecina, ka 26 bērniem pētījuma beigās ir noteikts VSNA II runas attīstības līmenis, 4 bērniem runas attīstības līmenis tika nedaudz uzlabots objektīvu iemeslu dēļ – bērni apmeklēja nodarbības neregulāri.



3.attēls. ***Bērnu attīstības līmeņa salīdzinājums 2019.gada septembrī un decembrī***
Figure 3 ***The Comparison of the Level of Development in Children in September and December 2019***

Paredzamajā rezultātā pētījumā iesaistītajiem bērniem tika pārvarēts runas negatīvisms, radīta nepieciešamība un iespēja komunicēt verbāli, un bērnu ikdienā tika ieviestas jaunas iemaņas.

Secinājumi
Conclusions

Veiktā pētījuma dati liecina, ka savlaicīga runas traucējumu noteikšana un profesionālās palīdzības saņemšana ir efektīvs un veiksmīgs veids, kas bērnam sniedz iespēju bērnam pārvarēt runas traucējumu un pilnvērtīgi attīstīties.

Lai nerunājošam bērnam logopēdiskais korekcijas darbs būtu rezultatīvs, speciālistam jāņem vērā, ka:

- korekcijas darbs tiek balstīts uz zinātniski pamatotām un apstiprinātām metodēm;
- korekcijas darbā logopēds pamatojas uz bērnam jau esošajām prasmēm;
- pozitīvā runas attīstības dinamika var būt novērota, ja korekcijas paņēmieni atbilst bērna vecumam un runas attīstības līmenim;
- logopēdiskais korekcijas darbs tiek veikts tā, lai novērstu vai maksimāli mazinātu runas traucējumu pirmsskolas vecumā;
- tikai kompleksa iedarbība var sniegt optimālus rezultātus runas traucējumu korekcijā.

Summary

The speech of a child develops gradually, starting from birth. With the growing need to communicate, to interact verbally with other people, to be understood, the quality of speech is changing, depending on the physical, mental and emotional development of the child. Up to the age of 3–4 years, the child is learning the rules of the native language.

But there are children who until four years of age are not able to learn their native language to the level that they would be able to speak clearly. These children are very different; they not only have disorders of speech and language, but there can also be other developmental disorders that impact speech development, which are hard to determine without additional diagnostics. In such cases, children need the help of a speech therapist who can determine the speech therapy conclusion and choose the methods of correction to eliminate or reduce the speech disorders according to the abilities and level of development of the child.
To start the corrective-developing activity with non-verbal children, the level of development of speech and language was tested, the development level of impressive and expressive speech was determined, psycho-motoric and cognitive development and sensory abilities were checked using the neuro-psychological diagnostic method and the Test of understanding of language.

Thirty-one non-verbal child in the age of 3–4 years from special X pre-school institution for children with speech and language disorders were involved in this research. The research took place from September until December of 2019.

After the research it was determined that all children are inactive in verbal communication – they lack the motivation to communicate with others; the conception of the meaning of surrounding objects and phenomena has not been created; the means of communication are limited, the communicative function of the speech is inactive; the sensory-motoric level of speech is insufficiently developed. It was established that two children have different levels of hearing loss. For other children, hearing is retained without disorders.

As a base for the corrective-developing activity, the special characteristics of speech development were observed and the strengths of a child were determined to help the children to obtain new skills. The correction activities consist of several stages (6), and as a result, children learn the skills of verbal communication and according to their abilities, use this type of communication in their daily life. The gross and fine motor skills of the child are developed, the sensory development is improved. In this stage of correction, the speech therapist communicates with the non-verbal child using gestures, mimic und minimal vocalization, paying more attention to the tactile feel that serves as a bridge connecting existing abilities with the new skills. When the negativity regarding speech has been overcome and the alertness of the hearing and seeing is sufficiently developed, the speech therapist works with the creation of impressive speech and improvement of speech activity.

Conclusions

During the course of correction, the speech therapist is using the existing abilities of the child as a foundation.

Positive dynamics of speech development can be observed if correction methods correspond to the age of a child and the level of speech development.

The corrective work by speech therapy is done in a way that the speech disorder in pre-school age is eliminated or minimized.

The only complex impact can bring optimal results in the correction of speech disorders.

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РЕФЛЕКСИЯ КАК СПОСОБ ФОРМИРОВАНИЯ УЧЕБНОЙ КОМПЕТЕНЦИИ БУДУЩИХ ПЕДАГОГОВ ДОШКОЛЬНОГО ОБРАЗОВАНИЯ

Reflection as a Way to Form the Learning Competence of Future Pre-School Teachers

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Abstract. *Problem of the research: what reflective technic strategies do the teachers use in their work in order to achieve a quality of teaching and which of them they recommend to their students for learning; what reflections do the students use? Aim of the research: to find out how the students use the reflective methods in the learning process, when improving their learning and what approach to the learning in the long-life perspective is. Objectives of the research: to reason the importance of reflection in the education process. To determine the students' and teachers' approach to the usage of reflection in the education process. Methods of research: analysis of documents and scientific literature, content analysis, written survey. The research has shown: The teachers and students positively evaluate the usage of the reflection method in their activity. Reflection is a good device for seeking of education quality. During this process the students overtake the teachers' experience, develop their competences by getting the consultations. During the consultations the teachers give relevant information about the usage of the most effective learning methods in the study process. The students actively use some of the reflection types, most of which are rarely used. This indicates that in the study process not all the possibilities that could improve the learning process are used.*
Keywords: *learning, pre-school teacher, reflection, the quality of the study process.*

Введение
Introduction

Актуальность темы. В целях повышения профессионального уровня будущих специалистов дошкольного образования, на занятиях практикуются различные приемы рефлексивного письма, развивающее рефлексивное (направленное на размышление, осмысление, анализ) обучение учащихся. Можно предположить, что в основе успешного обучения лежит необходимость преподавания и обучения, а рефлексия,

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основываясь на опыт - это суть обучения. Таким образом, размышление над обучением с рефлексией создают условия для эффективного обучения. Это стало особенно актуальным в случае с пандемией Covid 19, когда процесс преподавания и обучения переместился в онлайн-пространство, став удаленным. Можно предположить, что эта ситуация создала предпосылки для более тесного общения между студентами и преподавателями, с другой стороны, позволила студенту учиться более самостоятельно, уделяя больше внимания рефлексии своего обучения, т.е., размышлению, осмыслению, анализу своего обучения, своих возможностей, своего опыта и прилагаемых усилий в процессе обучения. По мере изменения условий обучения преподавателям также приходилось переосмысливать возможности преподавания и обучения, чтобы создать более позитивные условия для эффективного процесса обучения.

Однако результаты метаанализа исследований, проведенных с 2001 года (Bužinskas, 2005; Jucevičienė, 2006; Saulėnienė, Žydžiūnaitė, & Katiliūtė, 2006; Būdienė, 2008; Bubnys, 2012; Brunevičiūtė & Večkienė, 2011), показали, что методы, отражающие педагогическое взаимодействие и идеи обучения, применяются относительно редко и применяется меньшинством педагогов. Современная дидактика выражается фрагментарно, обычно с применением определенных методов преподавания/обучения, без систематической увязки процессов преподавания и обучения, оценки и рефлексии с методами их реализации. Было обнаружено, что учащиеся более открыты для появления новой парадигмы обучения. Учащиеся считают своих сверстников важными партнерами в учебных ситуациях, в то время как преподаватели не используют потенциал учащихся и не принимают во внимание их учебные потребности.

В ноябре/декабре 2020 года было проведено исследование, основанное на исследовании 2018 года «Методы преподавания, изучения и оценки в изменении учебного процесса дошкольного образования» (Saulėnienė, 2018), в котором было обнаружено, что при подготовке педагогов следует уделять больше внимания - рефлексии - постоянному размышлению, осмыслению и анализу своего обучения со стороны преподавателей и студентов. Это создаст условия для развития дидактической компетентности преподавателей и обеспечит качество учебного процесса в реализации парадигмы современного обучения. Это исследование, продолжающееся уже несколько лет, направлено на выяснение того, как студенты в процессе обучения, улучшая свое самостоятельное обучение, практикуют рефлексивные техники обучения - дневник, рефлексивное письмо, структурированные размышления, сложные размышления, диалогическое письмо, автобиографическое письмо и т. д. В исследовании обращается внимание на то, какие стратегии рефлексивных техник

используются/рекомендуются преподавателями для достижения качества процесса преподавания и обучения.

Проблема исследования: Какие стратегии рефлексивных техник применяют преподаватели в своей работе для достижения качества преподавания и какие из них рекомендуют своим студентам для обучения и какие рефлексии используют учащиеся?

Объект исследования - применение рефлексивных приемов в учебном процессе.

Цель исследования - выяснить, как студенты практикуют рефлексивные методы в процессе обучения, улучшая свое обучение и какое их отношение к обучению на протяжении всей жизни.

Задачи исследования:

1. Обосновать важность рефлексии в учебном процессе.
2. Определить отношение студентов и преподавателей к применению рефлексии в учебном процессе.

Методы исследования: анализ документов и научной литературы, контент-анализ, письменный опрос.

Обсуждение рефлексивных методов развития рефлексивного обучения в учебной программе дошкольного и предшкольного образования
Discussion of the Reflective Methods for the Development of Reflective Learning in the Curriculum of Pre-school Education

Современная конструктивистская парадигма обучения объясняет обучение как процесс, который включает качественные изменения в мышлении, чувствах, восприятии и поведении учащегося и подчеркивает его способность видеть, испытывать и понимать процессы реального мира, а также способность развивать индивидуальные знания и личностный рост (Targamadzė & Šimelionienė 2015; Bubnys, 2012; Jucevičienė, 2005). Учитывая современные тенденции в деятельности педагогов и их обучении, важно мнение, что на практике знания накапливаются через опыт. По мнению П. Ярвис, опыт студентов является важным источником обучения. Это совершенно другой тип получения знаний (Jarvis, 2006). Н.Гренстадт называет это информацией о процессе. Процесс сосредоточен на цель, которой является не только стремление усвоить учебный материал, а также данный учебный материал испытать, проверить, сравнивая со своим жизненным и научным опытом (Grenstadt, 1998). Опыт реализуется в практической деятельности, и то, что пережито, необходимо анализировать и отражать (Saulėnienė, 2008). В размышлении и анализе происходит

осознание и наименование. Размышление, основанное на своем опыте, рассматривается как процесс передачи процесса обучения (Bubnys, 2012).

Многие исследователи педагогики (Ramsden, 2000; Hargreaves, 2008; Jucevičienė, 2005; Saulėnienė, 2018) подчеркивают конструктивистский характер обучения при переходе от преподавания к обучению. Согласно отчету исследовательского проекта «Учитель для Европы» по методологии анализа учебных программ педагогической подготовки (Jucevičienė, 2006), конструктивистский подход проявляется в организации обучения как активного и конструктивного процесса, активного конструирования знаний и навыков учащихся, основываясь на возможности среды обучения. Это позволяет выделить основные черты парадигмы обучения, которую В.Таргамадзе и А.Шимеленене представляют в рекомендациях для педагогов и специалистов образования (Targamadze & Šimelionienė, 2015), поскольку они создают предпосылки для того, чтобы основывать процесс обучения и оценки на основе осмысления и рефлексии собственного опыта:

- учащийся ответственен и активен в планировании своего обучения, взаимодействии с преподавателем, в самооценке;
- учащийся с помощью педагога планирует исследовательскую деятельность, размышляя над ней.

Во всех процессах обучения актуализируется учебная среда, которая должна быть основана на сотрудничестве, активизации студентов, создании условий для опыта, анализе опыта и реконструкции через рефлексию. Таким образом, обучение станет процессом создания знаний.

Описание группы направлений обучения регулирует особые требования программ обучения, тем самым определяя методы преподавания и обучения, а также систему оценки достижений студентов. В этом документе отмечается, что следует использовать методики, ориентированные на активное обучение: активное понимание, конструирование значений, опыта и смысла, обработка информации, связь уже приобретенных и новых знаний и опыта с четким пониманием и ориентацией обучения, планирования, оценивая и размышляя над процессом обучения, успехами и достижения обучения (Švietimo ir ugdymo studijų krypčių grupės aprašas, 2015). Анализ научной литературы и документов позволил назвать конкретные методы обучения: экспериментальное обучение, экспериментальное изучение ситуации, создание размышлений и концепций, дневник размышлений, написание эссе, подготовка портфолио компетенций, количественные/качественные исследования и педагогические исследования.

Конечно, все эти прикладные методы и стратегии включают рефлексию как один из компонентов, но при обучении педагогов целесообразно использовать в учебном процессе такие задачи и методы, которые

поощряют саморефлексию учащихся и размышления о текущей деятельности. В структуре предмета около 70% отведено практической и самостоятельной работе студента, поэтому больше внимания следует уделять практическому обучению. Как утверждает Р.Бубнис, применяя рефлексивное обучение, опыт студентов превращается в переживания через рефлексию. «Опыт студентов, полученный в учебной практике, основан на скрытой рефлексии, когда теоретические системы знаний, представленные на лекциях, связаны с предыдущим опытом, а именно с опытом, полученным на практике, и наоборот» (Bubnys, 2012, p. 7). Целенаправленное применение рефлексии в учебном процессе может помочь улучшить личные и педагогические компетенции учащихся и сформировать отношение к обучению на протяжении всей жизни. Можно предположить, что разнообразие применения рефлексивных методов преподавания/обучения может помочь углубить понимание учебного материала, поэтому целесообразно обсудить рефлексивные методы, которые будут применяться в процессах преподавания/обучения. Некоторые из наиболее часто используемых рефлексивных методов преподавания/обучения представлены в таблице с описанием метода. Важность оценки знаний и процесса обучения также подчеркивается, чтобы улучшить обучение и углубить размышления как инструмент обучения. Современная оценка, понимаемая в широком смысле, ориентирована на развитие личностных способностей учащихся, адекватное восприятие возможностей и способностей (Bartusevičienė & Rupšienė, 2010; Žibėnienė & Indrašienė, 2017). Процесс оценивания отражает эффективность учебного процесса. Основная цель оценивания - помочь учащемуся улучшить результаты обучения и предвидеть возможные достижения. Для развития осознанного обучения будущих воспитателей дошкольного образования одним из наиболее важных инструментов является постоянная оценка, оценивание и самооценка учебных достижений. Исходя из парадигмы обучения, оценивание становится наиболее важным инструментом обучения, потому что учащийся также участвует в процессах оценивания и принимает самостоятельное решение о своем прогрессе в области обужения и своих достижениях (Šiupinytė & Kavaliauskienė, 2020). Задания на размышление и использование методов могут способствовать обучению и стать не только обучающими, но и методами оценки.

Самое важное - сформулировать измеримые критерии оценки и определить, что нужно оценивать - процесс или продукт (Bubnys & Žydžiūnaitė, 2012). Следует отметить, что критерии оценивания могут быть сформулированы самими студентами, но, как подчеркивает Р. Бубнис, очень важно, чтобы формулировка критериев оценивания была отдельным

процессом, и критерии формулировались на основе восприятия цели и сути задачи (Bubnys, 2012). Знание того, как учащиеся понимают предмет и какое влияние оказывает преподавание на их понимание, означает хорошее преподавание. В 1 таблице представлены рефлексивные методы преподавания/обучения и их характеристики, основываясь на исследования педагогов разных стран.

Таблица 1. ***Рефлексивные методы преподавания/обучения и их характеристики***
Table 1 ***Reflection Teaching Methods and their Characteristics***

Метод	**Характеристика метода**
Рефлексивное письмо	Включает в себя изучение более широкого контекста, обсуждение значения и смысла, создает предпосылки для личностного роста, профессионального развития, более значительных изменений в личных отношениях. Рефлексивное письмо анализирует события и опыт, позволяет понять опыт, который формирует основу для нового опыта и провоцирует новое обучение, чтобы его можно было практиковать для развития творческих идей. Желательно начать писать в начале курса (Bubnys, 2012).
Структурированные рефлексии	Структура полезна на ранних этапах письма. Его можно предоставить в качестве справочного материала, от которого студенты могут отказаться (Bubnys, 2012). Размышления можно записывать в трех формах: дневник объективных фактов, дневник комментариев и дневник личных эмоциональных впечатлений (Mažeikis, 2007).
Комплексные размышления/ рефлексивные эссе	Более академические записи в дневнике. В течение семестра студенты должны написать несколько эссе, описывающих личностное развитие, академические связи с учебным содержанием и предлагающие идеи и рекомендации на будущее. Преподаватель должен четко определить критерии разработки и оценки таких сочинений.
Диалогическое письмо	Написано двумя людьми. Подобно чату по электронной почте. Студенты предоставляют своему преподавателю отдельные страницы из своего заполненного дневника несколько раз в неделю для чтения и комментариев. Общаясь таким образом, студенты могут постоянно получать обратную связь и побуждаться обращать внимание на новые проблемы в течение семестра (Bubnys, 2012).
Автобиографическое письмо	Написано с целью самооценки, чтобы оценить самому себя; жизненные истории - воспоминания, оцениваемые собой, истории как из собственной, так и из чужой жизни, - чтобы неформально рассказать историю жизни человека (Bubnys, 2012).
Профессиональный дневник	Такие записи должны иметь конкретную цель, например, для оценки профессионального развития студентов, когда они заканчивают курс. Материал дневника критически анализируется во время последнего заключительного семинара участника семинара и лектора (Bubnys, 2012).

Учебный дневник	Записывается в тетрадь, где автор - один человек. Представлены мысли, мнения, ожидания, страхи, чувства, возникшие в период обучения. Ведение этого дневника помогает студентам стать более организованными и сосредоточенными на изучаемых предметах (Bubnys, 2012).
Диалоговый дневник	Написано в форме беседы двух человек. Как правило, один учащийся начинает писать свое мнение, оценки и передает этот текст другому, который отвечает первому, развивая дальнейшие идеи (Bubnys, 2012).
Дневник решающих критических событий	В дневниках такого типа учащийся анализирует конкретное событие, произошедшее в определенное время. При ответе на вопрос, студентов просят изложить свои мысли и реакции и составить план действий на будущее: описать важное событие, которое будет связано с личным опытом. Почему это было важно для вас? Как это повлияет на ваше поведение в будущем? (Bubnys, 2012).
Электронный дневник	Многие студенты выбирают электронную форму для записи своих мыслей и размышлений. Такое письмо способствует компьютерному общению как способу улучшить собственные знания и понимание.

Как утверждает П.Рамсден, знание того, как применять стратегии, которые способствуют рефлексивному обучению в учебном процессе, - это один аспект, понимание того, почему оно необходимо, - второй, но мотивация применять рефлексивное обучение и рефлексивное обучение в учебном процессе имеет решающее значение, которое может изменить понимание учащимися и улучшить преподавание (Ramsden, 2000).

Динамичная педагогическая деятельность требует не только широких и глубоких знаний в своей области, но и постоянного совершенствования учебной деятельности. В текущем периоде требования к специалисту дошкольного образования и рекомендуемые методики определяют соответствующие требования к дидактической компетентности педагогам будущих воспитателей детского сада. П.Рамсден указывает, что больше внимания следует уделять повышению качества учебного процесса - не только применению методов преподавания, изучения и оценки в учебном процессе, но и постоянному размышлению педагогов и учащихся о своей деятельности, поскольку это напрямую связано с изменением отношения и опыта учащихся (Ramsden, 2000). Это создает предпосылки для повышения дидактической компетентности преподавателей путем постепенного внедрения парадигмы обучения и формирования отношения учащихся на протяжении всей жизни и приобретения компетентности умения учиться самостоятельно.

Методология исследования
Research Methodology

Исследование проводилось в Литве, в городе Каунас, в ноябре - декабре 2020 года. В исследовании приняли участие 90 будущих педагогов дошкольного и предшкольного образования и 15 преподавателей, преподающих по программе дошкольного и предшкольного образования. Все респонденты из Университета прикладных наук г.Каунаса.

Цель исследования - выявить мнение преподавателей и студентов об рефлексии как способе формирования учебной компетенции будущих педагогов дошкольного образования.

Выбранный метод исследования - письменный опрос. Были составлены две анкеты. Одна предназначена для преподавателей, а другая - для студентов. Анкеты были подготовлены на основе принципов, изложенных в теоретической части статьи. Подчеркиваются следующие принципы обучения при использовании рефлексии:

- учащийся ответственен и активен в планировании своего обучения, взаимодействии с педагогом, самооценке;
- учащийся с помощью педагога планирует исследовательскую деятельность, размышляя над ней.

Анкета была основана на рефлексивных методах обучения и их характеристиках: рефлексивное письмо, структурированное письмо, сложные размышления, учебный дневник, диалоговый дневник, дневник критических событий, электронный дневник. В обеих анкетах по 8 вопросов. Исследование проводилось в соответствии с принципами добровольности, сознательности и анонимности. Данные исследования использовались только обобщенными и для научных целей.

Результаты исследования применения рефлексивных методик в учебном процессе студентов дошкольного воспитания и преподавателей
Results of the Study of the Application of Reflective Techniques in the Educational Process of Pre-school Students and Teachers

Опрос мнений студентов дошкольного и предшкольного образования и педагогов, преподающих в рамках программы дошкольного и предшкольного образования, дал следующие результаты: Опрошенные педагоги ответили на вопрос «Я улучшаю свое обучение, когда размышляю о своей деятельности на лекции»: 64% заявляют - всегда, 29% - часто, 7% - иногда. Итак, 90% опрошенные педагогов уделяют особое внимание размышлениям о своей деятельности. Опрошенные студенты ответили

следующим образом на вопрос «Я учусь, размышляя о моем обучении»: 36% указали, что почти всегда, 46%- часто, 18% - иногда. Таким образом, 82% студентов отметили, что размышления об обучении особенно важны для них.

Сравнивая ответы педагогов и студентов, можно увидеть, что обе группы респондентов уделяют большое внимание размышлению о своей деятельности, своем обучении, рефлексии. Очевидно, что размышления над своей работой после конкретного пройденного материала рассматривается как способ формирования учебной компетенции будущих педагогов дошкольного образования.

На вопрос «Мне важно, чтобы учащиеся размышляли над опытом написания рефлексии», педагоги ответили так: 43% утверждают, что почти всегда, 36% - часто, 21% - иногда. Ответы опрошенных студентов на вопрос «Мне важно осмыслить опыт при написании рефлексии»: 31% указали вариант почти всегда, 40% - часто, 29% - иногда.

Сравнивая ответы педагогов и студентов, можно увидеть, что и педагоги, и студенты понимают важность рефлексии, размышляют над полученным опытом, используют эти методы в процессе обучения.

Ответы педагогов вопрос «Читая размышления учеников, я лучше понимаю, как улучшить содержание предмета»: 36% заявляют, что почти всегда, 50% - часто 14% - иногда. Итак, 86% педагогов указали, что они принимают во внимание размышления учащихся при улучшении содержания предмета. Ответы студентов (рис. 1) на вопрос «При написании рефлексии я лучше понимаю учебный материал»: 25% ответили, что почти всегда, 30% - часто, 45% - иногда. Таким образом, более половины студентов знают о преимуществах рефлексии для лучшего понимания и усваивания содержания предмета.

Сравнивая ответы педагогов и студентов, можно увидеть, что, хотя и преподаватели, и студенты положительно оценивают преимущества рефлексии, углубляясь в содержание предмета, студентам стоит еще больше акцентировать внимание на сильных сторонах рефлексии. Для этого нужны совместные учения, беседы, разъяснения пользы рефлексии.

Ответы опрошенных педагогов на вопрос «Я напоминаю студентам писать рефлексию после каждой лекции»: 43% указали, что делают это часто, 36% - иногда, 21% - редко. Ответы студентов на вопрос «Я пишу размышления после каждой лекции» распределились следующим образом: 5% говорят, что так делают почти всегда, 30% - часто, 35% - иногда, 30% - никогда.

Сравнивая ответы педагогов и студентов, можно увидеть некоторые расхождения: хотя педагоги говорят, что они напоминают написание

размышлений после каждой лекции, студенты иногда пишут размышления, а треть размышлений не пишут вообще. Это проблемная область для улучшения качества преподавания и сотрудничества в процессе образования.

Ответы опрошенных педагогов на вопрос «Прошу студентов поразмышлять над каждой проделанной самостоятельной работой» распределились следующим образом: 15% указали, что почти всегда, 72% - часто, 13% - иногда. Таким образом, подавляющее большинство преподавателей используют этот метод особенно активно.

Ответы студентов на вопрос «Размышляю о самостоятельной работе»: 25% указали вариант почти всегда, 32% - часто, 18% - иногда и 22% - редко. Таким образом, более половины учащихся применяют рефлексию посредством самообучения, и примерно половине студентов следует уделять больше внимания этому аспекту обучения.

Сравнивая ответы преподавателей и учащихся на этот вопрос, можно увидеть, что, хотя педагоги побуждают учащихся размышлять о своей самостоятельной работе, учащимся по-прежнему не хватает сознательного размышления, они не прилагают достаточно усилий. Для достижения результата стоит обратить внимание на эту проблему.

Ответы опрошенных преподавателей на вопрос «Рекомендую студентам написать рефлексию после прослушивания всего курса»: 45% указали вариант почти всегда, 20% - часто, 20% - иногда, 15% - редко. Таким образом, большинство педагогов подчеркивают важность рефлексии после прослушанного курса и только треть указали, что рефлексии уделяется мало внимания. Ответы студентов на вопрос «Пишу рефлексию после всего курса»: 5% выбирали ответ - почти всегда, 30% - часто, 30% - иногда, 25% - очень редко. Таким образом, только около трети студентов задумываются над материалом после того, как заслушали весь курс обучения. Этот момент нужно улучшить в процессе обучения, так как не все студенты осознали пользу для своего обучения.

Сравнивая ответы педагогов и студентов на этот вопрос, можно увидеть, что, хотя педагоги особенно ценят важность размышлений после прослушанного курса, студенты недостаточно знакомы с позитивными возможностями этого метода. Есть возможность для совместных дискуссий и тренингов, подчеркивая возможности, предоставляемые рефлексией. Для этого можно использовать дискуссии, совместные занятия, практические занятия. Ответы опрошенных педагогов на вопрос «Советую студентам, как писать размышления»: 36% - почти всегда, 29% - часто, 29% - иногда, 6% - редко. 65% педагогов указали, что они открыты для вопросов учеников, стремятся улучшить передачу материала студентам, им важно качество обучения. Ответы учащихся на вопрос «Педагоги советуют писать

размышления»: 30 %. указали вариант почти всегда, 25% - часто, 30% иногда, 15% - редко.

Сравнивая ответы педагогов и студентов на этот вопрос, можно увидеть, что ответы педагогов и студентов очень похожи: преподаватели оказывают помощь учащимся, стремящимся разобраться в важности рефлексии. Таким образом, педагоги понимают важность рефлексии, консультируют студентов, но не все студенты обращают на это внимание и недостаточно используют возможности. Таким образом, возникает важность открытых дискуссий, тренингов, совместных мероприятий и их обсуждений, когда и педагоги, и студенты могут быть уверены в пользе размышлений для обучения и практики.

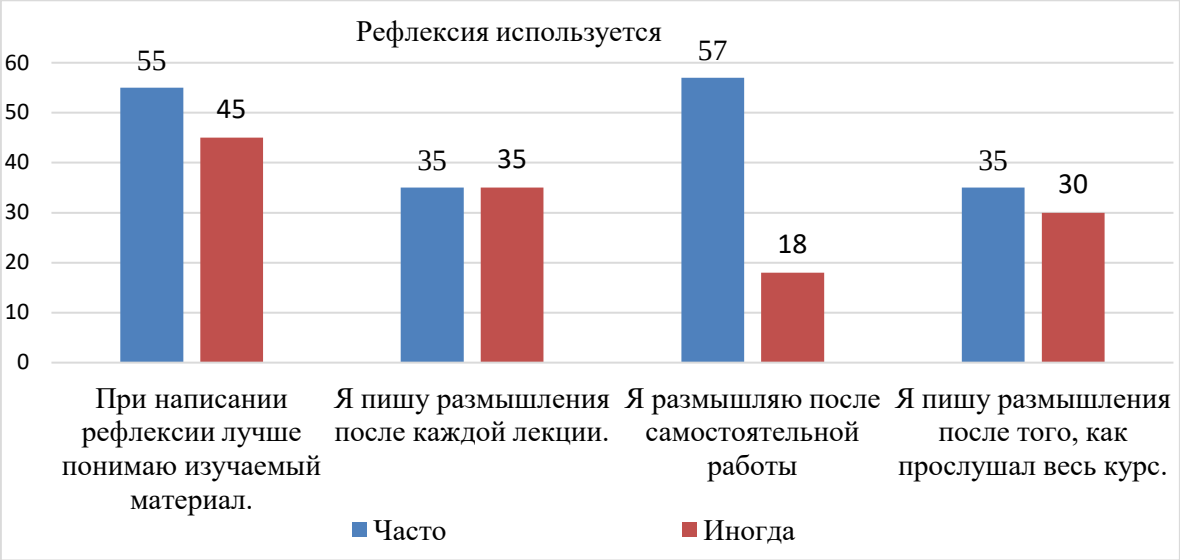

Рисунок 1. ***Использование рефлексии***
Figure 1 ***Use of Reflection***

Обобщив мнения опрошенных педагогов и студентов о применении рефлексии в учебном процессе и о пользе рефлексии, было установлено, что обе группы респондентов понимают пользу и важность рефлексии. Преподаватели уделяют больше внимания возможностям, предоставляемым размышлениями. Студенты понимают преимущества размышлений, но не всегда используют возможности размышлений. Хотя педагоги утверждают, что они подчеркивают пользу размышлений, студенты не всегда это осознают. Следовательно, когда дело доходит до размышления, студенты должны найти интересные способы представить это, применять рефлексию на лекциях, домашних, самостоятельных заданиях, чтобы применение рефлексии стало важным и осознанным для учащихся в процессе обучения.

Исследование было сосредоточено на том, как педагоги и студенты используют следующие рефлексивные техники в учебном процессе (рис. 2): рефлексивное письмо, структурированное размышление, сложное размышление, диалогическое письмо, автобиографическое письмо, профессиональный дневник, учебный дневник, диалоговый дневник, дневник критических событий, электронный дневник.

Ответы педагогов (рис. 3) на вопрос «Я использую в учебном процессе рефлексивное письмо»: 35% утверждают - часто, 50% - иногда, 15% - редко. Студенты на этот вопрос ответили так: 30% - часто, 30% - иногда, 36% - редко. Сравнивая ответы обеих групп респондентов, можно увидеть, что педагоги уделяют больше внимания этой методике, но для учащихся это тоже не новость. Структурированное размышление часто используется одной третью педагогов, 60% - редко.

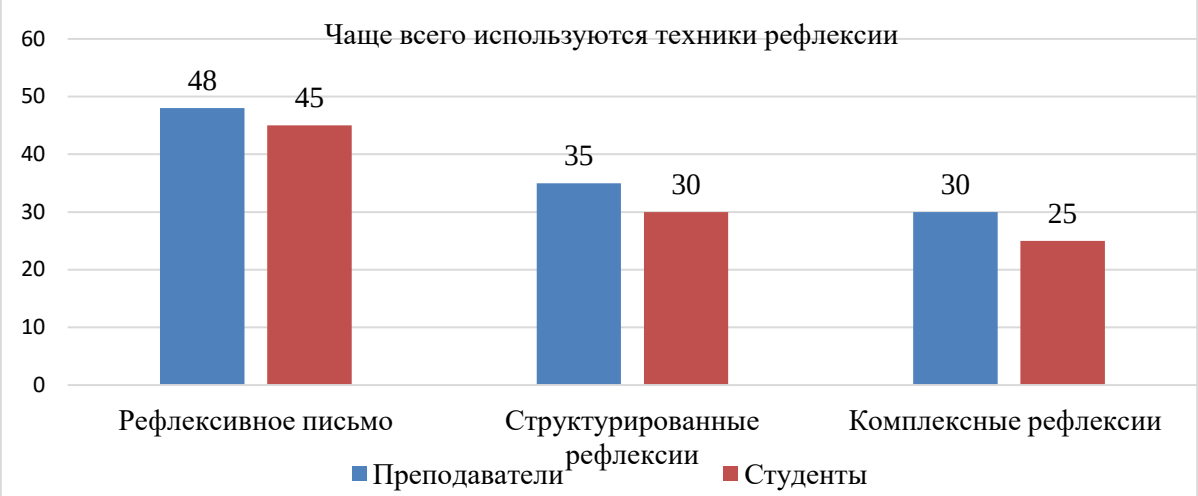

Рисунок 2. ***Чаще всего используются техники рефлексии***
Figure 2 ***The Most Commonly Used Reflection Techniques***

Студенты используют структурированные размышления следующим образом: 25% используют часто, 40% - иногда, 35% - редко. Педагоги используют комплексные размышления так: 35% - часто, 40% - иногда, 25% - редко. Студенты используют комплексные рефлексии следующим образом: 10% - часто, 40% - иногда, 50% - редко. Педагоги используют написание диалогов следующим образом: 40% - время от времени, 10% - редко, 50% - никогда. Студенты указали: иногда - 20% редко - 25%, никогда - 55%.

Было обнаружено, что большинство педагогов и студентов слышали об этих методах, но их применение не является распространенным. Таким образом, можно сделать вывод, что для того, чтобы лучше применять

рефлексию, больше внимания необходимо уделять объяснению, обсуждению и представлению этих методов, облегчающих обучение.

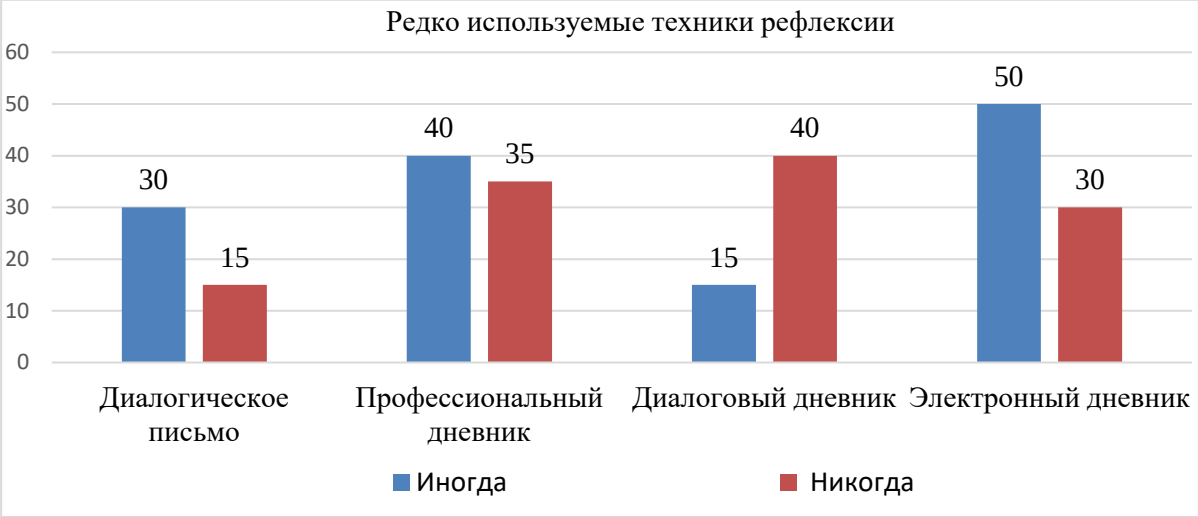

Рисунок 3. ***Редко используемые техники рефлексии***
Figure 3 ***Reflection Techniques Are Rarely Used***

Понятно, что педагоги и студенты выбирают те типы размышлений, которые наиболее подходят их предмету и являются наиболее удобными в использовании. Рекомендуется проанализировать, обратить внимание на следующие приемы рефлексии, улучшающие обучение: учебный дневник, диалоговый дневник, дневник критических событий, электронный дневник.

Исследование показало, что для студентов размышления не новость и они знают о такой возможности в процессе обучения. Студенты знают о многих типах рефлексии, максимально применяют их в учебном процессе. Педагоги говорят, что они сами размышляют о занятиях, обучая студентов размышлять о своей деятельности и процессе обучения. Хотя большинство студентов ценят преимущества размышлений, они недостаточно применяют их на практике. Обычно используется тот тип рефлексии, который педагоги рекомендуют как обязательный для конкретной задачи. По результатам исследования можно рекомендовать педагогам раскрывать преимущества того или иного типа рефлексии при выполнении определенной задачи на лекциях. Активизация использования рефлексии при обучении зависит от общих усилий и сознательности педагогов и студентов.

Исследование показало, что педагоги понимают рефлексию как реальный помощник и при обучении размышляя над собственным опытом. Ответы студентов показывают, что они получают поддержку от педагогов при обучении и поэтому воспринимают размышления как возможность более эффективно учиться и добиваться лучших результатов обучения.

Результаты исследования показали, что будущие воспитатели дошкольного образования позитивно относятся к осмыслению своей деятельности и опыта в процессе обучения, применяют различные виды рефлексии для достижения лучших результатов обучения. В этом процессе студенты перенимают опыт преподавателей, сотрудничая с ними. Педагоги оказывают поддержку студентам, предлагая новые и эффективные методы обучения.

Заключение
Conclusions

Рефлексия - постоянное размышление, осмысление и анализ своего обучения со стороны преподавателей и студентов. Это создаст условия для развития дидактической компетентности преподавателей и обеспечит качество учебного процесса в реализации парадигмы современного обучения. В процессе обучения актуализируется учебная среда, которая должна быть основана на сотрудничестве, активизации студентов, создании условий для опыта, анализе опыта и реконструкции через рефлексию. Обучение становится процессом создания новых, индивидуальных знаний.

Рефлексия воспринимается как способ формирования учебной компетенции будущих педагогов дошкольного образования, так как, используя метод размышления над своей деятельностью, своим опытом обучения, достигаются лучшие результаты при изучении учебного материала. Педагоги и студенты позитивно относятся к осмыслению своей деятельности и опыта в процессе обучения, применяют различные виды рефлексии для достижения лучших результатов обучения. В этом процессе студенты перенимают опыт преподавателей, сотрудничая с ними. Педагоги оказывают поддержку студентам, предлагая новые и эффективные методы обучения. Студенты активно используют несколько видов рефлексии. Большая часть видов рефлексии используются достаточно редко. это показывает, что используются не все возможности для достижения эффективности обучения.

Summary

The modern constructivist learning paradigm describes learning as a process which includes qualitative changes in a student 's thinking, feelings, perceptions and behaviors; and highlights his/her ability to see, experience and understand real-world processes and the ability to create individual knowledge and value for his/her own personal growth. In the view of the modern trends in educators' activities and their training, it is a significant view that knowledge in practice is accumulated through experience. Students’ experience is an essential source of learning. This is a completely different type of knowledge acquisition. Here the process is

geared towards the goal of not only mastering the learning material, but also experiencing it. Experience is realized in practical activities, and what is experienced must be analyzed and reflected. During reflection awareness and naming take place. Reflection on experience is seen as a process of conveying a learning process. In order to improve students' professional development, various reflective writing methods are practiced in the process of pre-school education, which develop students' reflective learning. It can be assumed that the basis of successful learning is the necessity of teaching and learning and reflection on experience is the essence of learning and development. Thus, students' reflection on their learning helps to improve learning. This became particularly relevant in the case of the COVID-19 pandemic, when the teaching and learning process moved to the online space becoming remote. It can be assumed that this situation created preconditions for closer communication between students and teachers; on the other hand, enabled the student to learn more independently, focusing more on the reflection of his/her learning. As learning conditions changed, teachers also had to rethink teaching and learning opportunities and strategies in order to make the learning process more effective. In November/December, 2020 a continuous research was conducted, which was based on the research carried out in 2018 "Teaching, study and assessment methods in the change of the pre-school education study process", which results revealed that in teacher training process teachers and students should pay more attention to the constant reflection of their own activities. This would create conditions for the development of teachers' didactic competence and ensure the quality of the study process by implementing the learning paradigm.

This continuous research aims to find out how students in the study process improve their learning and practice reflective techniques such as diary, reflective writing, structured reflection, complex reflection, dialogical writing, autobiographical writing, etc. What strategies of reflective techniques are used/recommended by teachers in order to achieve the quality of the teaching and learning process. The first part of the article presents reflective techniques that develop reflective learning. The second part of the article presents the results of the research, which reflect the application of reflective techniques of pre-school students and teachers in the study process.

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ACTUALIZATION OF VALUES IN PRE-SCHOOL EDUCATION BY IMPLEMENTING COMPETENCE-BASED LEARNING CONTENT

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Abstract. *Since 2018, competence-based learning content is being introduced in educational institutions of Latvia focusing on interdependent development of knowledge, skills, attitudes and values. If values are actualized in the educational process, the child gradually develops understanding of values from an early age. Thus, value-oriented pre-school education creates preconditions for the continuous development of a responsible and tolerant society and contributes to the common values that determine its direction.*
The aim of the study is to explore, based on the normative regulation of values in education, the actualization of values in the context of the implementation of competence-based learning content in educational institutions implementing pre-school education curricula. The study is based on the data analysis of the monitoring survey of the Ministry of Education and Science of the Republic of Latvia on the implementation of competence-based learning content during the 2019-2020 school year. The study combines quantitative and qualitative research methods. Data were analyzed using descriptive and inferential statistics as well as qualitative content analysis.
The analysis of the survey data shows that in the educational institutions that implement pre-school education curricula, all values defined in the normative regulation, i.e., life, human dignity, freedom, family, marriage, work, nature, culture, the Latvian language and the State of Latvia, as well as other values set by educational institutions are actualized.
Keywords: *competence-based learning content, Latvia, pre-school education, values.*

Introduction

The shared values that determine the growth of society are important in a democratic society despite the plurality of existing beliefs and values. Values are treated essential in the context of conceptualization of the competences enabling participation in a culture of democracy (Council of Europe, 2016).

Education is expected to be transformative and relevant to contemporary life and global challenges bringing shared values to life (UNESCO, 2016). OECD Learning Compass 2030 names the values alongside knowledge, skills and

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attitudes as a key component in the vision for the future of education. Values influence people's choices, judgements, behaviour and actions in the path towards individual, societal and environmental well-being (OECD, 2019).

Postmodern world faces significant changes related to values like attempts to update traditional values to current conditions and overall chaos of values. The same values are questioned or recognized by different societal groups. Loss of the values unaccepted by society and in contrary, preservation of existing values or building new values reflect the bipolar validity of values (Knapik, 2020). Material values are often seen as superior to moral and spiritual values, thus causing risks of losing higher moral ideals and norms of a person and society.

In Latvia, the issue of values has become increasingly topical in recent years. The importance of education in development of societal welfare and necessity to reinforce the values in the educational process are emphasized in educational sciences and policy (Lidaka, Samusevica, & Striguna, 2013). Strong regulatory framework for integration values in education has been established recently. The 2015 amendments to the Education Law of the Republic of Latvia (Saeima, 1998) indicate the need for the moral upbringing of the learner in accordance with the values included in Satversme (the Constitution of Latvia). Regulations of the Cabinet of Ministers No. 480 of July 15, 2016 "Guidelines for Educating Learners and Procedures for Evaluating Information, Teaching Aids, Materials and Teaching and Educational Methods" (Ministru kabinets, 2016) determine the guidelines for the upbringing of learners, as well as the values to be actualized in education.

Since 2018, competence-based learning content is being introduced in educational institutions of Latvia. The project "Competency-based Approach in the Curriculum" implemented by the National Centre for Education, well - known in Latvia by its brand "School 2030", envisages the development, approbation and successive implementation of competence-based learning content and approach to learning at all ages from pre-school to secondary school. Regulations of the Cabinet of Ministers No. 716 of November 21, 2018 "Regulations on State Pre-school Education Guidelines and Samples of Pre-school Education Curricula" (Ministru kabinets, 2018) introduce the competence-based principles in preschool education. Values are treated to be very central within the competence-based learning content. Values shape a conceptual framework that permeates the entire learning content (Oliņa, Namsone, & France, 2018).

The necessity to study the actualization of values in the new curricular framework arises from the discrepancy between legislative requirements and educational practice. In pre-school education, the implementation of competence-based learning content was started in the 2019-2020 school year. However, many pre-school teachers note their unpreparedness to actualize values, a lack of

knowledge and common understanding of the conceptual content of values (Delijeva, 2018).

The aim of the current study is to explore, based on the normative regulation of values in education, the actualization of values in the context of the implementation of competence-based learning content in the educational institutions implementing pre-school education curricula. The following research question was posed: do the educational institutions that implement pre-school education curricula actualize values determined in regulatory documents and which values are the most actualized?

Theoretical Framework

Values are defined as abstract goals or guiding principles in human lives. They represent criteria used by people to choose and justify their behaviour and valuate other people, themselves, and events (Schwartz, 1992). Values are phenomena studied in philosophy (axiology), psychology, sociology, anthropology as well as in education sciences. They can be conceptualized on the individual and group level. Thus, values characterize both individuals and social collectives, e.g., nations, organizations, or religious groups (Sagiv et al., 2017).

Axiology focuses on nature of values and the issue what 'ought to be'. In psychology, values are defined as internalized cognitive structures that guide choices by evoking a sense of basic principles of right and wrong (Oyserman, 2015). Values can be understood as cognitive representations of motivational goals (Schwartz, 1992) because of their broad, trans-situational nature. They affect people's preferences and behavior over time and across situations (Sagiv et al., 2017). From the perspective of social sciences, values are social standards that help individuals to live together within a society. In social psychology, two main sets of values, namely the terminal and instrumental values are distinguished. The terminal values refer to desirable and end-state existence, the goals that a person would like to achieve during their lifetime. The instrumental values refer to the means of achieving the terminal values (Rokeach, 1973).

Education promotes the acquisition of purposefully organised historical experience of the society including cultural values (Lidaka, Samusevica, & Striguna, 2013). When studying the temporal values in the educational context the definition of value from the sociopsychological perspective seems the most relevant. Values are characterized as scripts or cultural ideals held in common by members of a group (Oyserman, 2015). Values as the group's 'social mind' (ibid, 2015) underline the collective nature of shared values. Simultaneously, subjective attitudes and the degree of importance attached to a certain value by a person shape the individual nature of values.

In the educational process where values are considered significant, the child develops his / her understanding of values from an early age. Value-oriented pre-school education creates preconditions for the growth of child's personality as well as for a responsible and tolerant society contributing to the common values that determine its direction.

Pre-school education practice should be based on the principles stemming from democracy as a value, i.e., to take into account children's views and be aware that children experience real opportunities to influence and participate in pre-school education activities. Within daily practice, a pre-school teacher creates diverse and meaningful situations in which children can get the experience of how to be part of a group or community (Skriver Jensen & Brostrőm, 2018).

In pre-school education, a child acquires values during each activity. The child gets experiences on values from the surrounding environment, social contact and active engagement (Ülavere & Tammik, 2017).

The communication of values takes place both explicitly and implicitly. Actualization of certain values, e.g., freedom of choice, in large extent depends on teachers' personal values and their hierarchy (Ozola, 2017). Thus, in the teacher's self-analysis, special attention should be paid to the identification of intrinsic values. They shape the hidden curricular framework and may conflict with extrinsic values that are clearly defined in the learning objectives. Teacher's personal responsibility and high ethical standards are crucial to the implementation of a value-oriented educational process.

The role of the teacher is undergoing significant changes and becomes increasingly challenging concerning the actualization of values. The value-oriented educational process requires teacher's greater understanding of the content of values and methods of how to integrate values into the learning content and the entire educational process. In educational practice, the teacher faces a diversity of values, different value priorities and contradictions, which require the teacher to be prepared to deal with ethical dilemmas arising from value conflicts.

It is impossible for a teacher to be value neutral. The teacher implements the values in his professional activity constantly. In order to promote the learner's understanding of certain values, the teacher must have his / her personal understanding of values. The teacher should be professional in matters of values and prepared to meet value conflicts in daily communication (Johansson, 2018). An educational institution needs clear value standards and principles that support the actualization of values in the educational process (Delijeva, 2018). Clearly formulated values at the level of the educational institution and their integration into the curriculum make them visible. Thus, values become a subject of reflection and discussion among teachers (Skriver Jensen & Brostrőm, 2018).

Values are communicated both consciously and unconsciously in educational practice (Johansson, 2018). In pre-school education, the acquisition of values is reflected mainly in daily communication and activities. Values cannot be separated as an independent field of learning. The child starts to learn values by observing and imitating an adult, therefore a positive role model of an adult is especially important (Ülavere & Tammik, 2017).

The competence-based approach focuses on competence as a complex learning outcome that includes a value dimension. The new curricular framework requires shift of a paradigm both at individual and institutional level. The paradigm shift model should transform the learning by focusing on learner's competence, teaching, teacher's education and the role of the educational institution as a system (Oliņa et al., 2018). It can be concluded that the paradigm shift at all levels of the educational process creates preconditions for the actualization of values in pre-school education.

Recent education policy of Latvia emphasizes upbringing as an integral part of a purposefully organized educational process, the promotion of the learner's comprehensive development, including moral development and the formation of attitudes. The values that should be emphasized in education in order to promote learners' understanding, responsible attitude and appropriate action in accordance with the values, are life, human dignity, freedom, family, marriage, work, nature, culture, the Latvian language and the State of Latvia. The virtues to be nurtured are responsibility, diligence, courage, honesty, wisdom, kindness, compassion, moderation, restraint, solidarity, justice, tolerance (Ministru kabinets, 2016).

In pre-school education, the aim, objectives, the planned learning outcomes, and the basic principles for the implementation of the learning content and assessment of learners have also changed significantly. Regulations of the Cabinet of Ministers No. 716 of November 21, 2018 "Regulations on State Pre-school Education Guidelines and Samples of Pre-school Education Curricula" (Ministru kabinets, 2018) aim to educate a curious, creative, and joyful child who leads a healthy, safe, and active life, acts independently, learns with interest and joy, gaining experience about himself or herself, others, the surrounding world and the interaction therein. The guidelines introduce a competence-based approach to pre-school education and are challenging for pre-school teachers as require new skills and significant changes in beliefs and attitudes. When compared with a previous regulatory framework, i.e., Regulations of the Cabinet of Ministers No. 533 of July 31, 2012 "Regulations on State Pre-school Education Guidelines" (Ministru kabinets, 2012), the unity of competences, transversal skills as well as values and virtues is fundamentally new approach in pre-school education of Latvia. Competence-based learning content in pre-school education should be based on development of values and virtues, transversal skills as well as knowledge, understanding and basic skills relevant to the subject areas. The importance of the

unity of the upbringing and learning process is emphasized in order to promote the development of values and value-based habits as well as virtues of the child.

In Latvia, the age of pre-school learners ranges from 1.5 to 7 years. Pre-school education for five- and six-year-old children is compulsory.

Research Methodology

The study is based on the data analysis of the monitoring survey of the Ministry of Education and Science of the Republic of Latvia on the implementation of competence-based learning content during the school year 2019-2020. The survey was conducted in September 2020 using the *Limesurvey* tool of the Ministry of Education and Science.

Access to the online survey was sent to the official e-mails of all educational institutions implementing pre-school curricula. In order to obtain representative data the participation of 100% of educational institutions corresponding to the monitoring objective was expected. 788 educational institutions were represented in this survey that made up 80.90% of the educational institutions that implemented preschool curricula in the school year 2019-2020.

All planning regions of Latvia were represented in the survey. The educational institutions of Riga, the capital city, that formed the largest group of institutions (228 institutions), were additionally separated when comparing results by planning regions (see Figure 1).

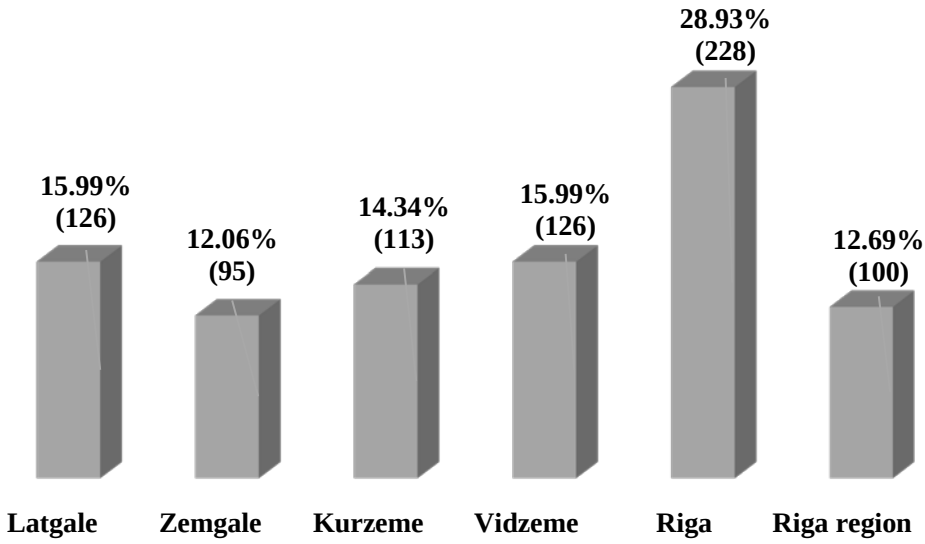

Figure 1 ***Distribution of the Respondents by Region: Percentage and Number of Educational Institutions***

The distribution of the respondents by owner, type of the institution and location was analyzed (see Table 1).

Table 1 ***Distribution of the Respondents by Owner, Type and Location of the Educational Institution: Percentage and Number of Educational Institutions***

Distribution by owner of the educational institution			Distribution by type of the educational institution			Distribution by the location of the educational institution		
	%	Number		%	Number		%	Number
Municipal educational institutions	87.69%	691	Pre-school educational institutions	71.45%	563	Institutions located in cities	61.55%	485
Private educational institutions	12.31%	97	Other educational institutions	28.55%	225	Institutions located outside cities	38.45%	303
Total		788			788			

The data revealed that the main part of the respondents were municipal educational institutions (691 institution of 788). 563 preschool educational institutions, 225 other educational institutions (elementary, primary and secondary schools and 1 institution for interest-related education) were among the respondents. The most of institutions were located in cities.

Each educational institution was represented in the survey once. The responses were mainly provided by the heads and deputy heads of educational institutions.

There was one question in the questionnaire related to the value actualization. Respondents were asked to assess which values defined in the educational institution were especially emphasized in the school year 2019-2020. Ten values defined in Regulations of the Cabinet of Ministers No. 480 of July 15, 2016 “Guidelines for Educating Learners and Procedures for Evaluating Information, Teaching Aids, Materials and Teaching and Educational Methods” (Ministru kabinets, 2016), namely life, human dignity, freedom, family, marriage, work, nature, culture, Latvian language and the State of Latvia were provided as the response options.

Respondents were also asked to provide general data about their educational institutions in order to further analyze the differences between municipal and private educational institutions, pre-school education institutions and other educational institutions implementing pre-school education curricula, institutions by their location in cities or outside and belonging to a certain planning region of Latvia.

Descriptive statistics such as absolute and relative frequencies and graphic analysis were mainly used. The data were also processed and analyzed in the statistical software IBM SPSS Statistics 22.0 using inferential statistical methods,

namely Cronbach's α un Pearson's chi-square tests. Qualitative content analysis was used to analyze the textual responses. Thus, mixed-methods research design dominated by quantitative methods was chosen for the current study.

Findings and Discussion

Prior to data analysis the internal reliability of the scale was measured. Cronbach's α (α = 0.738) indicates acceptable internal reliability.

The results of the research reveal that in the educational institutions that implement pre-school education curricula, all the values mentioned in the regulatory documents are actualized although the frequency of their choice differs significantly (see Figure 2).

The most emphasized values in pre-school education are the family and nature. Human dignity and the State of Latvia are also highly valued. Freedom and marriage are least actualized. It can be concluded that in pre-school education value issues are in the spotlight. All values except freedom and marriage are actualized by more than a half of the educational institutions (58.63 to 90.36%).

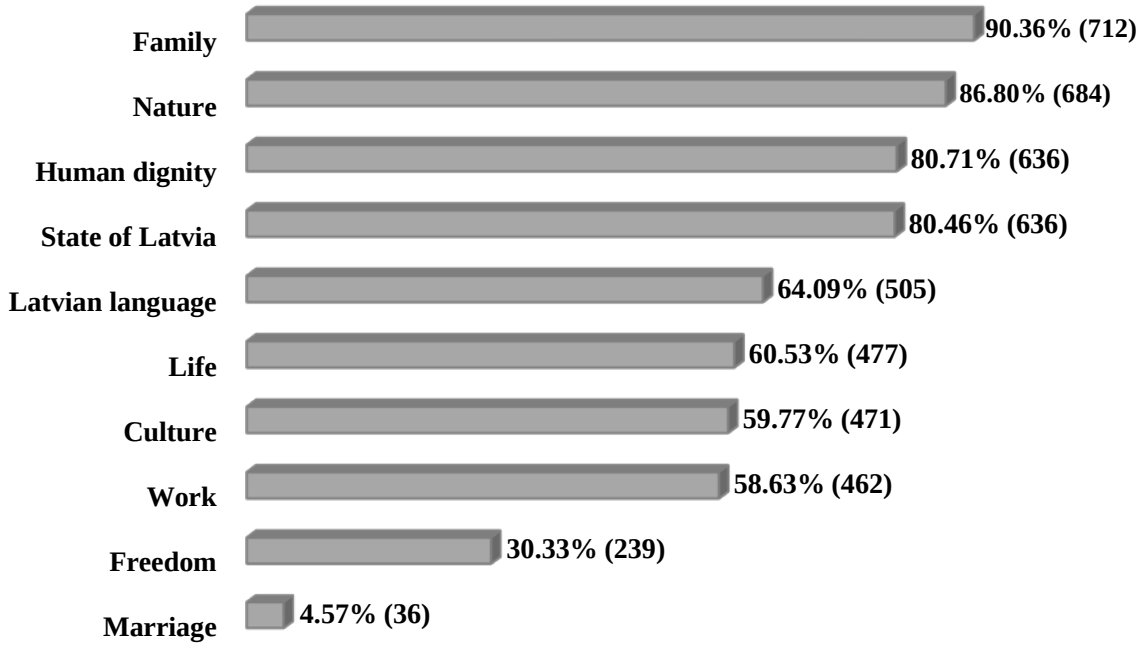

Figure 2 ***The Values Actualized in the Educational Institutions that Implemented Preschool Education Curricula in the School Year 2019-2020: Percentage and Number of Educational Institutions***

Most respondents prioritize the family as a value. During the early years, the child is closely connected to his / her parents and other family members. Parents

are the first role models for children. By starting to attend the pre-school educational institution, the child reaches a new stage of socialization and his / her success to overcome the difficulties of adaptation depend largely on the experience gained in the family. Early childhood is a period in a child's life when parents are most present in the educational institution on a regular basis. Multifaceted partnership between the educational institution and family, high respect to diverse social and ethnic backgrounds of families as well as the significance of the preschool learning content related to the family reflects value of the family.

In the educational practice, the emphasis on nature as a value is underpinned by a variety of nature-based educational activities like ecologically-based curricula, forest education and outdoor practices that recently have become very common in early childhood education of Latvia. Responsibility for the protection of the surrounding environment and sustainability of nature and the environment has been prioritized (Ministru kabinets, 2016).

Freedom is one of the values mentioned relatively rarely. The education policy interprets freedom as an opportunity to pursue person's aspirations and goals without prejudice to the fundamental rights of other including freedom (Ministru kabinets, 2016). Although the understanding of the term emphasizes the self-realization of the child in the educational process it can be assumed that many respondents interpreted the term in the context of political freedom and independency.

Marriage is a value that has been excluded from the values to be actualized specifically in pre-school education (Ministru kabinets, 2018) and appears as the least actualized when analyzing the data from the survey. It can be concluded that in acquisition of values by young children the value of marriage is indivisible from the value of the family and does not require in-depth actualization.

The questionnaire provided an opportunity to mention other values of respondent's choice. Although only a small proportion of respondents (4.57%) provided textual responses, the main sets of values were emerging, namely moral, cultural and personality-related values. Responsibility, helpfulness, tolerance, restraint, compassion and kindness are the most mentioned moral values. Respondents indicated cultural values as folk traditions, the value of the native town and county, cultural traditions of the national minorities (e.g., Polish, Jewish). Purposefulness, autonomy and independence were most frequent among the personality-related values.

Further, it was determined whether there was statistically significant relationship between the choice of values and general characteristics of the educational institution like location in a certain planning region, the owner, type of the institution and location in city or outside (see Table 2).

Table 2 ***The Statistical Significance of the Relationship between the Actualized Values and the General Characteristics of the Educational Institutions: Pearson Chi-square Test Results (Assymptotic Significance)***

Characteristics of educational institutions	Life	Human dignity	Freedom	Family	Marriage	Work	Nature	Culture	Latvian language	State of Latvia
Planning region	**,003**	,468	**,000**	,195	,127	,254	,589	**,015**	**,000**	,063
Owner	,547	,845	,280	,088	,415	**,010**	,369	,662	**,038**	**,000**
Type of the institution	,401	,263	,368	,650	,106	**,048**	,693	,229	,309	,838
Location	,207	,224	,208	**,041**	,768	,081	,084	,446	,088	,885

Pearson's chi-square test results reveal that there was no statistically significant relationship between the choice of values and location in cities or outside, nor the type of the educational institution.

The test showed statistically significant relationship regarding the planning regions and choice of values like the Latvian language (p = 0.000), life (p = 0.003), freedom (p = 0.000) and culture (p = 0.015). A significantly higher proportion of educational institutions emphasizes the Latvian language in Riga and Latgale region, life has been more emphasized in Riga region, Riga and Zemgale region, freedom in Riga and Riga region, and culture in Riga. Riga and Latgale are the regions characterized of the largest proportion of national minority curricula. It can be assumed that higher scores related to the Latvian language stem from the necessity to actualize the use of the Latvian language in linguistically heterogeneous environment. Similarly, culture can be assumed to be a value more typical for the city, especially the capital city, due to higher accessibility of cultural experiences in the educational institutions and outside.

There are statistically significant differences between municipal and private educational institutions in actualization of several values. Work (p = 0.010), the Latvian language (p = 0.038) and the State of Latvia (p = 0.000) are actualized by a significantly higher proportion of municipal educational institutions in comparison with private educational institutions.

The current study explores the values that refer to the temporal values, according to Rokeach (1973) while most of research on values conducted in pre-school education focuses on moral values or, according to Rokeach, the instrumental values. Despite the diversity of preferences, the democratic, caring and disciplinary values are in the spotlight of preschools (Einarsdottir et al., 2015; Skriver Jensen & Broström, 2018).

The results provide an idea of the tendencies on emphasizing values in the educational institutions that implement pre-school education curricula. However,

it has been noted that the obtained data largely reflect the opinion of the administration of educational institutions. There is also a high probability of socially desirable responses.

Implementation of values in pre-school education requires further research. In order to analyze how values are implemented in educational practice it is important to obtain data from observations in the activities of individual pre-school education teachers. Data triangulation will help to increase the reliability of research results and to reduce the influence of the perspectives of the administration and risks concerning socially desirable responses.

Conclusions

In pre-school education of Latvia, the implementation of values is determined by strong regulatory framework as well as the basic principles for the implementation of the competence-based learning content defined in methodology underpinning the regulatory requirements. The competence-based learning content is based on the development of values and virtues, transversal skills as well as knowledge, understanding and basic skills relevant to the subject areas. The importance of the unity of the upbringing and learning process in promoting the development of values, value-based habits and virtues in the child is highly valued.

In the educational institutions of Latvia that implement pre-school education curricula, all values defined in the regulatory documents, i.e., life, human dignity, freedom, family, marriage, work, nature, culture, the Latvian language and the State of Latvia, as well as other values set by educational institutions are actualized. The frequency of the choice of values differs significantly. The most emphasized values are the family, nature, human dignity and the State of Latvia.

The actualization of values in the educational process depends mainly from teachers' understanding of values and their attitudes. Motivation to implement values is closely related to the personal significance of certain values in the teacher's hierarchy of values. Awareness of methods how to integrate values in daily activities is crucial in order to actualize values in a way that would be attractive and clear for every child according to his or her age and developmental stage. Teachers acquire new skills directly in the educational practice through teaching and learning simultaneously. Thus, teachers’ ability of self-reflection becomes increasingly important among the pre-conditions in order to actualize values. It is important to include values in pre-school methodological work and to involve teachers in the development of teaching resources by promoting teachers’ cooperation. Teachers attach greater importance to actualization of values when they themselves are actively involved in the planning, implementation and evaluation of activities, regularly evaluate their own and colleagues' performance,

share opinions and experiences. Teachers should also collaboratively develop criteria for self-assessment of their professional performance. Methodological activities focused on the implementation of values would help to shape teachers' attitudes and personal meaning and significance of values implemented in the educational practice.

Besides the teacher's professional competences, the self-actualization of the teacher as a personality becomes especially important when implementing competence-based learning content. The unity of values that are personally significant for the teacher and his / her personal and professional value orientation shape the moral basis and congruence of the teacher in the educational process, so that the teacher could be able to become a role model for children with his / her actions, behaviour, attitudes and values. Thus, the implementation of competence-based curricula envisages teachers to be motivated to develop their personalities which affects not only the professional field but personal spiritual growth in a broader sense.

In pre-school education, values permeate all fields starting with the simple daily communication between the teacher and the child. In turn, the values set at the level of the educational institution determine both the learning content and the choice of educational activities as well as the image of the entire educational institution in the community. Everyday educational practice requires the teacher's mastery to bring to life values that express the ideals of society or even humanity, while integrating values into simple, child-friendly and play-based activities, verbal and non-verbal expressions in ritual daily activities, clear everyday rules for children and the communication between children and adults characterized by mutual respect. It is important for teachers to use positive methods of upbringing and discipline, creating an emotionally supportive and safe environment where the child can freely express his or her views and act in accordance with his or her interests and needs. The values are also revealed by the layout of the educational environment, the involvement of parents in the development of the educational institution and the general orientation of the institution towards creative and child-friendly development.

To sum up, in the competence-based approach the value dimension can be understood as a conceptual framework that permeates the entire learning content and educational process. The surrounding environment, social contacts and active engagement shape the value experience of the child. Teacher's understanding of values, his / her professional and personal growth, responsibility and ethical standards determine the values that are transmitted explicitly and implicitly. In educational process, teacher's role is crucial for the development of child's values. Clear value standards and principles set in the educational institution promote the implementation of values.

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ОРГАНИЗАЦИЯ ГРУППОВОЙ ДЕЯТЕЛЬНОСТИ ДЕТЕЙ СТАРШЕГО ДОШКОЛЬНОГО ВОЗРАСТА ВО ВРЕМЯ ЭКСПЕРИМЕНТИРОВАНИЯ

Organization of Group Activities of Older Preschool Children in the Process of Experimenting

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Abstract. *The authors of the article analyze the advantages and disadvantages of group activities of older preschool children. The article focuses on the importance of children's experimentation for the versatile development and readiness of older preschool children to study at school. A comparative characteristic of the organization of individual children's experimentation and a group of older preschool children is presented. Based on a survey of older preschool children and their teachers, as well as monitoring the activities of children during experimentation, problematic aspects of organizing group activities of children are identified. Psychological and pedagogical conditions for organizing group activities of older preschool children for effective interaction during experimentation are presented. The expediency of using experimentation as a means of developing children's research activity is substantiated. The specifics of experimentation are indicated. The purpose and structure of experimentation as a kind of games for children's cognitive development are determined. The article also contains a list of devices and materials for arranging the experimentation centre which should be located in a preschool institution according to the thematic principle and teacher's work plan; due to such centre children will be able to further freely experiment and consolidate the learned material through independent search activities. It is proved that the use of psychological and pedagogical conditions for the organization of group activities of older preschool children in the process of experimentation will contribute to the formation of their beliefs about nature and the world.*

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Keywords: *an educational process at preschool education institutions, children's experimentation, group forms of work, older preschool children, personality-oriented approach.*

Введение
Introduction

Актуальность рассматриваемой проблемы вызвана необходимостью умения учиться в течение жизни для каждого человека. По мнению многих психологов (Kostyuk, 1989; El''konin, 1989; Leont'ev, 1981; Maksymenko, 2018) такое умение нужно формировать, начиная с дошкольного возраста. Считаем, что в процессе самостоятельных открытий, решения проблемных задач, наглядно преобразующих действий, которые сопровождают экспериментальную деятельность дошкольники одновременно будут овладевать новыми знаниями, а также умениями и навыками их самостоятельного приобретения. Если при этом использовать коллективные формы обучения, то удасться, помимо сформированности так называемых “мягких навыков” (умение договариваться, взаимопомощь, умение работать в команде, взаимодействовать с другими, навыков к сотрудничеству и других) у воспитателя появляется возможность реализовать управленческую функцию: направить ход детских мыслей так, чтобы они активно, сосредоточено стремились увидеть невидимое, понять скрытое, разглядеть необычное в обычном, осознать причинно-следственные связи явления, которое исследуется. Таким образом, ребенок будет соискателем новых знаний, а не пассивно воспринимать их от воспитателя.

Целью данной публикации является выявление влияния коллективных форм работы на эффективность экспериментальной деятельности детей старшего дошкольного возраста.

В ходе данного исследования нами использованы следующие методы исследования: теоретические: анализ научных источников для уточнения понятийного аппарата; синтез, систематизация и обобщение теоретических положений исследуемой проблемы; эмпирические: педагогическое наблюдение (за процессом работы старших дошкольников в группах), беседы, анкетирование воспитателей.

Теоретические основы темы
The Theoretical Background

Инновационные процессы в системе дошкольного образования требуют изменения взглядов педагогов на обеспечение новых подходов к организации образовательного процесса с детьми. Поэтому актуальной

проблемой современного дошкольного образования в Украине является поиск эффективных путей воспитания и развития креативной, инициативной личности, способной к реализации своего творческого потенциала и исследовательской активности в различных видах деятельности.

Детям, по своей природе, свойственна ориентация на познание окружающей среды, для исследования объектов и явлений действительности. Для дошкольников характерен повышенный интерес ко всему, что происходит вокруг (Karuk, 2018). Поэтому, именно в этот период создаются важные предпосылки для развития исследовательской активности и познавательных интересов детей.

Существует значительное количество как отечественных, так и зарубежных научных исследований, свидетельствующих об эффективности влияния обучения в группах на развитие детей. В частности, о влиянии игры со сверстниками на эффективность развития ребенка дошкольного возраста и о переходе от педагогики обучения к педагогике развития (личностных качеств и психики) акцентирует в своем исследовании (Frishman, 2014). Напротив, известный отечественный психолог (Podd'jakov, 1977) сформулировал гипотезу о том, что в детском возрасте ведущим видом деятельности является не игра, как это принято считать, а экспериментирование. Есть ученые, которые акцентируют внимание на том, что усвоение социальных правил общественной жизни и реализация моральных норм достигаются в ходе игры со сверстниками (Johansson, 2006; Singer & Haan, 2007). Еще одно исследование, которое проводилось на севере Иордании доказывает, что использование малых групп является эффективным способом повышения уровня грамотности детей дошкольного возраста (Majedah Abu Al Rub, 2017). Исследовано также влияние обучения в группах на математические способности и социальное поведение детей дошкольного возраста (Perihan, 2009): по окончании экспериментального обучения, в котором приняли участие 17 детей была замечена положительная динамика в развитии математических способностей детей.

Таким образом, в данной статье под детским експериментированием будем понимать активную форму исследовательской деятельности детей, направленную на познание свойств, качеств предметов и материалов, выявление причинно-следственных связей процессов и явлений. Детское экспериментирование рассматриваем как сложный многогранный процесс, который охватывает и живое наблюдение, и опыты, проведенные ребенком (Podd'jakov, 1977).

Разработана и экспериментально проверена методика формирования у старших дошкольников уверенности в себе в групповой деятельности и обоснованы организационно-педагогические условия формирования у старших дошкольников этого качества (создание положительной эмоциональной атмосферы в детском коллективе; поэтапное усвоение детьми основных типов взаимодействия в групповой деятельности; развитие способности дошкольников свободно и вариативно использовать типы взаимодействия) (Sirenko, 2016).

Несомненным является факт наличия диалектической связи между речью и мышлением. В частности, исследователи (Kolesnik, 2017; Bleses et al., 2018) показывают, что групповая деятельность положительно влияет на развитие речевой компетентности детей дошкольного возраста. Стоит отметить, что в эксперименте (Bleses et al., 2018) принимали участие 5436 детей 3-6-летнего возраста с 154 детских садов.

В условиях групповой деятельности в процессе экспериментирования создаются уникальные возможности для развития как мышления, так и речи детей. Речевая деятельность дошкольников в таких условиях приобретает творческого окраску, а мышление – признаки гибкости, ассоциативности и оригинальности. Именно в групповой деятельности ярко проявляется образность и выразительность детской речи, в которой сочетается языковые и неречевые средства выразительности. Если воспитателю удастся создать атмосферу сотрудничества, взаимоуважения и взаимопомощи в группе, это положительно повлияет на уверенность каждого ребенка в своих возможностях, вызовет желание к продолжению общения между собой, со взрослыми, с книгой, окружающей средой.

Также положительное влияние имеет групповая деятельность на развитие логико-математического мышления детей старшего дошкольного возраста (Shykyryns"ka, 2019), в работе с одаренными детьми (Demchenko et al., 2018) и в контексте преемственности дошкольного и начального образования (Lapshina et al.,2020).

Обобщив труды психологов и педагогов (Amonashvili, 1991; Vigotskij, 1991; Kostyuk, 1989; Maksymenko, 2018; Karuk, 2018; Podd'jakov, 1977) рассмотрим, как реализуются некоторые классические принципы дидактики в применении к организации коллективной деятельности детей старшего дошкольного возраста в процессе экспериментирования.

Принцип научности. Наряду с тем, что воспитатель должен стараться меньше сообщать детям готовые знания, всячески поощряя их к самостоятельному исследованию какого-то явления, он может использовать похвалу при малейших успехах каждого ребенка, который работает в группе. В случае же нахождения ребенком / детьми неправильного ответа должен дополнительными вопросами довести его абсурдность, а не

отрицать. Известным и убедительным в контексте указанного есть опыт грузинского педагога-новатора (Amonashvili, 1991). Недопустимо категорическое авторитетное отрицание неправильного ответа ребенка, поскольку это не будет побуждать его к самостоятельному поиску ответов на вопросы и поиска таких вопросов в окружающей среде в будущем. Умело направляя мысли детей в правильное русло мы также способствуем формированию логического мышления.

Принцип систематичности и последовательности. Действия воспитателя (или родителей по рекомендации воспитателя) относительно создания познавательных ситуаций, которые будут побуждать ребенка мыслить, искать ответы должны быть не эпизодическими, а постоянными. Воспитатель должен уметь удержаться от соблазна ответить сразу на вопрос ребенка/детей, не бояться делиться своими соображениями с детьми, сомневаться. Именно систематическая и последовательная работа в этом направлении будет способствовать поддержанию интереса детей к самостоятельной (или вместе с другими детьми и воспитателем) деятельности.

Принцип связи обучения с жизнью. Коллективную деятельность детей старшего дошкольного возраста в процессе экспериментирования важно организовывать, решая проблемы и вопросы, взятые из окружающей среды. Сюда можем отнести эксперименты с водой (выявление свойств воды (растворимость, прозрачность, без запаха и цвета, способность к замерзанию и испарению, бывает теплая и холодная и другие), опыты с почвой (углубить знания детей о свойствах почвы и о значении в природе; усовершенствовать умение определить качество почвы по ее внешним признакам, опыты и эксперименты с воздухом (например, чтобы выяснить факт наличия воздуха, можно провести опыт с двумя одинаковыми листками бумаги. С одного делаем шарик, другой не трогаем. Одновременно отпускаем оба листа. Спрашиваем детей, почему они упали не одновременно? Итак, что-то мешает падению? А что находится вокруг наших экспериментальных листьев? (воздух)

Принцип наглядности. Важно, чтобы опыты с водой, землей, снегом дети видели наглядно, а не на картинках, поскольку такие опыты не отличаются особой сложностью и поэтому у воспитателя есть возможность их демонстрировать.

Принцип доступности. По нашему мнению, реализуя этот принципы необходимо, чтобы экспериментальные задачи, предлагаем детям, находились в «зоне их ближайшего развития» (Vigotskij, 1991). Именно тогда воспитателю удастся пробудить любознательность и познавательный интерес, у каждого ребенка будет возникать желание найти ответ. Во время

работы в группах каждый ребенок имеет возможность высказаться, а воспитатель имеет возможность услышать ход рассуждений каждого ребенка для того, чтобы в будущем предлагать ему такие познавательные задачи, которые будут находиться в зоне его ближайшего развития.

Как показывает педагогическая практика, дети старшего дошкольного возраста с интересом относятся к активным формам организации деятельности – групповым, парным, которые позволяют реализовать их естественное стремление к общению, взаимопомощи и сотрудничеству, помогают стать активными субъектами образовательного процесса.

Рассмотрим преимущества и недостатки каждой формы организации обучения (фронтальную, групповую и индивидуальную) применительно к детскому экспериментированию. Характеристика каждой формы учебной деятельности представлена в систематизированной таблице 1.

Таблица 1. ***Преимущества и недостатки фронтальной, групповой и индивидуальной форм организации деятельности старших дошкольников в процессе экспериментирования***

Table 1 ***Advantages and Disadvantages of Frontal, Group and Individual Forms of Organizing Senior Preschoolers' Activities during the Experimentation Process***

Формы деятельности	*Содержание задания*		*Темп работы*		*Уровень базовой подготовки детей, на который ориентируется воспитатель, подбирая экспериментальные задачи*		*Роль воспитателя*		*Возможность общения детей*	
	Одинаковый	*Разный*	*Средний*	*Индивидуальный*	*Средний*	*Индивидуальный*	*Руководящая*	*Советчик*	*Отсутствует*	*Взаимодействие*
Индивидуальная		+		+		+	+	+	+	
Групповая	+	+	+		+			+		+
Фронтальная	+		+		+		+		+	

Его задача теперь сводится не к передаче определенной суммы знаний и опыта, а к помощи детям самостоятельного приобретения необходимых знаний, критического осмысления полученной информации, умений делать выводы, аргументировать их, обладая необходимыми фактами.

Сравнительный анализ таблицы позволяет утверждать, что наиболее оптимальной для организации детского экспериментирования является именно групповая форма. Однако, чтобы такая деятельность была максимально эффективной, воспитатель должен акцентировать внимание детей именно на сотрудничестве, а не на соревновании. Индивидуальная ответственность означает, что успех всей команды (группы) зависит от вклада каждого участника, предусматривает помощь каждого члена команды друг другу.

При таких условиях (работа в сотрудничестве) педагог имеет возможность полнее реализовать свою главную функцию – управленческую: он находится как бы «за кадром», на первый взгляд за пределами свободной деятельности детей в процессе экспериментирования, а на самом деле – четко контролируемой.

Методы, организация и результаты исследования
Methodology, Organization and Results of the Research

С целью выяснения владения украинскими воспитателями знаниями и умениями по организации групповой деятельности детей старшего дошкольного возраста в процессе экспериментирования нами на протяжении ноября 2020 года были проведено анкетирование, в котором принимали участие 34 воспитатели учреждений дошкольного образования Винницы и Винницкой области.

Ответы воспитателей на первый вопрос анкеты «Укажите роль, которую осуществляет групповая деятельность в развитии / обучении / воспитании старших дошкольников» были следующими: «развивающую, воспитательную» (но не конкретизировали, в чем именно заключается развитие или воспитание) - 8 человек (23,5%), «незначительную или второстепенную» - 3 (8,8%). О том, что групповая деятельность является важной, способствует развитию коммуникативных умений, формированию навыков сотрудничества, взаимодействия друг с другом, формирование уважения к мнению других людей; развивает лидерские качества ребенка и формирует умение прислушиваться к мнению других, социализации и подготовке к школе, воспитанию гуманных отношений между детьми, самостоятельности, умение доказывать и отстаивать свою точку зрения, а также прислушиваться к мнению товарищей, культуры ведения диалога, ответственности за результаты своего труда – указали 17 человек (50%). Воспитателей, которые отмечали, кроме указанного выше еще и то, что групповая деятельность способствует активизации детей на занятии,

результативности усвоения детьми новых знаний, влияет на развитие памяти, мышления внимания, воображения - 2 человека (5,9%).

Проанализируем ответы воспитателей на второй вопрос «Какое влияние на развитие ребенка старшего дошкольного возраста осуществляет экспериментальная деятельность?» Ответы «позитивное», «воспитательное», «развивающее», «большое», «важное» отмечали 11 воспитателей (32,4%). По нашему мнению, на основании таких ответов нельзя сказать однозначно, что эти воспитатели осознают влияние детского экспериментирования на развитие ребенка именно за счет отсутствия конкретизации ответа. Также трудно понять, оценивает воспитатель положительно или отрицательно влияние экспериментирования на развитие ребенка на основе такого ответа: «ребенок не знает, какой будет конечный результат». Ответы «развивается познавательная активность, стимулирует желание исследовать, побуждает стремительное развитие познавательных умений, способствует развитию логики, мышления, воображения, развитию представлений об окружающем мире, развивает детское творчество, учит неординарной мыслить отмечали 19 человек (55,9%). Наиболее полными и осознанными были ответы, в которых отмечалось, что экспериментирование является одним из эффективных методов познания ребенком закономерностей и явлений окружающего мира; такая деятельность способствует расширению мировоззрения, обогащению опыта самостоятельной деятельности и саморазвития ребенка; экспериментальная деятельность помогает дошкольнику применять свои знания; с помощью экспериментальной деятельности у детей усиливается интерес к материалу; ребенок исследует окружающий мир, у детей формируется элементарные навыки поисковой работы, усиливается интерес к явлениям природы, активизируется самостоятельная мыслительная деятельность, активизируется познавательная деятельность ребенка. Такие ответы были у двух человек (5,9%).

На рисунке 1 можно видеть, как распределились ответы воспитателей на третий вопрос анкеты («Насколько, по Вашему мнению, организация групповой деятельности детей старшего дошкольного возраста в процессе экспериментирования является целесообразной? (Выберите один вариант из предложенных)».

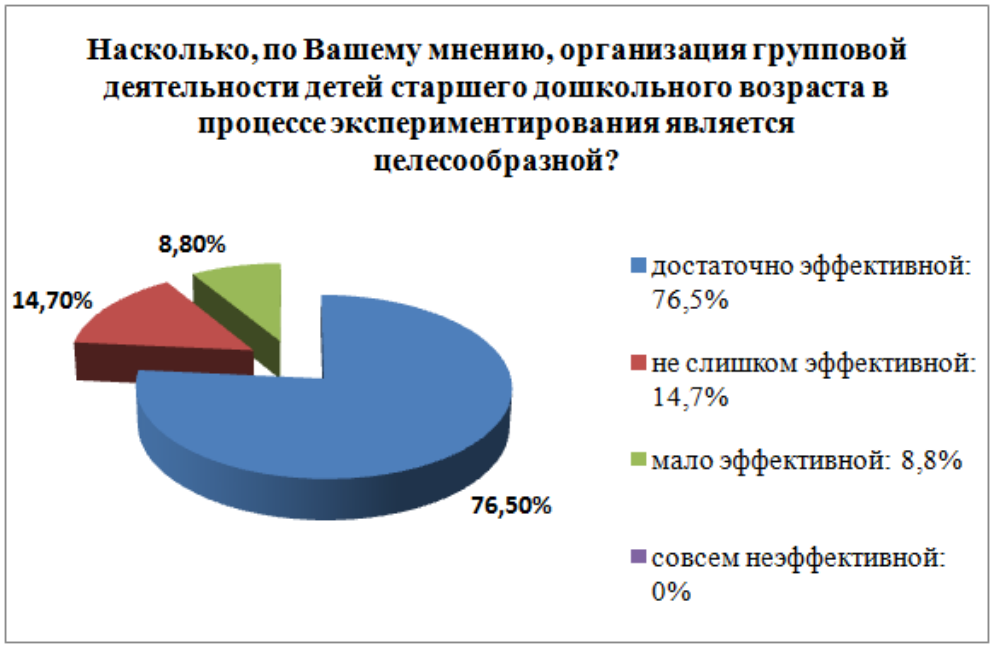

Рисунок 1. ***Распределение ответов воспитателей на вопрос «Насколько, по Вашему мнению, организация групповой деятельности детей старшего дошкольного возраста в процессе экспериментирования является целесообразной?***
Figure 1 ***Distribution of Preschool Teachers' Answers to the Question "To What Extent, in Your Opinion, is the Organization of Group Activities of Senior Preschoolers Appropriate for Experimentation?"***

Проанализируем ответы воспитателей на следующий, четвертый вопрос: «Для того, чтобы групповая деятельность во время экспериментирования была эффективной, какими знаниями / умениями / качествами должен обладать ребенок старшего дошкольного возраста?» Часть воспитателей отмечали знания / умения / качества детей именно относительно работы в группе - «умение работать в команде», «умение договариваться», «способность к сотрудничеству, коммуникативные умения», «умение активно сотрудничать для получения общего результата», «уважение к мнению ближнего, умение выслушать», «ребенок должен знать, как найти общий язык с другими, уметь уступать и налаживать отношения ради единой цели» - 12 человек (35,3%). Пятнадцать воспитателей (44,1%) отмечали умения относительно исследовательской, экспериментальной деятельности - «умение планировать свою деятельность, действовать по плану, определенному алгоритму; умение предвидеть трудности; анализировать; контролировать; корректировать свои действия; рефлексировать; реальные представления о различных сторонах изучаемого объекта, о его взаимоотношениях с другими и со средой обитания». Предполагаем, что эти респонденты неправильно поняли суть вопроса. Четыре человека отмечали, что важны как умение работать в

команде, так и умение осуществлять экспериментальную деятельность. Приведем пример таких ответов: «ребенок должен видеть проблему, уметь искать пути ее решения, классифицировать, уметь общаться со сверстниками и слышать их мысли, принимать их во внимание», «дошкольники должны знать правила поведения во время экспериментирования (воспитателю нужно заранее их озвучить)», «дети должны быть гуманными и дружественными для работы в группе, не должны бояться сделать ошибку». Из ответов «талант» и «базовые качества» трудно сделать вывод о степени понимания лицом вопрос организации групповой деятельности старших дошкольников в процессе экспериментирования (такой ответ дали 3 воспитатели (8,8%)). Как можем видеть, мы не заметили ответа, который бы свидетельствовал о понимании воспитателем прямой связи (влияния) между слаженной работой в группе и развитием интереса к исследовательской деятельности, а также умений осуществлять такую деятельность.

К основным трудностям, с которыми может столкнуться воспитатель, организуя групповую деятельность старших дошкольников в процессе экспериментирования воспитатели, участвовавших в опросе (ответ на следующий вопрос) отмечали отсутствие у детей умений к сотрудничеству - 31 человек (91,1%), борьба за лидерство в группе, отсутствие у воспитателя умений правильно распределить детей в группы - 12 респондентов (35,3%), отсутствие интереса к изучаемому явлению или процессу - 9 человек (26,5%). Некоторые воспитатели (3 человека - 8,8%.) отмечали также необходимость проведения инструктажа перед организацией работы детей в группах во время экспериментирования с целью предупреждения проблем, которые могут возникнуть. Три человека не ответили на данный вопрос. Важно заметить, что, отвечая на этот вопрос, каждый респондент, участвовавший в опросе имел возможность выбрать причин, то сумма не равна 100%.

На рисунке 2 можем видеть результаты самооценки воспитателями способности организовывать групповую деятельность старших дошкольников в процессе экспериментирования (0-совсем не владею такой способностью, 5 - владею в совершенстве).

Итак, обобщив результаты проведенного нами опроса, с целью повышения эффективности организации групповой деятельности детей старшего дошкольного возраста в процессе экспериментирования считаем необходимым сформулировать следующие подходы по формированию групп детей:

- учитывать психологические особенности детей данной группы (например, не включать в группу детей, между которыми присутствует взаимная неприязнь;

- количество человек должно быть от 3 до 5;
- основой групповой работы должен быть именно сотрудничество, а не соревнование;
- каждый ребенок сравнивается только с предыдущим уровнем его развития и ни в коем случае сравнивается с кем-то из детей;
- отдельно воспитателем оценивается умение детей к общению: по окончанию работы стоит отметить, что положительного результата они достигли только потому, что работали вместе.

Рисунок 2. ***Распределение ответов воспитателей на вопрос об оценке способности организовывать групповую деятельность старших дошкольников в процессе экспериментирования***

Figure 1 ***Distribution of Preschool Teachers' Answers to the Question on the Assessment of Their Own Ability to Organize Group Activities of Senior Preschoolers during the Experimentation Process***

Конечно, в ходе организации групповой работы детей старшего дошкольного возраста возможно возникновение проблем. Для того, чтобы их предупредить или минимизировать такое влияние, предлагаем воспитателю накануне сформулировать с детьми правила. Приведем такие ориентировочные правила, исполнение которых будет положительно влиять на эффективность организации коллективной деятельности детей старшего дошкольного возраста в ходе экспериментирования:

1. Внимательно выслушай и старайся понять мысли товарищей из группы.
2. Если не понял, спроси еще раз.
3. Выражайте свои мысли кратко и четко.

4. Если товарищи не согласны с тобой, узнай, почему.
5. Если не доказал правильность своих взглядов – признай ошибку.
6. Если не согласен с мнением товарища, обоснуй, почему.
7. Помни: успех группы зависит от каждого.

Приведем пример организации групповой деятельности детей старшего дошкольного возраста в процессе экспериментирования. Очень ярким, впечатляющим для детей этой возрастной категории будут опыты с цветными кубиками льда и подсолнечным маслом. Такие эксперименты имеют большой развивающий потенциал и одновременно не требуют значительных материальных затрат. Для этого опыта нужно предварительно заморозить цветные кубики льда. Опыт будет более ярким и увлекательным, если форма кубиков будет разной. Воспитатель может сделать это самостоятельно, а может попросить детей помочь, в продолжение изучения свойств воды. Воду для замораживания подкрашиваем водорастворимыми красителями или акварелью. Создаем группы (3-5 детей); целесообразно также дать названия группам (можно предложить детям самим придумать название их группы или воспитателю дать названия, например “Лаборатория №1”, “Лаборатория № 2”). Далее предлагаем каждой группе путем жеребьевки определить форму и цвет кубиков, с которыми будет проводиться эксперимент (заодно повторяем и закрепляем знания геометрических фигур и цветов). Для каждой группы нужен будет прозрачный сосуд, кубики льда и подсолнечное масло.

Перед началом опыта целесообразно рассказать детям его суть и попросить каждую группу детей обговорить и выдвинуть гипотезу о том, что будет происходить, если смешать воду (или лед) и масло. Таким образом мы активизируем мышление детей, побуждая их проводить мыслительный эксперимент. Потом предлагаем детям поместить в сосуд разноцветные кубики льда, залить маслом и наблюдать – подтвердится ли их гипотеза или нет. В процессе наблюдения дети в группе делятся впечатлениями и идеями, учатся аргументировано доказывать свою мысль и также находить аргументы для отрицания противоположной мысли. Именно такая форма общения, когда ребенок имеет возможность высказать свое мнение и одновременно чувствует ответственность за результат группы способствует активизации мышления каждого ребенка, возникновению (если отсутствовал) или повышению интереса к познанию окружающего мира, то есть способствует повышению эффективности экспериментальной деятельности старшего дошкольного возраста.

Стоит отметить, что эффективная организация групповой деятельности детей старшего дошкольного возраста в процессе экспериментирования требует внимания к выбору содержания и форм обучения, организации и управления образовательным процессом в дошкольном учреждении.

Эффективность применения этих требований невозможно рассматривать без учета обстоятельств, в которых они действуют, поэтому эффективная организация группового взаимодействия детей старшего дошкольного возраста в процессе экспериментирования в определенной степени зависит от определения педагогических условий. Сформулируем педагогические условия, с учетом которых организация групповой деятельности детей старшего дошкольного возраста в процессе экспериментирования будет более эффективной:

- поощрение самостоятельного нахождения детьми ответов по проблеме, которая исследуется детьми. Воспитателю важно проявить терпение и понимание необычных объяснений, которые дает дошкольник, поддерживая его стремление проникнуть в сущность предметов и явлений, выяснить причинно-следственные связи, узнать о скрытых свойствах; воспитатель также должен использовать похвалу при малейших успехах ребенка;
- оценка воспитателем не только результата исследовательской деятельности детей, но и процесса его получения (акцентирование внимания детей на наличии взаимопомощи, взаимоподдержки и взаимоуважения в группе, в результате чего произошло получения положительного результата);
- использование воспитателем провокационных вопросов, стимулирующих детей не останавливаться на достигнутом, а продолжать экспериментирование.

Выводы
Conclusions

Обобщение научной литературы и результатов опроса воспитателей, а также наблюдение за деятельностью детей старшего дошкольного возраста при групповой деятельности в процессе экспериментирования позволило сделать следующие выводы:

экспериментальная деятельность старших дошкольников в условиях организации обучения в группах будет более эффективной, то есть усиливается развитие мышления и других функций психики, речи, обостряется познавательный интерес;

происходит развитие коммуникативных умений (формулировать мысль, высказывать суждения, конструктивно его отстаивать, учиться слушать других и уважать альтернативную точку зрения), навыков к сотрудничеству, продуктивного общения, лидерских качеств, развитие эмоциональности (проявлять чувства, распознавать чувства окружающих,

сочувствовать, быть открытым, умело справляться с негативными чувствами к окружающим и к себе), способности к анализу собственных поступков и поступков окружающих, адаптивности.

Для эффективной организации групповой деятельности старших дошкольников в процессе экспериментирования необходимы специальные педагогические условия: поощрение самостоятельного нахождения детьми ответа по проблеме, которая исследуется; оценивания воспитателем не только результата групповой деятельности детей в процессе экспериментирования, но и процесса его получения; использование воспитателем провокационных вопросов, стимулирующих детей не останавливаться на достигнутом, а продолжать экспериментирование.

Summary

Experimental activity of senior preschoolers is more effective when the educational process is carried out in groups, i.e. the development of children's thinking and other functions of mentality and speech is enhanced, and their cognitive interest grows under such conditions. Also, their communicative skills (how to formulate opinions, express judgements and constructively substantiate them, how to learn to listen to others and respect an alternative point of view) develop more intensively, as well as their adaptability, skills for cooperation and productive communication and leadership skills, their emotionality (how to express feelings, differentiate the feelings of others, how to empathize, be open and able to cope with negative feelings towards others and towards themselves) and ability to analyze their own actions and the actions of other people.

For the effective organization of group activities of senior preschoolers in the process of experimentation special pedagogical conditions should be provided: children should be encouraged to find an answer to the problem under study on their own; preschool teachers should evaluate not only the result of children's group activities in the process of experimentation, but also the process of its achievement; provocative questions that stimulate and motivate children to continue experimenting should be used by preschool teachers.

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ИСПОЛЬЗОВАНИЕ ЗАГАДКИ В ДОШКОЛЬНОМ ПЕДАГОГИЧЕСКОМ ДИСКУСРЕ КАК СРЕДСТВО РАЗВИТИЯ МЕТАФОРИЧЕСКОГО МЫШЛЕНИЯ

The Use of Riddles in Preschool Pedagogical Discourse as a Means of Developing Metaphorical Thinking

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Abstract. *Psycholinguistic studies show that the formation and development of a metaphor in a child's speech occurs during active interaction with an adult and in various activities. It is in pedagogical discourse that, when a child and an adult interact, the latter teaches to detect similarities between different objects, demonstrating transference patterns. In all types of activity, the child's experience of replacing one object with another expands. One of the means of developing figurative thinking in pedagogical discourse is a riddle, which is, in essence, a logical task. Pedagogical discourse actively uses the riddle to achieve a discursive goal: the socialization of a new member of society. In pedagogical preschool discourse, the riddle performs various functions, the main of which are pedagogical, informative, cognitive, playful, axiological. The material for the article was the results of studies devoted to the study of the influence of riddles on the development of figurative thinking in preschool children in pedagogical discourse. As the experimental data have shown, children, composing their riddles, build metaphorical models characteristic of their age: coloristic metaphors, parametric metaphors, anthropomorphic metaphors. The pedagogical value of riddles lies in the fact that they acquaint the child with objects and phenomena, their main features, encourage a deeper delve into the meaning of verbal designation, increase thinking ability, etc. At the same time, the developing potential of riddles is determined by the possibilities inherent in them, and the forms of working with them. Each riddle solved strengthens the child's self-esteem, the desire to repeat success.*
Keywords: *figurative thinking, metaphor, preschool pedagogical discourse, riddles.*

Введение
Introduction

Формированию образного мышления детей нужно уделять особое внимание, постепенно стимулируя его развитие. Психологические и психолингвистические исследования показывают, что формирование и

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развитие метафоры в речи ребёнка происходит при активном взаимодействии со взрослым и в разных видах деятельности: предметной, игровой, речевой (Shabalina, 2007). Именно в педагогическом дискурсе при общении ребенка и взрослого последний учит обнаруживать сходство между разными объектами, демонстрируя образцы переносов. Во всех видах деятельности у ребенка расширяется опыт замены одного объекта другим.

Одним из средств развития образного мышления в педагогическом дискурсе является загадка, малый фольклорный жанр, представляющий по своей сути логическую задачу. Цель данной статьи рассмотреть загадку как средство развития образного мышления в педагогическом дискурсе.

Теоретическая основа темы
The Theoretical Background

Педагогический дискурс рассматривается в гуманитарных науках с разных точек зрения, но чаще всего он становится объектом изучения лингвистики и собственно педагогики. Понимание педагогического дискурса во многом зависит от целей исследования и подходов. К примеру, в лингвистике исследуются вербальные характеристики дискурса: речевые стратегии, жанры, базовые концепты и пр. (Zhestkova, 2016; Ezhova, 2006; Karasik, 2002). В педагогике дискурс рассматривается как средство тех или иных педагогических методов (Katermina, 2017). Разные подходы к педагогическому дискурсу не являются взаимоисключающими, наоборот, они дополняют друг друга, раскрывая многообразные стороны одного и того же явления. Давая различные определения понятию «педагогический дискурс», исследователи, тем не менее, единодушны в определении целей педагогического дискурса, которые заключаются в создании условий для социализации личности и развитиях ее психофизических, социальных и личностных характеристик (Leontiev, 1999; Mikhalskaya, 1998; Oleshkov, 2007). Таким образом, педагогический дискурс понимается в данном исследовании как «тип речевой деятельности коммуникаторов, обусловленный направленностью на социализацию нового члена общества» (Perevalova, 2015, 39).

Педагогический дискурс обладает «открытостью», которая позволяем ему взаимодействовать с другими видами дискурсов, при этом степень взаимодействия дискурсов во многом определяется наличием общих целей. Исследователи не раз обращали внимание на то, что цели педагогического дискурса имеют много общего с целями фольклорного дискурса.

Фольклорный дискурс, реализуясь в ряде устойчивых коммуникативных ситуаций, передает членам общества общее знание,

предлагая варианты поведения в стереотипных ситуациях (Altruova, & Nurekeshova, 2019). Через фольклорные тексты передаются эстетические, морально-этические, трудовые идеалы, представления о мире и человеке, лежащие в основе национального менталитета. Фольклорный дискурс, как и педагогический, нацелен на социализацию членов общества, на передачу личности знаний, норм и оценок, принятых в обществе.

Фольклорные тексты разных жанров активно используются в педагогическом дискурсе в процессе социализации личности. Особо важную роль они выполняют в период дошкольного обучения, когда ребенок проходит этап социализации в коллективе. Чаще всего на этом этапе обучения участники педагогического дискурса знакомятся с малыми фольклорными жанрами, к которым относится загадка.

Загадка представляет собой один из древнейших жанров народного творчества, который продолжает развиваться и адаптироваться под социокультурные изменения, хотя и утрачивая свои первоначальные функции «тайного языка» и превращаясь в игровой жанр (Senderovich, 2008). Формулировка понятия «загадка» вызывает определенные трудности, которые обусловлены как древним происхождением загадки, так и ее трансформацией с течением времени.

Суммируя все подходы к жанру загадки, можно утверждать, что загадка – малый фольклорный жанр, в котором в иносказательной форме описывается изображение предмета, который нужно угадать. Обязательной характеристикой загадки является ее структура, состоящая из двух компонентов, оба из которых представляют собой номинацию реалии действительности, при этом первая часть загадки служит иносказательной формой номинации предмета, а вторая – прямой. По содержанию загадка представляет собой замысловатое описание, как правило, лаконичное, которое надо расшифровать. Многим загадкам присущ ритм и стихотворная форма, однако эти характеристики появились у загадки сравнительно недавно (Senderovich, 2008).

Исследователи, занимающиеся изучением загадки как единицей фольклора, выделяют народные загадки и авторские, традиционные и современные. Под последними понимаются загадки, «бытующие с середины XX в. по настоящее время, вне зависимости от среды существования» (Emer, 2011, 90).

Загадка как фольклорный жанр формирует модель нормативного представления о предметной сфере, окружающей человека. При этом загадки актуализируют традиционные для фольклорного дискурса темы. В традиционной загадке описывается предметный мир (дом, предметы быта, пространство возле дома) и даётся нормативное представление о предметах и реалиях действительности и их свойствах. Загадка актуализирует, в

первую очередь, внешние физические свойства предмета и характеристики реалий, улавливаемые рецепторами человека.

Современные загадки при сохранении традиционной формы отличаются от традиционных по способу представления мира. В современных загадках «мифологическое мировосприятие уступает место рациональному, категоризация действительности происходит на иных основаниях» (Perevalova, 2015, 92). В традиционной загадке разгадывание представляет собой опознание признака, характерного для скрытой реалии и замещающей ее – и выявление скрытой загаданной реалии. Современные загадки более рациональны по своему содержанию и чаще всего представляют собой развернутое описание скрытой реалии или описание целой ситуации, включающей в себя все компоненты и функции, характерные для загаданной реалии или ситуации (Perevalova, 2015).

Педагогический дискурс активно использует загадку в процессе социализации личности. В педагогическом дошкольном дискурсе загадка выполняет разнообразные функции, главными из которых являются педагогическая, информативная, познавательная, игровая и аксиологическая. Игровая функция загадки позволяет разнообразить формы деятельности ребенка на занятии. Выполняя свою педагогическую функцию, загадка применяется чаще всего как способ представления темы занятия или в качестве приема закрепления и повторения изученного материала. Информативная функция загадки связана с ее способностью выступать в роли приема подачи и закрепления материала. Познавательная функция загадки заключается в ее способности представлять стереотипный образ предмета, отображать способ восприятия действительности. Аксиологическая функция загадки выражена имплицитно, поскольку оценочный знак реалии определяется ее значимостью для социума (Perevalova, 2015).

К загадке часто прибегают в дошкольном и младшем школьном педагогических дискурсах как к средству развития речи (Pervova, Bozhok, & Koivistojnen, 2012; Ignatenko 2019, Babaeva, 2020), в особенности у детей с задержкой развития (Kornev, 2006, Kudryavtseva, 2010). При этом активно используется информационная и дидактическая функция загадки: изучить новые реалии действительности, уметь выделить их на основе ряда перечисленных признаков или функций, а также видеть иносказательный смысл сказанного (Perevalova, 2015). Однако загадка может использоваться и как средство развития мышления ребенка, в особенности развития метафорического мышления. Загадка по своей сути представляет собой логическую задачу, которая содержит вопрос, поставленный в явной или скрытой форме. Отгадывание загадки представляет собой довольно

сложную мыслительную операцию – сравнение, освоение которой способствует развитию метафорического мышления ребенка.

Наличие образного, метафорического мышления является важным показателем психофизического и эмоционального развития ребенка. Вместе с формированием образного мышления постепенно приходит понимание идиоматических выражений, в основе которых лежит метафорический перенос. В свою очередь, непонимание образного значения языковых единиц является признаком умственной отсталости ребенка (Sedov, 2009).

Как известно, метафорический перенос как прием номинации осваивается всеми детьми и появляется в детской речи довольно рано (Sedov, 2009, 182). «Техника метафорической номинации связана с установлением ассоциаций по сходству, позволяющих ребенку соединять новое с уже познанным (путем переноса названия известного ребенку предмета на новый объект)» (Gridina, 2018). Однако осознание условности метафорического переноса приходит к ребенку намного позже, когда он перестает буквально отождествлять названия с обозначаемыми свойствами объекта (Sedov, 2008).

Детская метафора, в отличие от метафоры взрослых, предметна и возникает на основе чувственного опыта ребенка. Ее предметность проявляется в установлении сходства между конкретными объектами, тогда как у взрослых актуализируются представления о признаках не только конкретных, но и отвлеченных объектов. Область-источник метафоры у детей более компактна и однородна, чем у взрослых. Расширение объема области-источника и дальнейшее развитие метафоры обусловлено увеличением когнитивно-языкового и социокультурного опыта человека Структурообразующими компонентами детской метафоры являются типы интегральных семантических признаков «форма», «функция», «структура», «материал», «цвет», «размер» (Shabalina, 2007; Popova, 2018).

По данным исследований первые метафоры в речи ребенка (1-3 лет) представляют собой результат аналогии между объектами вещного, растительного и животного мира, т.е. аналогий, фиксирующих наиболее заметные, визуально наблюдаемые свойства. При этом на раннем этапе развития метафорические значения в речи детей употребляются только у имен существительных (Popova, 2018). Позднее в старшем дошкольном возрасте (7 лет) метафоры в речи детей усложняются. Появляются метафоры, базирующиеся на отвлеченных понятиях, более сложные по своей структуре.

Загадка, которая требует дешифровки иносказательной условности предъявляемого образа, представляет для ребенка трудность ввиду того, что детям свойственен номинативный буквализм и отрицание наличия у слов переносных значений (Tseitlin, 2000; Gridina, 2018). Однако более близкое

знакомство с загадкой и составление своих загадок, активизирует мыслительные операции сравнения и сопоставления, что способствует развитию метафорического мышления ребенка.

В загадке на первый план выступают не все признаки предмета, а лишь те, которые являются наиболее типичными и легко узнаваемыми: цвет, размер, функция, расположение. В тексте загадки отображается стереотипный образ предмета и фиксируются его типичные свойства (Smolyar, 2007; Perevalova, 2015). Именно эти типичные характеристики предмета и должен узнать ребенок при разгадывании загадки, тем самым проводя дешифровку метафоры.

Методы исследования
Methods of Research

Материалом для статьи послужили результаты социолингвистических исследований (дошкольные образовательные муниципальные учреждения г.Краснодара и г.Магнитогорска [Россия]), посвященные изучению влияния загадки на развитие образного мышления детей дошкольного возраста в дошкольном педагогическом дискурсе. В работе использованы следующие методы: описание, наблюдение, интерпретация, ассоциативный эксперимент.

Материал, анализ и результаты
Data, Analysis and Results

Эмпирическая часть исследования заключалась в организации, проведении и интерпретации результатов исследования, проводимого в дошкольных образовательных муниципальных учреждениях № 135 и №187 г.Краснодара и № 55 г.Магнитогорска для изучения влияния загадки на развитие метафорического мышления в дошкольном педагогическом дискурсе.

В качестве дидактического материала использовались как классические (традиционные) загадки, так и современные.

Проводимые в последнее время интенсивные исследования в области ассоциативного эксперимента, активно вводят понятия парадигматического и синтагматического типов ассоциаций. Синтагматическая близость отображает частотность совместной встречаемости слов. Если сравнить загадку с ассоциативным экспериментом, то можно сказать, что энигматор загадки отображает ассоциаты, а энигмат — то, что в ассоциативном эксперименте выступает как стимул. С этой точки зрения, загадка может быть интерпретирована как обращённый, перевёрнутый ассоциативный

эксперимент: стимул задан по возможным ассоциативным реакциям на него (Denisova, 2008, 38).

Эксперимент проводился в 2 этапа. В опросе приняли участие 50 детей, 5-6 лет. На первом этапе участникам предъявлялись традиционные загадки, отгадками к которым были лексические единицы, обозначающие хорошо знакомые современным детям реалии: предметы быта, домашние животные, дикие животные, овощи, фрукты и пр.: *Явился в жёлтой шубке:- Прощайте, две скорлупки! (Цыпленок), Сидит на ложке, свесив ножки (Лапша).*

После попыток отгадать загадки проводилось их обсуждение. Педагог просил детей объяснить, почему загадываемая реалия описывалась таким образом или сравнивалась с теми или иными предметами. Также детей просили объяснить, на каком основании они ошибочно приписывали названной им реалии те или иные характеристики. Таким образом педагог просил детей расшифровать метафору. Особое значение при обсуждении уделялось образной характеристике объекта.

Затем детям предъявлялись современные загадки более сложные по своему содержанию. Такие как, например, *«Одой ручкой – всех встречает, / Другой ручкой – всех провожает (Дверь)».* При обсуждении современных загадок педагог обращал внимание на практическую функцию загадываемых предметов схожесть выполняемых ими функций с другими предметами.

На протяжении всего первого этапа дети испытывали трудности при отгадывании как традиционных, так и современных загадок. (Все участники при первом предъявлении загадки давали неправильные ответы. При более длительном обдумывание некоторые участники эксперимента смогли дать правильный ответ, но их количество невелико [7 из 50]). Такое поведение детей было ожидаемо, поскольку дети воспринимают загадку, как буквальное описание загаданного предмета. «Прагматический вектор восприятия загадок «перевешивает» в сознании ребенка их образное осмысление» (Gridina, 2018, 69).

Во время первого этапа эксперимента большое внимание уделялось поддержанию положительного настроя у участников. Коммуникативные неудачи при разгадывании загадок не должны были вызывать негативное отношение детей к заданию. При неправильном ответе на загадку, педагог использовал наводящие вопросы, объяснял, почему вариант отгадки считается неверным. Если ребенок затруднялся объяснить, на каком основании он приписывал названной им реалии те или иные характеристики, педагог предлагал ребенку подсказку в форме наводящих вопросов. Если ребенок отказывался объяснять свой ответ, педагог не настаивал. Первый этап эксперимента занял несколько занятий, и каждый

раз время, отведенное на обсуждение загадки, увеличивалось, чтобы дети привыкли к форме задания. После разгадывания загадок детям часто предлагалось нарисовать отгаданные предметы.

На втором этапе эксперимента дети должны были сами составить свои загадки. Обучение детей составлению загадок шло от полуактивной ступени, на которой дети вместе с педагогом составляли одну общую загадку, до активной, кода детям должны были составить свои собственные загадки самостоятельно.

На полуактивной ступени детям предлагалось называть признаки загадываемого предмета по одной из 3 моделей, предложенных Ю.И.Игнатенко (Ignatenko, 2019) и вместе с педагогом составить коллективную загадку.

Итак, детям показывали картинку и предлагали выбрать предмет для загадки. При выборе предмета учитывалось, что сочинять загадки целесообразнее об объектах, которые имеют многоплановую, разнообразную характеристику и позволяют выбрать широкий круг других объектов для сравнения, в связи с чем, педагог направлял детей при выборе объекта на картинке. Далее детям задавались вопросы, по одной из трех моделей. Педагог записывал образные характеристики, которые называли дети в таблицу, состоящую из двух колонок и зачем составлял загадку.

Модель 1. *«Какая она по цвету? Что бывает таким же?» – «Желтая. Солнышко».* Дети описывали лампочку.

Таблица с признаками выглядит следующим образом:

Какая?	Что бывает таким же?
Желтая	*Солнышко*
Яркая	*Огонь*
Горячая	*Свечка*

Затем отбиралась самые яркие признаки и предметы, и педагог соединял их при помощи союзов «как» и «но не». Итоговая загадка выглядела следующим образом: «*Желтая как солнышко, яркая как огонь, горячая, но не свечка».*

Модель 2. «Что она делает? Что (кто) делает также?». По аналогии с первой моделью педагог заполнял таблицу, когда дети описывали ежика.

Таблица с признаками выглядит следующим образом:

Что делает?	Что (кто) также делает?
пыхтит	*паровоз*
колется	*иглы*
сворачивается	*клубок*

Далее все признаки и сравнения соединялись при помощи союза «как». Итоговая загадка выглядела следующим образом: *«Пыхтит, как паровоз, колется как иглы, сворачивается как клубок».*

Модель 3. «На что похоже? Чем отличается?». Особенностью этой модели является то, что дети сравнивали один объект с другим, находя между ними общее и различное. Составление загадки про капусту выглядело следующим образом.

На что похоже?	Чем отличается?
голова	*зеленого цвета*
арбуз	*несладкая*
мяч	*съедобная*

Далее педагог предлагал составить загадку в целом, используя связку «но без чего-либо». В итоге получилась следующая загадка: «*Похожа на голову, но зеленого цвета, похожа на арбуз, но несладкая, похожа на мяч, но съедобная».*

На заключительной ступени второго этапа детям предлагалось сочинить свои собственные загадки, опираясь на одну из трех моделей. Теперь весь процесс составления загадки, включающий следующий алгоритм мыслительных действий: 1. Выбор объекта на картине. 2. Выбор модели метафоры. 3. Подбор характеристик. 4. Выбор наиболее удачных сравнений и включение их в речевую фразу.

В течение всего второго этапа эксперимента дети проявляли положительный настрой. Участники эксперимента уже были хорошо знакомы с загадкой и без труда поняли смысл задания. Отказов от участия в коллективном составлении загадок не было. Некоторые дети при составлении индивидуальных загадок не совсем верно определили ключевые признаки загадываемых предметов (23 человека из 50), однако отказов со стороны детей при выполнении задания зафиксировано не было.

Результаты эксперимента показали, что, опираясь на предложенные модели построения загадок, дети довольно быстро научились составлять свои собственный загадки, применяя метафорические модели, характерные для своего возраста: колористические метафоры, параметрические метафоры (метафоры-размеры, метафоры-формы, антропоморфные метафоры. Большинство детей, участвующих в эксперименте (40 из 50 участвующих в эксперименте), использовали общеизвестные метафоры, что, очевидно, объясняется влиянием произведений литературы, с которыми уже знакомы дети. Однако некоторые испытуемые использовали и индивидуальные метафоры. В частности, небольшой процент участников эксперимента (7 человек из 50) даже проявили лингвистическую

креативность, составив рифмованные загадки: *Красный клубок похож на носок. / По лесу летает, шишки разгрызает (Белочка). Зеленые волосы, красное тело в земле засело (Морковь), Тело – палка, летает, глазами всех пугает (Стрекоза). Длинный шнурок, землю капает, а урожай не собирает (Червяк). Красная лиса пол леса унесла (Про пожар). В тарелку кровь налили и белым снегом завалили (Борщ со сметаной).*

Обобщение
Conclusions

Загадка является важным инструментом социализации личности в педагогическом дискурсе. Помимо речевого развития загадки также имеют большое значение в воспитании нравственных и эстетических чувств обучающихся. Включение традиционных загадок в процесс обучения является необходимым условием передачи детям национальных культурных ценностей и представлений, сложившихся в конкретном языковом коллективе о мире, поскольку способствуют погружению в национальную культуру, ознакомлению с этнографическим материалом.

Загадка является отличным стимулом для развития мышления, а также доступным, очень эффективным и увлекательным средством обучения. Загадки, развивая у обучающихся «поэтическое восприятие мира» (Illarionova, 1988, 23), занимают особое место в работе по развитию мышления, в частности в развитии образного метафорического мышления.

Экспериментальное использование загадок в развитии образного мышления показало, что при анализе готовых загадок и составлении собственных, мышление ребенка делает качественный скачок в сторону развития: происходит активизация умственных процессов сравнения и сопоставления, совершенствуется познавательная деятельность, развивается речь и творческий потенциал. Благодаря загадке ускоряется процесс усвоения общеизвестных, распространенных в данном языковом коллективе метафор, и развивается лингвистическая креативность.

Summary

The formation of children's imaginative thinking needs to be given special attention gradually stimulating its development. Psychological and psycholinguistic studies show that the formation and development of a metaphor in a child's speech occurs during active interaction with an adult and in different types of activity: subject, game, speech. It is in pedagogical discourse, when communicating between a child and an adult, that the latter teaches to reveal similarities between different objects demonstrating transference patterns. In all types of activity the child's experience of replacing one object with another expands.

One of the means of developing figurative thinking in pedagogical discourse is a riddle, a small folklore genre, which is, in essence, a logical task.

Pedagogical discourse actively uses the riddle in the process of personality socialization. In pedagogical preschool discourse a riddle performs various functions, the main ones of which are pedagogical, informative, cognitive, playful and axiological. The game function of the riddle allows to diversify the forms of the child's activity in class. Fulfilling its pedagogical function, the riddle is most often used as a way of presenting the topic of the lesson or as a method of consolidating and repeating the studied material. The informative function of the riddle is associated with its ability to act as a reception for the supply and consolidation of material. The cognitive function of a riddle lies in its ability to represent a stereotyped image of an object, to reflect a way of perceiving reality. The axiological function of the riddle is expressed implicitly since the evaluative sign of reality is determined by its significance for society.

In addition to speech development, riddles are also of great importance in the education of students' moral and aesthetic feelings. The inclusion of traditional riddles in the learning process is a prerequisite for the transfer of national cultural values and ideas that have developed in a particular language community about the world to children as they contribute to immersion in national culture, familiarization with ethnographic material.

The experimental use of riddles in the development of imaginative thinking has shown that when analyzing ready-made riddles and composing their own, the child's thinking makes a qualitative leap towards development: mental processes of comparison are activated, cognitive activity is improved, speech and creativity develops. Thanks to the riddle, the process of mastering well-known metaphors that are common in a given language community is accelerated and linguistic creativity develops.

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VERIFICATION OF ASSESSMENT SCALES OF THE SENSORY ENRICHED ENVIRONMENT ECERS-R AND SSTEW OR IMPLEMENTATION IN UKRAINE

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Abstract. *The quality of education in general and preschool education in particular remains relevant both in the light of current reforms in the educational sphere of Ukraine and in the international context. Scientists pay attention to solving the problem of organizing comfortable environment, in particular the lack of internal space for each child. So far, the problems of teaching educators of preschooleducation establishments for the assessment of a high-quality sensory enriched environment have not been fully resolved.*

The purpose of the article is to determinate the effective quality scales of preschool education, to verify the most acceptable scales for assessment of the sensory enriched environment, to compare analysis of the obtained experimental data. During the research we used the following methods: observation, analysis, interviews, mathematical statistics, scales ECERS-R (Early Childhood Environment Rating Scale-Revised) and SSTEW (Sustained Shared Thinking and Emotional Well-being).

The assessment of the condition of the sensory enriched environment was conducted by the 3rd year undergraduate students studying at the educational program «Preschool Education» at Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University, Mukachevo State University, Khmelnytskyi Humanitarian-Pedagogical Academy. At the stage of experimental

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activity, 21 experts, 30 educators were involved, 15 environments in preschool establishments were evaluated.
The analysis of the main features of the external and internal sensory enriched environment, which was carried out on the basis of the proposed parameters of the ECERS and SSTEW scales, allows us to determine the features that set out the possibility of further enrichment of this environment. The authors propose to focus on the enrichment of the environment as a special means of integrating the accumulated pedagogical experience into a holistic pedagogical system, as well as the complexity of the child's development situation, which is taken into account by adults.
Keywords: *assessment scales, sensory enriched environment, ECERS-R, SSTEW, preschool education establishments, quality of preschool education.*

Introduction

The quality of preschool education is a topical issue not only of modern reforms in the educational sphere of Ukraine, but also in the international context. The report "Improving the quality of preschool education and child care in Ukraine" by Jan Peeters, Doctor of Education, University of Ghent (Belgium), with the financial support of the United Nations Children's Fund (UNICEF), has considered 75.4% of children from 3 to 6 years (84.5% - in urban settlements and only 57.8% - in rural areas) attend preschool educational establishments (Peeters, 2019). This index is slightly higher than similar one in other countries for example as in neighboring Georgia (69.5%), but much lower than in the EU (95% of children from 4 to 6 years) (Kryterii yakosti doshkilnoi osvity [KYDO], 2019, 8). Some problems of preschool educators training to examination of high quality sensory enriched environment have not been solved yet.

There are contradictions between:

- the numerous experimental studies in the field of creating an environment for young children and the low level of their implementation in the practice of preschool education;
- the high level of validity of the theory and its insufficient implementation in the content of professional and pedagogical training of future early childhood educators and practicing preschool teachers;
- the need to ensure the quality of the sensory enriched environment and the lack of specially trained specialists in the relevant field;
- the need to consolidate and integrate the efforts of preschools and other social institutions to create a sensory enriched environment for the development of young children and the lack of theoretical and methodological support for pedagogical partnerships in quality assurance of preschool education (Krutii, Kit, Holiuk, & Stakhova, 2020).

The purpose of the research is determining the effectiveness of preschool education quality scales for implementation in the educational field of Ukraine, verification of the most acceptable scale for use in order to examine the sensory enriched environment, a comparative analysis of the obtained experimental data.

Research methods include observation, analysis, interviewing, mathematical data processing, ECERS-R and SSTEW scales.

The Theoretical Background

The attention to solving the problem of organizing a comfortable environment, in particular the lack of internal space for each child is paid by doctors, designers, architects, as well as psychologists and teachers. They define the quality of the educational process as a set of interactions and experiences that the child receives in the kindergarten classroom, being in its social, sensory and physical environment (Diskowski, 2006). At the end of the 20th century some researches noticed that the structure of the process of interaction between a teacher and a child in most institutions has to be considered unsatisfactory. In particular, there were minimum game situations in the environment registered in the collective interaction, which takes about 5% of the observed time. It turned out that children have less pair than group interactions with teachers. Only 5% of the time is used to encourage children to play outdoors without performing special exercises, while 13% of spare time is filled with play activities planned by the teacher.

Assessment of the quality of preschool education (set of conditions) is a controlled process. It should not be formed spontaneously. It’s difficult to assess the quality of preschool education because any child educational results cannot be chosen as an external assessment of the quality of preschool education of the particular preschool educational establishment (hereinafter – PEE), in contrast to primary school institutions). Thus, in 2014, the European Commission established a working group to develop recommendations for defining the quality criteria to preschool education (Key Data on Early Childhood Education and Care in Europe, 2014). Emphasizing the complexity of the concept of quality of preschool education, the working group outlined the following main criteria: the quality of the structure, the quality of the process and the quality of the result. Let’s characterize them.

Quality of structure. This criterion includes the peculiarities of accreditation and licensing programs; correspondence of the number of staff to the number of children in PEE; ensuring equal access to quality education for all children, sanitary and hygienic norms, etc.

Quality of the process includes practices used at preschool institutions, the part of game techniques at the educational programs; cooperation between

educators and parents of children; interaction between educators and children, as well as between the children themselves; integrated approach to education, care and training of children.

Quality of results includes benefits for children (emotional, cognitive, physical development, development of social skills and preparation for further learning and adult life), benefits for families, as for local communities and society as a whole (KYDO, 2019, 10).

Unfortunately, there are few effective tools for a comprehensive assessment of the quality of preschool education as in the Ukrainian pedagogy of early and preschool childhood, as in the theory and practice of management. However, in the practice of foreign colleagues such tools have been developed and they are relevant and valid.

The assessment scale of the educational environment Early Childhood Environment Rating Scale-Revised (ECERS-R), which is translated into various languages and standardized in many countries, is the most well known in the United States, Canada, Asia and Europe. This tool was developed in 1980 at the USA. It was modified in 2005 (Harms, Clifford, & Crye, 2005), and in 2010 an additional scale was created together with British experts (Sylva K., Siraj-Blatchford E., Taggart B.). That one emphasizes the preparing children for mastering learning skills (ECERS-E) (Sylva, Siraj-Blatchford, & Taggart, 2010). In particular, it is used by the NAEYC in conducting accreditations, as it stated in the introduction to the description of the scale (Harms et al., 2005). ECERS includes scales of observations that allow to assess one specific educational group of institutions (Anikeich, 2017; Harms et al., 2005). Researches show that ECERS is a tool flexible enough to assess different educational conditions (Montessori pedagogy, Waldorf program, Step-by-step, etc.).

We have analyzed another scale for assessing sustainable shared thinking and emotional well-being SSTEW (Sustained Shared Thinking and Emotional Well-being) – a new tool for studying and evaluating the work of preschool educational establishments (Siradzh, Kingston, & Melhish, 2020). The scale covers 14 criteria that have clear indicators that reflect the trends of quality development in the practice of kindergartens. The indicators (subscale) include:

Subscale 1. Development of trust, confidence and independence.

Subscale 2. Social and emotional well-being.

Subscale 3. Support and development of speech and communication skills.

Subscale 4. Support the learning process and the development of critical thinking.

Subscale 5. Assessment of the learning process and speech development.

The first two subscales assess the quality of conditions for ensuring the independence of children and their social and emotional well-being in the adult environment.

In the international educational field, there are some scales that assess the conditions of a child's development, such as:

1. The scales for assessing the educational environment.

Early Childhood Environment Rating Scale-Revised (ECERS-R). The evaluation procedure is based primarily on observation and recording the results of it to the evaluation protocols with explanations of why that or another evaluation is chosen for each criterion. There are observation scales in ECERS that allow to assess the educational environment of a particular class of kindergarten. The environment in preschool education plays a significant developmental role. The experts from "Reggio Emilia" consider "environment as a third teacher".

2. The scale of practices assessment in education of young children (Assessment of Practices in Early Elementary Classrooms (APEEC)).

3. The Child-Adult Interaction Scale (CIS). This scale is often used to assess pedagogical impact at home or in childcare centers.

4. The scale of observations of children's interaction in the classroom (Classroom Assessment Scoring System (CLASS)). This scale is of particular interest to professionals because the sphere of interaction between child and adult is the most problematic point of any education due to historical cultural reasons.

5. The scale of observations after language and literacy development at preschool age (ELLCO: Early Language and Literacy Classroom Observation). This scale is designed specifically to assess the conditions of a child's development in an educational institution.

It is important to note that each of the scales is the result not only of testing, but also of serious and large-scale research, which allow us to see the relationship between the results obtained by PEE and various effects and relationships.

Thus, the ECERS-R educational environment assessment scale is the most well-known, translated into different languages and standardized in many countries one. As for the SSTEW scale, it is almost unknown in the Ukrainian educational environment (Krutii & Popovych, 2020a; Siradzh et al., 2020).

Many approaches define the concept of quality of preschool education, tools and procedures for its evaluation at the level of preschool education. However, the scales that focus on two objects of quality assessment of educational activities, such as educational environment and educational outcomes of children (Krutii, 2019) prevail among them. The analysis of the scale points shows that the assessment of the quality of the environment, conducted with the help of ECERS and SSTEW, shows researchers:

- if the environment creates conditions for the emotional well-being of the child;

- if children are active in the learning process;
- if the conditions to stimulate children's curiosity and learning are created;
- if there is a balance between actions initiated by adults and children themselves;
- if the environment promotes the development of creative and critical thinking of children.

Methodology, Organization and Results of the Research

The quality of the sensory enriched environment was identified with standardized interviews and surveys of leaders, teaching staff of the PEE, document analysis and examinations then and there. Relationships with families were revealed through written survey of parents. The quality of the educational process was designated through 3-4-hour observation of specially trained specialists in the kindergarten groups and by additional interview with the group educator.

The examination of the sensory enriched environment included the scaling of

- the level of comfort and safety;
- ensuring the development of holistic sensory perception;
- providing independent individual children's activities (the ability to use the subject for its intended purpose);
- providing opportunities for research and training (elements of experimentation);
- functionality of the subject environment (variability, transformability);
- approachability for children;
- emotional saturation of the environment (brightness, sound signals, mobile);
- age matching.

The assessment of the content of the sensory enriched environment in terms of the development of subject activity was carried out according to the following characteristics that were common to ECERS as to SSTEW scale:

- a variety of forms of objects;
- reproduction of color of objects;
- sound transmission of objects (for auditory perception);
- objects of advanced nature;
- replacement items (game replacements for real things);
- subject safety;
- kinesthetic modality (tactility, movement, touch, smell).

The assessment of the sensory enriched environment was carried out by the 3rd year undergraduate students studying in the educational program "Preschool Education" at Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University, Mukachevo State University, Khmelnytsky Humanitarian and Pedagogical Academy. We initiative the research and guided it. 21 experts and 30 educators were involved during the experimental activity. 15 environments were evaluated, which were unified into groups called "Shchedryk", "Kotyhoroshko", "Barvinok" for the convenience of processing the protocols.

During the training the future educators (experts) for pedagogical practice in the groups of young children, a number of consultations were held on working with the ECERS and SSTEW scales. It was emphasized that the observation of children should be much careful. The observation shouldn't interrupt the current children activity at the class. The questionnaire gave experts the opportunity to become children for a while and try to perceive the environment from the child's point of view, to take a subjective position in relation to both the child and the educational environment (Demchenko, Kit, Holiuk, & Rodiuk, 2018).

The experts were offered a questionnaire (author – O. Popovych), which they filled out while being in active practice in the groups of young children (Krutii & Popovych, 2020b). After processing the questionnaire, the future preschool educators got a consultation how to assess the research results. The features of work in the groups of young children were determined. Preparatory work was carried out using ECERS and SSTEW scales.

In the process of observation, future educators filled out a specially designed assessment protocol. Also there were explanations in the assessment protocols of each indicator so that the expert knew how to qualitatively evaluate this or that criterion, what guidelines to pay attention to, what questions can be asked to the educator for the qualitative assessment of particular criterion. The general assessment of the environment's quality in the groups of young children was formed with filling in the protocols and reflecting the facts in them. Thus, this work precluded formal assessment of the sensory enriched environment and reduced the risk of subjective assessment by the expert (student). The results obtained during the examination were qualitative and convincing, because they pointed to the strengths and weaknesses of the environment's quality of particular class in a particular period of time. In summary, we can say that the ECERS and SSTEW scales are universal and are an effective method of assessing the quality of the environment of kindergarten or any center of child development.

The average valuation for each of the subscales was calculated as the arithmetic mean of the scores obtained for each indicator. The final average valuation on the whole scale is the sum of scores on all indicators of the scale. There are the criteria, levels and indicators that we have developed to teach

students to assess the sensory enriched environment in the group of young children, in Table 1.

Table 1 ***Criteria, Levels and Indicators of Sensory Enriched Environment on the ECERS and SSTEW Scales***

	Criteria	Levels and indicators
1.	The presence of centers that provide play, sensory cognitive and research activities of children (children's experimentation with sand, water, and other materials)	Optimal level (80-100%). There are at least 5-7 centers (exercises in practical life, for play, sensory and cognitive development, learning the native language and speech development, "mini-laboratory" for experiments, including sand, water; artistic creativity, reading and relaxation, designing, privacy) in the classroom.
		Average level (60-79%). There are 3-4 centers, which partially provide play, cognitive, research and creative activity of all children, experimenting with available materials in the classroom. There is minor inconsistency with the educational program.
		Lower than average level (less than 59%). There is no or minimal number of centers (2-3). They provide game, cognitive, research and creative activity of all children, experimenting with available materials poorly.
2.	The presence of centers that provide motor activity (gross and fine motor skills), participation at moving games	Optimal level (80-100%). There are centers of motor activity in accordance with the Sanitary Regulations (2016) for the development of gross motor skills with appropriate sports and play equipment, sports facilities.
		Average level (60-79%). There is a center for motor activity, for the development of gross motor skills, a minimum set of equipment.
		Lower than average level (less than 59%). There is limited environment for physical activity, development of gross motor skills, insufficient amount of appropriate equipment, sports facilities.
3.	Ensuring the possibility of manifestations of young children's independence in sensory cognitive activity	Optimal level (80-100%). There are materials and items fully prepared for productive activities, as well as for place to arrangement the products of children's activity ("child's voice", "child's footprints"), there are free materials there.
		Average level (60-79%). There is minimum amount of materials and items for the activities of children, limited area for placement of products of creative activities.
		Lower than average level (less than 59%). There is no or minimum materials for productive activities of children.

The following Table 2 shows a variant of verification of the obtained data on the ECERS and SSTEW scales.

Table 2 ***Verification of the Obtained Data on the ECERS and SSTEW Scales, in %***

Scale name /Levels	***Scale ECERS-R***			***Scale SSTEW***		
	Optimal level	Average level	Lower than average level	Optimal level	Average level	Lower than average level
Barvinok	17	52	31	15	57	28
Kotyhoroshko	15	49	36	18	53	29
Shchedryk	18	51	31	17	52	31
Average indicator	***16,7***	***50,7***	***32,6***	***16,7***	***54,0***	***29,3***

The analysis of the protocols results made it possible to derive the average indicators at the levels of table 2. Thus, the quality of the sensory enriched environment in the analyzed groups of young children was almost similar. Thus, the quality of the sensory enriched environment in the groups "Barvinok", "Kotyhoroshko" and "Shchedryk" is lower than the average level on the ECERS scale – 32.6% of protocols, on the SSTEW scale – 29.3% it is almost the same, but the indicators of the group "Kotyhoroshko" are somewhat differ from others. This difference can be explained by the incorrectness of filling in the protocols by students, so it makes sense to revise the content of the protocols in the future to avoid subjectivism on the part of the expert. The obtained data can be clearly seen with the help of Figure 1.

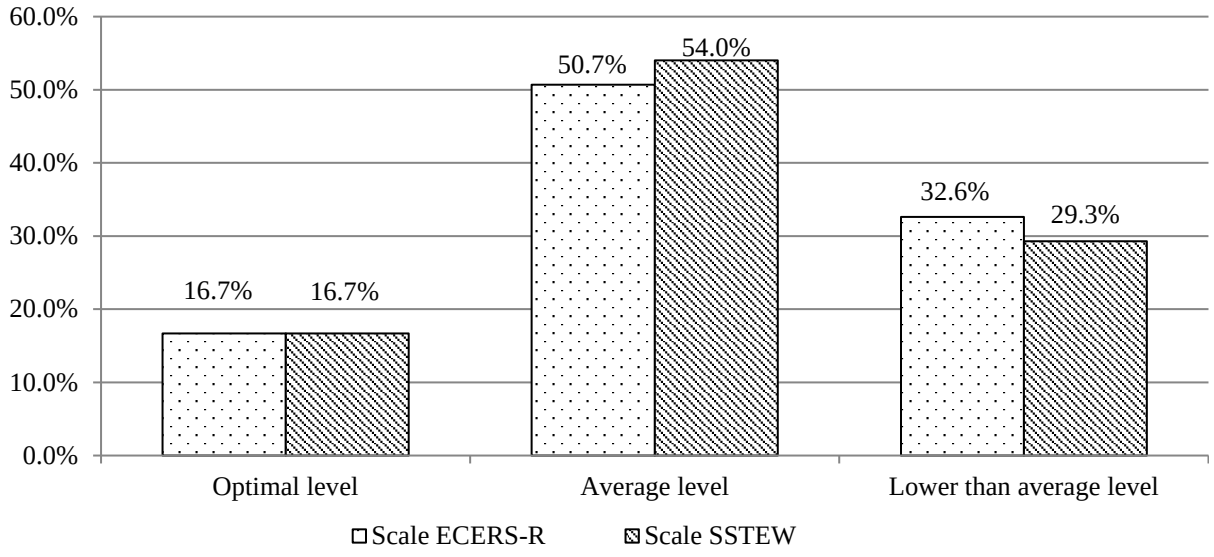

Figure 1 ***Verification of the Obtained Data on the ECERS and SSTEW Scales on the Quality of the Sensory Enriched Environment in the Groups of Young Children***

Conclusions

Based on the study, we can draw the following *conclusions*: the quality of the environment in the studying sample can be characterized as "average". Good results were obtained in terms of indicators related to the equipment of groups of young children with furniture, but they have low scores on the arrangement of centers and focus on children's needs. Expert students did not record that the bedroom was adapted for use during the day. Research has shown that the sensory enriched environment is not intensive and accessible enough to ensure the free spontaneous children's activity. In many ways, this is a reflection of the situation of the tradition of emphasizing frontal classes, the initiative of which belongs entirely to the preschool teachers. In groups of young children there are almost no places for privacy and cozy places. Children's works, results of their recent activity, photos are extremely short used in decoration of group rooms. It can be concluded that the group rooms are adapted for children, but not focused on the development of children's initiative, independence and individuality.

In conclusion, we can say that ECERS and SSTEW are the value of the environment that creates conditions for the emotional well-being of children, as well as the development of children's activity and free will, which allows them to start school actively. This means that the ECERS and SSTEW scales correspond to the ideas of quality preschool education that were formed in the expert educational community before the beginning of the XXI century. Using the ECERS and SSTEW scales, we organized an assessment of the environment of groups of young children. The results of this assessment clearly presented the degree of conformity of an indicator with the requirements of the scales, they provided an opportunity to verify the data, to determine the prospects for further development of the environment, to plan further activities for its enrichment. Note that the format of the SSTEW scale has the same construction as ECERS-R, namely: points are evaluated on a seven-point scale, it has division into 5 subscales. However, it should be noted that the concept of the SSTEW scale is more acceptable for the faster implementation it in the educational field of Ukraine.

First of all, it is based on ECERS-R and ECERS-E / ITERS-R, provides research within the environment, clarifies the role of adults in supporting the learning and development of children, takes into account the quality of interaction with children and between them. In our opinion, the teaching staff of preschool education establishments may not be ready to use all subscales without special training. This is relevant to such subscales as: critical thinking, learning assessment, support and promotion of speech and communication. The scales that will be proposed by the state should be used by those who are theoretically trained and know about the peculiarities of creating conditions for

children's development, and relevant practice. We see such training in conducting systematic learning seminars, workshops and trainings for both heads of preschool education establishments and teachers.

Our findings are consistent with the findings of the Iram Siraj, Denise Kingston and Edward Melhuish study (Siraj, Kingston, & Melhuish, 2015) on how to promote the SSTEW scale to improve the quality of preschool education.

Therefore, the analysis of the main features of the external and internal sensory enriched environment, which we carried out on the basis of the proposed parameters of the scale ECERS and SSTEW allows us to determine the features that stipulate the possibility of further enrichment of the environment in the conditions of Ukrainian preschool education establishments. Emphasis in the further development of the analyzed problem should be made on enriching the environment as a special means of integrating the accumulated pedagogical experience into a integral pedagogical system, as well as in the complexity of the situation of child development, which is taken into account by adults.

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МУЛЬТИМЕДИЙНАЯ СРЕДА КАК ФАКТОР ВЛИЯНИЯ НА РАЗВИТИЕ ДЕТЕЙ ДОШКОЛЬНОГО И МЛАДШЕГО ШКОЛЬНОГО ВОЗРАСТА

Multimedia Environment as a Factor of Influence on the Development of Preschool and Primary School Children

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Abstract. *New media and leisure activities, often referred to as the media environment, have been a powerful factor influencing the development of the modern child. More often this influence is associated with the negative consequences caused by the fascination with gadgets (weak social skills, dependence on devices, poor academic performance, etc.). The relevance of the topic of our research is due to the insufficient amount of data that would allow a) to determine the ways of development of the multimedia component of the process of upbringing and teaching children of preschool and primary school age, b) the lack of reasoned and research-based data on the influence of the multimedia environment on the child, c) to identify problems of use of new means of information and entertainment by the child; e) to find pedagogical means of preventing negative consequences that may arise in connection with the use of media by children. In the course of the study, the time of classes in the multimedia space, the structure of using various types of devices, the presence of parental control in this process and the presence of children with addiction were determined.*
Keywords: *pedagogical process, development, media, self - assesment, addiction.*

Введение
Introduction

Новые средства массовой информации и проведения досуга, часто обозначаемые как медийная среда, явились мощным фактором, влияющим на развитие современного ребенка. Довольно часто это влияние связывают с негативными последствиями, вызываемыми увлечением гаджетами (слабые социальные навыки, зависимость от устройств, плохая успеваемость и т. п.). Однако информационно-коммуникативные технологии становятся в современном мире и составной частью процесса образования детей дошкольного и младшего школьного возраста. По сути, овладение детьми новыми технологиями имеет две стороны: самостоятельное, практически бесконтрольное вхождение в медийное

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пространство с очень раннего возраста и некоторые элементы использования ИКТ в процессе обучения (Carlsson, 2019).

Актуальность исследования обусловлена необходимостью а)выработки модели включения ИК технологий в процесс воспитания и обучения дошкольников и младших школьников, б) недостаточностью данных, касающихся влияния цифровизации на развитие личности детей, в) необходимостью более точного выявления проблем, связанных с использованием ребенком новых средств информации и развлечений, с)выработкой педагогических средств предотвращения негативных последствий, которые могут возникнуть в связи с использованием детьми медийных возможностей.

Цель исследования – изучение особенностей развития отдельных аспектов личности дошкольников и младших школьников в условиях использования ИКТ.

Объект исследования – ИКТ как фактор развития личности ребенка.

Предмет исследования – влияние использования ИКТ на формирование основных предпосылок развития ребенка (ориентация на взрослого, положительная самооценка, чувство безопасности).

Методы исследования
Methods

Методы исследования включали *опрос, анкетирование, беседу, наблюдение* по определенным показателям, *методики* определения самооценки детей и *статистическую обработку данных*.

На *первом этапе* были определены возрастные рамки использования мультимедийных устройств детьми дошкольного и младшего школьного возраста. Для этого проводился опрос родителей и детей старшего дошкольного и младшего школьного возраста, а также учителей начальной школы, где учились дети. Определялся также контент, используемый детьми, и устройства, с которыми они любят работать.

На втором этапе проводились наблюдения за детьми в детском саду и школе по выбранным критериям и при помощи отдельных методик определялась самооценка детей. Изучались особенности личности детей с зависимостью от гаджетов и пути педагогической коррекции их развития.

На третьем этапе изучались особенности детей с зависимостью от гаджетов, а также наличие этой зависимости в дальнейшем. Для этого проводили анкетирование 84 человек 15-16 лет и 21-34 лет (две группы по 42 человека). Кроме этого, были использованы данные исследования проблемных детей, проведенные в 2004 году Рижским центром профилактики наркомании, в поле зрения которого попали и дети с

компьютерной зависимостью (Rīgas narkomānijas profilakses centrs, 2004, 12.-14. L.).

Исследование проводили преподаватели и студенты педагогических специальностей с 2017 по март 2020 года, т. е. до начала карантинных мероприятий. В данной статье представлены результаты первого и второго этапа исследования. База исследования: 112 детей дошкольного и младшего школьного возраста и 127 взрослых.

***Ключевые слова**: педагогический процесс, развитие, медиасреда, самооценка, компьютерная зависимость*

Сокращения: **ИКТ** – информационные и коммуникационные технологии

Постановка проблемы
Definition of Problem

Пути развития мультимедийной составляющей процесса воспитания и обучения детей дошкольного и младшего школьного возраста давно и хорошо освещены в документах и изданиях ЮНЕСКО (Kalash, 2013; Davidsson, Thoresson, 2017; Informacionnyje i kommunikacionnyje tehnologiji v obrazovaniji: monografija, 2013). Это в первую очередь определение прогнозов использования ИК технологий в учебном процессе. По мнению авторов, процесс интеграции цифровых технологий является необратимым, безусловно положительным и позволяющим поднять уровень образования. Необратимость указанного процесса обусловливается все более ранним началом использования детьми Интернета. Так в Швеции уже годовалые дети пользуются им несколько раз в неделю.

Выработаны принципы и ценности, которыми должны руководствоваться работники системы просвещения при цифровизации учебного процесса. Это, во-первых, принцип соответствия уровню развития, (Siraj-Blatchford, I. & Siraj-Blatchford, J., 2006). Указанные авторы при уточнении целей, содержания и методики обучения призывают действовать осторожно, избегая чрезмерной конкретизации целей, навыков и знаний, которыми предстоит овладеть детям. Это способствует зарождению возникающей ИКТ компетентности, подобно тому, как возникает речевая и математическая грамотность. Подобную идею о наличии у детей допонятийных, неявных, скрытых знаний при обучении в условиях новизны, сложности, неопределенности высказал еще в 70-х годах XX века Н.Н.Поддъяков (Poddiakov, 2015). Принципы многогранности, увлекательности, продуктивности и персонализации с тем, чтобы дети овладели определенными навыками, одними из первых предложили (Moore & Anderson, 1969).

Изучены на примере многих стран пути изменения в образовании: разработка нового содержания и форм обучения с применением мультимедиа технологий, стратегии интеграции новых ИТК в дошкольное и начальное образование, уточнение целей, содержания и методик обучения (Kalash, 2013; Informacionnyje i kommunikacionnyje tehnologiji …, 2013).

Определены направления и ценность внедрения новых форм обучения в такие области образования как инклюзивное, образование языковых и национальных групп, отдаленных групп и т п. (Kalash, 2013; Atkins, Brown, Hammond, 2007). Сейчас это особенно актуально в связи с пандемией, когда многие миллионы детей и учителей вынуждены работать удаленно.

Период активной работы по разработки принципов и содержания внедрения мультимедийных средств в процесс образования совпал с запросом на новую концепцию образования, которую представили такие практики и популяризаторы как К.Робинсон (Robinson, 2015) и Д.Сигел (Siegel, 2010). В своих многочисленных трудах авторы сформулировали проблемы образования: отчуждение ученика или работника от того, чему его учат, бессмысленность для обучающегося содержания образования, игнорирование личности обучаемого, бесталанная и безрадостная жизнь не реализовавшего себя человека. Выход виделся в персонализации образования, развитии творческого потенциала, воплощении своего истинного предназначения и таланта.

Авторы ратовали за упразднение существующей системы образования, изменение методов обучения, использование новых технологий. Отстаивался компетентностный подход к обучению, который нынче начал осуществляться в Латвии в системе дошкольного образования. Однако такой подход, с учеником, который учится в своем темпе, сам определяет предмет внимания, самостоятельно выбирает задания (т. наз. самообучение), означает большую зависимость результатов обучения от способностей ребенка и, по сути, ликвидацию общей для всех системы образования, разделения ее на элитную и ту, где ребенку приятно чему-то поучиться без понуждения и домашних заданий.

Запрос на преобразование системы воспитания и обучения детей имел практические последствия: 1) переформатирование содержания образования и способа обучения учащегося и 2) попытки развития способностей учащегося до такой степени, чтобы он мог ориентироваться и усваивать все возрастающий объем новой информации. В некоторой степени это разные подходы. В первом все определяется эмоциональным благополучием и мотивацией ребенка с учетом его личностных и индивидуальных способностей, а во второй – попыткой развить способности ребенка до такого уровня, чтобы он все-таки воспринимал любое содержание, предложенное ему в соответствующей форме. Первый

подход, кроме всего прочего, означает значительное снижение уровня навыков и в целом уровня образования.

Идея о том, что ребенок лучше определяет, чему и как его учить, повлияла и на оценку умения пользоваться ИКТ. Если в учебном процессе предлагалось уволить всех прежних учителей (Robinson, 2007), то здесь появилась «теория» о т.наз. цифровых аборигенах, которая была озвучена даже в документах ЮНЕСКО.

Материалы, обобщенные в отчетах и экспертных оценках ЮНЕСКО, отражают картину формирования нового человека. Так как близко 80% информации, получаемой детьми к 11 годам, воспринимается ими вне класса из источников не имеющих бумажных носителей, то их можно назвать аборигенами цифрового общества.

У них, якобы, существуют другие способы обработки информации, измененные алгоритмы мышления, они мгновенно откликаются на изменения, свободны и имеют доступ к информации, также понимают ценность цифровой информации, имеют иной тип концентрации внимания, интуитивно владеют информатикой и оборудованием, у них новый взгляд на время и пространство. Скорость и мобильность – черты этого нового поколения Y (Informacionnyje i kommunikacionnyje tehnologiji …2013).

Такие дети якобы выполняют несколько задач одновременно, предпочитают визуальные и графические источники обучения, а текст воспринимают с трудом. Им присуще сетевое мышление, коллективный разум, наподобие муравьев в муравейнике, и отрицание иерархии общества.

По мнению отдельных экспертов, дети данного поколения достигли уровня развития, который превосходит уровень их учителей, а сегодняшняя школа не подходит для их образования.

Кроме того, у детей Y существует непреодолимая пропасть с поколением их родителей, которые являются цифровыми иммигрантами, стоя на более низкой ступени развития в современном цифровом обществе. Учитель больше не владеет монополией на донесение знаний. Знания становятся экономическим благом, которое можно купить, продать, хранить, обменивать и т.д, а цифровое поколение составит будущих граждан мира, сформировав целостное глобальное сознание. Теория принадлежит М. Пренски, писателю и популяризатору науки, и, по нашему мнению, является попыткой образно охарактеризовать представителей нового поколения, но никак не научной концепцией (Prensky, 2001).

К тому же данная теория содержит ряд положений, с которыми никак нельзя согласиться, и которые очень напоминают коммерческий проект о «детях индиго». Это необходимость упразднить все прежние институты общества, там здравоохранения, здесь образования, прежние ценности и принципы взрослого общества, межпоколенную иерархию, роль родителей

в развитии детей и т.п. Ценность человека определяется по способности действовать в цифровой среде, притом, как соподчиненный элемент.

Большие успехи есть в изучении когнитивного развития детей цифровой эпохи. Так Г.У. Солдатова и О.И. Теславская (Soldatova, Teslavskaya, 2019) определили различия в когнитивных функциях детей с разной пользовательской активностью – аспекты памяти, внимания, вербальных функций дошкольников и младших школьников, связь пользовательской активности с высокими оценками по математике и чтению.

Были выявлены тенденции формирования когнитивных функций, уровень исполнения нейропсихологических тестов. Дети дошкольного возраста с низкой онлайн–активностью лучше справлялись с целым рядом тестов, чем дети, которые много времени проводили за гаджетами.

У старших детей результаты менялись. Автор придерживается мнения, что существует некая золотая середина в занятиях мультимедиа, которая положительно влияет на развитие восприятия и переработки информации, умения планировать и осуществлять деятельность. В отдельные периоды отмечается положительное влияние цифровых технологий на распознавание образов, развитие зрительной памяти, метакогнитивные функции планирования, выбора стратегии, поиска и оценки информации.

Опираясь на данные психоневрологических и психолигвистических исследований Т.В. Черниговская разработала замечательную программу внедрения IT в образовательный процесс, изучала особенности восприятия информации, внимания, памяти, умения определить проблему исследования при работе с одаренными детьми в рамках проекта «Сириус» (Chernigovskaya, 2015; Chernigovskaya, 2017). Обучение на стыке знаемого и незнаемого, при синтезе нескольких наук и является тем самым новым подходом в образовании.

Однако, несмотря на важность темы, прямых доказательств влияния новых условий обучения и воспитания на развитие ребенка немного. Так, в исследованиях Ю.В. Батеновой (Batenova, 2017) определена связь развития коммуникативных навыков дошкольника и уровня его общения с взрослым и сверстниками. В условиях снижения контактов современные дети ориентируются прежде всего на свои собственные коммуникативные потребности, усиливается прагматизм и социальная обусловленность тех или иных действий, увеличивается аналитическая составляющая детской коммуникации, а также отсутствуют навыки успешного разрешения конфликтов. Автор предлагает восполнить недостаток опыта общения детей при помощи игровых технологий, организуя более тесное взаимодействие между ними.

В другом исследовании в рамках психологии обучения автору удалось повысить показатели уровня интеллектуального развития детей, используя на занятиях ИК технологии (Batenova, 2017a).

В работе О.А. Комаровой (Komarova, 2016) сравнивались черты современного дошкольника и детей прошлого века. Дети прошлого века застенчивы, скромны, незащищены, самостоятельны, ответственны, отзывчивы, способные на взаимовыручку и взаимоподдержку в коллективе, признающие авторитет взрослого. Современные дети обладают способностью делать недетские умозаключения, высокоинформированы, умеют размышлять над смыслом своих действий и действий партнера, свободны от условностей и смелые, с высокой познавательной активностью, и интересом к различным сторонам действительности.

Однако у них проявляется повышенная тревожность, агрессивность, драчливость, низкий уровень концентрации внимания, рассеянность, неумение себя обслужить даже в старшем возрасте, зависимость от компьютера и гаджетов, концентрация на собственных интересах и желаниях, сниженная творческая активность, плохое физическое развитие, отставание в речевом развитии, размытость ценностных ориентиров и т. п.

Эти характеристики были получены при опросе педагогов дошкольных учреждений и, значит, отражают только мнение о детях и в какой-то мере трудности педагогов при работе с ними.

Л.Ф. Обухова и И.А. Корепанова (Obuchova, 2010) выяснили, что по уровню развития общения с взрослым, современные дети в целом несколько отстают от возрастной нормы, а у 5-летних детей преобладает ситуативно-деловая форма общения, что соответствует навыкам 3-4 летних детей.

Исходя из этих данных, попытаемся ответить на вопрос о влиянии привычек детей по использованию ИКТ на формирование основных предпосылок развития ребенка (ориентации на взрослого, положительно самооценки, чувства безопасности).

Изложение материала
Results

На первом этапе исследования были выявлены навыки использования мультимедиа устройств, возрастные рамки их использования, время, проводимое за гаджетами, а также родительский контроль контента и времени. При опросе родители отвечали на вопросы о возрасте, в котором ребенок научился работать с гаджетами, об уровне навыков ребенка, о времени, посвящаемом ИКТ, и о контроле родителей за занятиями детей. Уровень навыков ребенка оценивался по параметрам Г.У. Солдатовой (Soldatova, 2018): умения использовать устройства и степень уверенности

владения ими; основные способы использования, предпочитаемые ресурсы; обучение использованию устройств и помощь родителей; умение детей пользоваться интернетом).

Исследование показало, что дети дошкольного возраста начинают использовать средства ИК технологий с раннего возраста. Во многих странах этот показатель зависит от степени доступности ИК устройств.

Таблица 1. ***Уровень использования устройств дошкольниками и младшими школьниками (Латвия)***
Table 1 ***The Rate of Use of Devices by School and Preschool Children (Latvia)***

Количество детей, использующие ИКТ устройства (%)							
2 года	3 года	4 года	5 лет	6 лет	7 лет	8 лет	9 лет
30%	34%	35%	63%	67%	78%	98%	100%

В беседах с родителями выяснилось, что дети очень рано проявляют интерес к гаджетам, т. к. те яркие, изменчивые, легкие в употреблении, а изображением легко управлять. Кроме того, гаджеты превратились в своеобразную няньку. Занятость родителей вынуждает их прибегать к устройству, как к средству успокоения ребенка, возможности заняться своими делами, отдохнуть. Сопоставимые результаты обнародованы и в соседней стране.

Таблица 2. **Уровень использования устройств дошкольниками и младшими школьниками (Швеция) (*Davidsson och Thoresson, 2017)***
Table 2 ***The Rate of Use of Devices by School and Preschool Children (Sveden)***

Количество детей, использующие ИКТ устройства (%)							
2 года	3 года	4 года	5 лет	6 лет	7 лет	8 лет	9 лет
49%	56%	49%	61%	67%	75%	67%	81%

Вероятно меньшее количество шведских детей, использующих ИКТ, можно объяснить иной моделью образования в начальной школе: короткий учебный день, пребывание на природе, минимальное количество классических уроков.

Почти все опрашиваемые по поводу обучения навыкам использования планшета или смартфона утверждали, что не учили совсем уж маленьких

детей. Так, рассказали о 2-летнем ребенке, который в отсутствие взрослых взял телефон отца и попытался найти любимую игру. Не найдя, он вошел в интернет и, видимо, попытался скачать игру, но поскольку объем игры был большим, высветилась надпись с предложением удалить некоторые приложения, что он и сделал. Опустошив телефон отца и получив игру, он принялся играть.

При этом ребенок не разговаривал до 3 лет 2 месяцев, произнося только некоторые слова и короткие фразы, у него был высокий уровень тревожности, агрессивности и при переходе в школу начались проблемы с поведением и учебой.

Не приходится думать о каких-то больших способностях младенца. Надо полагать, алгоритм предложений на экране высвечивает предпочтительное действие, на которое и реагирует пользователь, в данном случае маленький мальчик.

Наблюдение за этим мальчиком, в 5 лет пользователем интернета и социальных сетей, знающим обо всех новых приложениях устройства, т. е. формально успешным в деятельности, с низкой самооценкой и с признаками зависимости довольно показательно.

Беседы с самими детьми подтвердили, что в 6-7 лет почти половина из них а) считают, что научились сами (26%) и б) что они всегда это умели (23%).

Таблица 3. ***Время, проводимое за компьютером и просмотром ТВ в день (дети 6-7 лет)*** *(Mazure, 2019)*
Table 3 ***The Time Spent for TV Watching and Computer Using a Day (by 6-7 year old children)*** *(Mazure, 2019)*

	Без ограничений	5 часов	4 часа	3 часа	2 часа	1 час	Не использ.	Иногда
Компьютер	0%	18,5%	0%	32%	14%	22,7%	9,1%	0%
ТВ	4,5%	27,3%	9,1%	18,2%	31,8%	4,5%	4,5%	4,5%

Нельзя согласиться, что речь идет о каком-то особом типе мышления или способностей. Скорее ребенок выступает как пользователь, подобно пользованию электричеством взрослым человеком без технического образования.

По результатам опроса мы определили время, которое дети проводят, используя или в фоновом режиме работы включая устройства мультимедиа.

Принимая во внимание, что дети посещали детский сад, эти цифры очень значительны – от 1 до 5 часов в день.

Считается, что ИКТ не влияют на другие виды деятельности ребенка, но глядя на количество времени, посвященное мультимедиа устройствам, понятно, что дети очень заняты. При формулировке вопроса не говорилось в какие дни, в будень или выходной, предлагалось оценить время пользования ИКТ. Возможно, эта неточность повлияла на ответы родителей, поскольку больше времени с ребенком они проводят именно в выходной день и слова «проводит в день...» оценили по выходному дню. Иначе трудно поверить, что, возвратившись из сада в 17 часов, ребенок еще 5 часов проводит у телевизора.

Ответы позволили увидеть, что довольно большая часть детей дошкольного возраста (9,1%) вовсе не использует компьютер, телефон или планшет. Родители считали, что ребенку полезнее побыть на природе, поиграть с братьями и сестрами, помочь в хозяйстве.

Исследование подтвердило возрастающую роль медиа во всех сферах жизни. Индивид становится потребителем медиапродуктов. Таким потребителем является и ребенок дошкольного и младшего школьного возраста. Дошкольник ежедневно суммарно за компьютером и просмотром телевидения проводит от 1 до 9 часов.

В большинстве семей TV включается и работает фоном целый день, так что вся деятельность семьи происходит при включенном телевизоре. Поэтому время, затраченное на просмотр телевизора, в среднем больше, чем на занятия у компьютера (0.9 против 0.55 часа). При этом половина детей ежедневно проводит у телевизора 3-5 часов.

Ученики начальной школы отдают предпочтение компьютеру и другим устройствам. Доля ТВ просмотров падает с 93% до 58%.

Если родители дошкольников считают, что они контролируют ситуацию с использованием детьми мультимедийных устройств (93%), то уже 80% родителей учеников 2 класса считают, что существует угроза возникновения у ребенка зависимости.

Следующим шагом в исследовании было определение уровня самооценки детей дошкольного возраста. Выявлялось отношение дошкольника к своему имени (как тебя зовут – нравится ли тебе твое имя), отношение к себе (ты хороший?), определение своего статуса с помощью упрощенной методики Дембо-Рубинштейн, определение физического тонуса, смелости, желания победить (методика «Динамическая проба»). Высокая самооценка выявлена у 68,2% детей, средняя у 22,7%, а низкая у 9,1%. Поскольку структура самооценки у младших школьников усложняется, данные методики не отражали модальности самооценки.

Формально опрос выявил 73,8 % детей с высокой, 17,1% средний и 9,1% с низкой самооценкой.

Не подтвердилось наше предположение, что у детей, которые уделяют компьютеру много времени, низкая самооценка. Самооценка в большей степени формируется при тесной связи с близким взрослым, полной семье и способностью родителей посвящать время детям. Эта позиция не поменялась и в цифровом обществе. При этом родители, которые сами связаны с ИКТ по работе, более требовательны к детям и более осознанно выбирают содержание мультимедиа.

У некоторых детей в саду и в начальной школе стал заметен целый ряд особенностей, которые присущи зависимым людям. Это изменчивое настроение, легкая возбудимость, нервозность, вспышки гнева, а также постоянное стремление скорее попасть к компьютеру или телефону, интересы, связанные только с проблемами ИКТ и равнодушие к внешнему виду и необходимостью гигиены (Buša, 2017).

В начальной школе таких детей оказалось 29%. В детском саду выраженной зависимости не наблюдалось, однако эмоциональная нестабильность фиксировалась довольно отчетливо у 21,7% детей. Следует проверить предположение, что зависимость от ИК устройств начинает формироваться именно в дошкольном возрасте.

У всех детей с зависимостью самооценка оказалась низкой.

Обсуждение результатов
Analysis of the Results

Качественный анализ полученных данных позволяет заключить, что процесс развития ребенка, его предпосылки остались прежними и в настоящее время, когда дети используют мультимедийные устройства.

Это, в первую очередь, нахождение контакта с близким взрослым. Как пишут некоторые авторы (Batenova, 2017), уровеня выделенных М. Лисиной форм общения нынешние дети не достигают. В настоящее время об этом трудно судить. Возможно следует говорить об *ориентации на взрослого*, как первого шага в построении общения, восприятия его как исключительного явления, субъекта деятельности.

Если же у ребенка нет такого специфического опыта постижения человека, если тот является фоном, предметом наряду с другими, то возникают трудности и при вхождении в группу сверстников, т. к. навыки общения с взрослым первичны.

Вероятно, нельзя согласиться и с утверждением о социализирующем воздействии гаджетов, наделяя их некоей функцией субъектности (Soldatova, Teslavskaya, 2019). Дети любят живое общение, им нравится

играть со сверстниками, а не по телефону, а как показал опыт пандемии, детям нравится учиться в классе, среди сверстников. Возможно, это касается только детей, посещающих детский сад.

Как показало наше исследование, самооценка, особенно в дошкольном возрасте, является наиболее устойчивым элементом и одновременно фактором развития личности ребенка. Даже дети, у которых не сложились отношения с близкими взрослыми, пытаются защитить свое достоинство. Не было обнаружено связи частоты и интенсивности использования ИКТ и самооценки, кроме у детей с признаками зависимости.

Чувство защищенности ребенка как предпосылки развития личности, зависит от характера отношений с близкими взрослыми и в первую очередь от иерархичности этих отношений. Дети, которых не сумели «приручить» победить любовью, более одиноки. По нашим данным в возрасте 5 – 5,5 лет у них наблюдается период страхов, агрессии.

Выводы
Conclusions

Исследование подтвердило возрастающую роль медиа во всех сферах жизни. Индивид становится потребителем медиапродуктов. Таким потребителем является и ребенок дошкольного и младшего школьного возраста. Дошкольник ежедневно суммарно за компьютером и просмотром телевидения проводит от 1 до 9 часов.

В большинстве семей TV включается и работает фоном целый день, так что вся деятельность семьи происходит при включенном телевизоре. Поэтому время, затраченное на просмотр телевизора, в среднем больше, чем на занятия у компьютера (0.9 против 0.55 часа). При этом половина детей ежедневно проводит у телевизора 3-5 часов.

Ученики начальной школы отдают предпочтение компьютеру и другим устройствам. Доля ТВ просмотров падает с 93% до 58%. Однако появляется проблема компьютерной зависимости. Так 29% младших школьников испытывают гнев, злость, негативные эмоции, когда им запрещают работать на компьютере.

Если родители дошкольников считают, что они контролируют ситуацию с использованием детьми мультимедийных устройств (93%), то уже 80% родителей учеников 2 класса считают, что существует угроза возникновения у ребенка зависимости. Можно сделать вывод, что зависимость начинает формироваться в семье, но с ее последствиями сталкиваются в основном учителя.

Попытки предотвратить негативное влияние мультимедиа на развитие ребенка предпринимаются в настоящее время только учителями, хотя решение проблемы невозможно без взаимодействия с семьей.

По нашему мнению, проблемы современных детей дошкольного и младшего школьного возраста связаны с отсутствием модели общения с близким взрослым, который и является проводником в мир. Отсутствует эмоциональный компонент, сотрудничество, сотворчество, любовь. Ребенок пытается найти это в виртуальной среде. Но вхождение в социум у такого ребенка затруднено, т. к. общение с взрослым первично, а со сверстниками (вживую, через компьютер ли или другое устройство) вторичны.

Если же взаимоотношения с взрослыми складываются, то, как показал наш опрос, наблюдение и изучение самооценки, дети вполне успешно развиваются, дружат, радуются и при наличии средств ИКТ.

Важно сохранять и приумножать наработки педагогов по разумному и целенаправленному развитию мультимедийных умений, чтобы воспользоваться преимуществами, которые они предоставляют.

Summary

The study has confirmed the growing role of media in all spheres of life. An individual becomes a consumer of media products. A child of preschool and primary school age is also such a consumer. A preschooler spends from 1 to 9 hours a day using the computer and watching television. In most families the TV is turned on and runs in the background all day long, so all family activities take place with the TV on. Therefore, the time spent watching TV is, on average, more than the time spent using the computer (0.9 vs/0.55 hours). At the same time, half of the children spend 3-5 hours watching TV every day.

Primary school pupils prefer computers and other devices. The share of TV views decreases from 93% to 58%. However, the problem of computer addiction appears. Thus, 29% of junior schoolchildren experience anger and negative emotions when they are forbidden to use a computer. If parents of preschoolers believe that they are in control of the situation with the use of multimedia devices by children (93%), then already 80% of parents of 2nd grade pupils believe that there is a threat of addiction in a child. It can be concluded that addiction begins to form in the family, but mainly teachers face its consequences. Attempts to prevent the negative impact of multimedia on child development are currently being undertaken only by teachers, although the solution to the problem is impossible without interaction with the family. It is important to preserve and enhance advances of teachers in the field of intelligent and targeted development of multimedia skills to take advantage of the benefits they provide.

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ПОМОГАЮЩИЙ СТИЛЬ В ДЕТСКО–РОДИТЕЛЬСКИХ ОТНОШЕНИЯХ: БАРЬЕРЫ И СТРАТЕГИИ ФОРМИРОВАНИЯ

Helping Style in the Parent–Child Relations: Barriers and Formation Strategies

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Abstract. *The article analyzes the problem of child–parent relations as an important and in modern conditions the crisis component of a holistic family system. The authors consider various approaches to typifying the styles of family education of preschool children, specify the characteristic features of the relations between parents and children. The problem of child–parent relations in the modern family, according to the authors, finds its solution in educating the family according to the strategy of the "understanding parent", laid down in the concept of the helping style of the interaction between the child and parents.*
The article describes an empirical study of the features of interaction between a family and a preschool child: the diagnostic tools are characterized, the diagnostic procedure is described, and the results are analyzed. Based on the results of the experiment, the authors conclude that it is necessary to develop and implement the program «On the way to understanding parenting»: mission, content, forms of educational work with the family.
The results of the study can be used as a basis for designing the content of pedagogical work on the organization of cooperation between a kindergarten and a family of pupils.
Keywords: *child–parent relations, family, helping style.*

Введение
Introduction

Трансформация современного общества непосредственным образом влияет на атмосферу в семье: взаимопонимание членов семьи, эмоциональную сопричастность друг к другу, психологическое благополучие, – все то, что необходимо для благоприятного социального развития личности ребенка.

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Жизненный путь человека, по мнению многих представителей психолого–педагогического сообщества (Detsko-roditel'skoe vzaimodejstvie i razvitie rebenka rannego..., 2019; Lisina, 2009; Fromm, 2000; DeMause, 1982), во многом предопределяется условиями и особенностями взаимодействия детей и родителей.

Как показывают научные источники (Arnautova, 2018; Vasil'eva, 2015), статистика и практический опыт авторов, последнее десятилетие наблюдается кризис детско–родительских отношений: это обусловлено не только появлением деструктивных, неполных семей вследствие социально–экономических причин (разводы, большая занятость родителей, низкий уровень материальной обеспеченности семьи, изменение семейных ролей и функций), но и низким качеством готовности к исполнению супружеских ролей, инфантильностью супругов: легкомыслием в вопросах создания семьи, снижением ценности семейного очага и родительской заботы.

По мнению Ю.Б.Гиппенрейтер (Gippenrejter, 2014), Л.В.Петрановской (Petranovskaja, 2015), внутрисемейные отношения все чаще характеризуются как малосодержательные, непродолжительные, дефицитарные с точки зрения взаимного внимания, поддержки, безоценочного принятия и совместного досуга. Л.Б.Шнейдер (Shnejder, 2013) отмечает, что трудности ребенка (чувства страха, низкая самооценка, замкнутость) являются проекцией неблагополучия отношений в семье.

Выявленные проблемы позволили обозначить цель исследования – изучение теоретико–прикладных аспектов проектирования программы просвещения современной семьи согласно стратегии «понимающего родителя», заложенной в концепции помогающего стиля взаимодействия ребенка и родителей (обоснование преимуществ помогающего стиля в детско–родительских отношениях, разработка базового контента программ, в том числе на основе эмпирических данных, обсуждение особенностей ее реализации).

Методологическим основанием исследования являлись идеи антропологического, аксиологического и компетентностного подходов (Purgina, 2015). В процессе исследования был использован комплекс методов: анализ и обобщение научных взглядов на проблему детско–родительских отношений, анкетирование родителей с последующим контент–анализом ответов, обобщение результатов работы.

Особенности взаимоотношений родителей и детей: теоретические основы проблемы исследования
Features of the Relationship between Parents and Children: the Theoretical Basis of the Research Problem

Выбор семьей как целостной системой определенной воспитательной стратегии влияет как на процесс, так и результат детско–родительских

отношений (важной подсистемы семьи); он имеет свои особенности и формируется под влиянием многочисленных факторов.

Существенно, что Е.Н.Токарева, Л.С.Рычкова (Tokareva & Rychkova, 2011) одним из таких факторов называют личность самого родителя (–ей), его определенную установку на выбор стратегии родительского отношения, в ситуации, когда родитель «оказывается лицом к лицу с ребёнком» (DeMause, 1982). Поэтому детско–родительские отношения преломляются: через систему разнообразных чувств к ребёнку, механизмов поведения родителя по отношению к своему ребенку (принятие или отвержение, естественное или подчеркнутое дистанцирование, формы контроля), аттракцию его личностно–поведенческих особенностей (Varga & Stolin, 2017); они ваимообусловлены мотивами рождения ребенка и его воспитания; воспитательными установками; образами родительства и типами семейного воспитания (Ershova, 2018).

Данная характеристика не была бы полной без наличия важной ее составляющей – эмоциональной, когнитивной и поведенческой взаимообусловленности и взаимозависимости между родителем и ребенком (Bak & Forvard, 1989; Rybakova, 2017).

А.С.Спиваковская (Spivakovskaja,1986) категорию «родительского отношения» соотносит с содержанием «родительской любви», поскольку именно чувственно-эмоциональный компонент, по мнению ученого, позволяет выстраивать «принимающие» (симпатия-антипатия, близость-дальность) и «понимающие» (уважение-презрение) отношения. Причем принимающие детско-родительские отношения описаны через стремление (и готовность) простить, обеспечить отдых и покой, признать право любого члена семьи на слабости и ошибки (Spivakovskaja, 2000). Принятие отрицает осуждение, гнев и сравнение с неким идеалом. Принятие не приемлет родительские директивы – «скрытые послания» ребенку («не будь самим собой – делай, как я скажу», «без меня ты не справишься» и так далее). Данная точка зрения лежит в основе большинства исследований рассматриваемой проблемы (Golovej, Savenysheva, Vasilenko & Jengel'gardt, 2014).

Как указывают в своих исследованиях Е.Н. Васильева (Vasil'eva, 2015) и И.Н. Кириленко и С.Б. Овсяник (Kirilenko && Ovsjanik, 2018), по мнению представителей европейской и американской психологических школ (А.Адлера, Д.Баумрид, Д.Боулби, Е.Е.Маккоби, М.Эйнсворт, Э.Эриксона и других), детско–родительские отношения, в особенности матери (Vinnikott, 1998), влияют на ощущение ребенком чувства защищенности, безопасности, «доверия к миру», помогают в преодолении комплекса неполноценности, формируют «зрелое» принятие решений ребенком по

образцу поведения родителя. Зародившаяся в рамках теории психанализа концепция привязанности с позиции изучения «отношения к себе и близкому человеку» расширилась до анализа взглядов в данном контексте на социальную адаптацию ребенка и стратегию его поведения с родителями (Merser, 2019; Petranovskaja, 2015). Представляет интерес типология реакций в детско–родительских отношениях Lloyd DeMause (DeMause, 1982): от проецирования своего эмоционального состояния через нереализованную потребность в любви, заботе, понимании в прародительской семье до понимания состояния ребенка на всех уровнях: эмоциональном, когнитивном и поведенческом (Ovcharova, 2006).

В научно–методической литературе представлено множество подходов к типизации стилей семейных взаимоотношений детей и родителей, на основе которых выделили следующие стили (типы, критерии) детско–родительских отношений:

- диктат, опека, конфронтация, мирное сосуществование, сотрудничество (Petrovskij, 1981);
- принимающе–авторитарное родительское отношение, «маленький неудачник», симбиотическое, симбиотически–авторитарное родительское отношение (Varga & Stolin, 2017);
- на основе «принимающих и понимающих отношений» – действенная и отстраненная любовь, действенная жалость, снисходительное отстранение, отвержение, презрение, преследование, отказ (Spivakovskaja, 1986);
- забота и опека, руководство поведением ребенка и тактика запретов (Domaneckaja, 2013);
- на основе исторической эволюции детско–родительских отношений (в трактовке авторов) – устрашающий, безучастный, формирующий, эмпатийно–контролирующий, социализирующий, помогающий (DeMause, 1982).

Таким образом, анализ сущности всех представленных выше подходов к типизации стилей семейных взаимоотношений детей и родителей позволяет выявить общие тенденции в понимании стилей–антагонистов и подчеркнуть необходимость принятия современной семьей стратегии помогающих детско—родительских отношений, которые включают: понимание ребенком своих потребностей; недопущение физического и иного насилия над ребенком при осознанном принятии им запретов со стороны родителей; активную коммуникацию детей и родителей (основной метод – беседа); совместный поиск способов преодоления конфликтных ситуаций, причем родитель, по мнению А.Бандуры и Р.Уолтерса (Bandura & Uolters, 2000), должен быть примером для подражания, образцом лучших

человеческих качеств и доверительных отношений. Глобальным результатом помогающего стиля является социальная уверенность ребенка, то есть умение самостоятельно решать жизненные задачи.

Результаты изучения программ сопровождения семьи с целью решения проблемы детско–родительских отношений (Arnautova, 2018; Bykova, 2017; Derkunskaja, 2018; Polivanova, Vopilova & Nisskaja, 2015; Shnejder, 2013) позволили определить авторскую позицию по данной проблеме: просвещение семьи согласно стратегии «понимающего родителя», заложенная в концепции помогающего стиля взаимодействия ребенка и родителей, должно включать 3 блока: «Ценности семьи. Любовь» (представления о воспитании ребенка с учетом жизнеобеспечения семьи, семейных традиций), «Общение в семье. Диалог» (коммуникация, досуг семьи, активность членов семьи, родительская самоэффективность), «Границы семьи. Взаимоуважение» (правила, регламентирующие взаимодействие членов семьи между собой и с социумом, самопознание и самообразование, связь поколений). Данные блоки вошли в контент программы «На пути к понимающему родительству», миссия которой была персонифицированно проанализировать родительской опыт (личный и других семей) и выработать механизмы предупреждения и преодоления трудностей и барьеров при построении детско–родительских отношений.

Общие принципы программы: 1. Принцип обмена педагогическими инициативами (а не «всезнайство» конкретного родителя). 2. Принцип экспертной оценки (оптимальность решений проверяется через опыт всех участников). 3. Принцип формирования родительской компетентности (расширение поведенческого репертуара взаимодействия с ребенком).

Формы осуществления просветительской работы с семьей в рамках заявленной программы разнообразны – от индивидуальных и групповых консультаций, детско–родительских гостиных до разбора кейс–ситуаций, ролевых игр и групповых тренингов.

Программа реализуется в 4 этапа: 1. Диагностика. Формирование групп на добровольной основе. 2. Составление перспективного плана работы (на основе результатов диагностики и запроса родителей). 3. Организация встреч с группой (на основе графика и тем плана работы). 4. Рефлексия (выявление эффективности реализации программы).

Важно подчеркнуть тот факт, что для семьи, воспитывающей ребенка–дошкольника, несмотря на учет уникальности и неповторимости каждого субъекта детско–родительских отношений, «лейтмотивом» в процессе реализации заявленной программы является работа именно с родительским самоменеджментом (уверенностью, стрессоустойчивостью, обогащением опыта использования разнообразных педагогических приемов) в соответствии с эмоциональной, когнитивной и поведенческой

составляющими детско–родительских отношений.

В исследованиях, релевантных в вопросах отношений родителей и ребенка дошкольного возраста (Vasil'eva, 2015), указывают на: 1) приоритетное влияние матери на развитие ребенка; 2) на взаимосвязь принятия ребенка и проявлением у него креативности; 3) на влияние дошкольника на динамику межличностных отношений родителей между собой и ребенком; 4) наибольшую значимость идеала родителя на этапе до–школьного детства; 5) низкий уровень развития когнитивного компонента эмоциональной сферы ребенка и высокий уровень развития экспрессивного компонента, связанного с преобладанием у матери установки на «зависимость–равенство»; 6) связь сформированности нравственных характеристик детей от особенностей нравственной сферы их родителей.

Стоит отметить, что для современных родителей барьерами в принятии и реализации стратегии помогающих детско–родительских отношений являются проблемы, связанные с гигиеной тела ребенка, его психологического развития, реакции на детские поступки, ценностные ориентиры в воспитании социально значимых качеств у ребенка («Учить давать сдачу обидчику или нет?»), а также его академическая успеваемость.

Эмпирическое исследование
Empirical Research

Реализации программы «На пути к понимающему родительству» предшествовало эмпирическое исследование с помощью метода анкетирования родителей, в процессе которого выявлялись особенности взаимодействия семьи и ребенка дошкольного возраста: актуальные для семьи вопросы по оптимальной организации детско–родительских отношений; рефлексия потребностей и интересов своего ребенка.

Содержание и интерпретация ответов респондентов являлось базовым содержанием заявленной выше программы.

В исследовании приняли участие 120 родителей, проживающих в городе Пскове и воспитывающих детей дошкольного возраста. Анкетирование семей проходило на основе содержания опросников диагностической программы, разработанной авторским коллективом ученых (Problemy doshkol'nogo detstva v polikul'turnom prostranstve izmenjajushhejsja Rossii. Monografija. V 2–h ch. Nauch. red. A. G. Gogoberidze, 2010). Содержание анкет обрабатывалось с помощью контент–анализа, результаты которого представлены в таблице 1.

Таблица 1. ***Процентное распределение ответов родителей на вопросы анкеты***
Table 1 ***The Percentage Distribution of Answers of Parents to the Survey Questions***

N п/п	Вопросы	Варианты ответов (ключи)	Ответы (%)
1.	**Что бы Вам хотелось узнать о своем ребенке?**	Абсолютно все	38
		Его психологические особенности и потенциальные способности	20
		Волнения и тревоги ребенка, его переживания	16,6
		Как ребенок воспринимает настоящую жизнь и что думает о будущем	8,4
2.	**Что труднее всего для Вас как родителя?**	Материальное обеспечение жизни ребенка	3,7
		Быть интересным для ребенка, построение партнерских отношений с ним	38
		Процесс воспитания	41,7
		Процесс подготовки ребенка к обучению в школе	16,6
3.	**Как вы думаете, какие проблемы волнуют Вашего ребенка**	Личного характера (проблемы Я)	16,6
		Общественного, социального характера (Я и другие)	25
		Проблемы познания окружающего мира (Я и Мир)	16,6
		Мне кажется, что пока ничего не волнует всерьез	41,7
4.	**Какие проблемы воспитания ребенка кажутся Вам наиболее важными?**	Проблемы воспитания самостоятельности	8,4
		Проблемы воспитания правильного поведения в обществе, во взаимодействии с другими людьми	38
		Проблемы воспитания личной культуры (приобщение к режиму дня, правильному питанию, воспитание культурно–гигиенических навыков)	38
		Проблемы воспитания интереса к окружающему миру, его познанию	7,2
		Проблемы поощрения и наказания	8,4
5.	**Что доставляет вам наибольшее удовольствие во взаимодействии с ребенком?**	Эмоции, чувства ребенка, разнообразие его проявлений	50
		Инициативность, самостоятельность, настойчивость, активность ребенка	12
		Результаты развития ребенка, изменения, происходящие с ним	38
		Не задумываюсь об этом	0
6.	**Чем Ваш ребенок любит заниматься больше всего?**	Играть	41,7
		Рисовать	3,7
		Петь, танцевать	3,7
		Общаться	0,8
		Учиться (заниматься)	3,7
		Смотреть телевизор	25
		Играть в планшете, телефоне	16,6
		Гулять	2,4
		Другое	2,4

Оригинальные ответы в варианте «другое» и комментарии к ответам фиксировались отдельно.

По результатам анкетирования можно обнаружить ряд тенденций: с одной стороны (вопрос № 1), современных родителей интересует широкий спектр тем, касающихся жизнедеятельности ребенка: от потенциальных способностей до психологического состояния, – при этом большинство респондентов интересует «абсолютно все» (38 %); с другой стороны, родители указали на приоритетные трудности, с которыми сталкиваются в повседневной жизни: помимо организации процесса воспитания, в целом, родителей волнует именно построение партнерских отношений, основанных на взаимном интересе.

Отвечая на вопросы №3 и №4, респонденты в подавляющем большинстве (41,7%) отрицают наличие у ребенка серьезных трудностей по причине их «детскости», при этом со своей стороны родители указали на наличие проблем в сопровождении социализации ребенка («сложно учить его вести себя правильно на людях», «зачастую, она как будто не слышит меня, когда объясняю, как надо общаться») – 38% ответов, – и такое же количество ответов было получено на утверждение о наличии проблем в формировании культурно–гигиенических навыков.

При ответе на вопрос №5 опрос родителей показал, что только 12% респондентов среди вариантов предпочитаемой обратной связи в детско–родительских отношениях указали на инициативность, самостоятельность, активность ребенка. Этот количественный показатель полностью противоречит социально значимым целевым ориентирам современного дошкольного образования и свидетельствует об игнорировании (или незнании) ценности указанных качеств личности ребенка для его целостного развития.

Внешние (эмоциональные) проявления интереса к детско–родительскому взаимодействию доставляют удовольствие 50 % опрошенных, поскольку эти проявления «искренние», «свойственные только детской непосредственности», «понятные всем». Комментарии к данной части ответа на вопрос указывают на готовность родителей принять ребенка со свойственными ему проявлениями – его желаниями, протестом, переживаниями.

При ответе на вопрос №6, большинство родителей (41,7%) подчеркнули предпочитаемость игры другим видам детской деятельности, однако анкетирование в этой части опросника также выявило общую тенденцию «цифровизации» жизни современного ребенка–дошкольника: 25% увлечены просмотром телевизора, а 16,6% детей – игрой в планшете и телефоне. И только один респондент отметил «общение» в чистом виде как тот ресурс, который доставляет ребенку подлинное удовольствие.

Три участника (2,4%) анкетирования дали оригинальные ответы на этот вопрос: «помогать мне по дому», «играть с папой в шашки», «собирать вместе конструктор», – что указывает на многообразие внутрисемейных отношений детей и родителей.

Результаты анкетирования подтвердили актуальность проектирования программы «На пути к понимающему родительству», в содержании которой отражены приоритеты и потенциал развития детско–родительских отношений: в познании целостного мира ребенка (его интересов, проблем, взглядов на будущее, особенностей психофизиологического развития, путей успешной социализации), в поиске механизмов воспитания через принятие, взаимоуважение и доверие, способов преодоления эмоционального отвержения на основе привлекательной для обеих сторон деятельности (игровой, коммуникативной, досуговой).

Заключение
Conclusions

Ретроспектива исследовательского пространства проблемы детско–родительских отношений позволила сделать вывод о признании социализирующей и конструктивной роли родителей в становлении личности ребенка. Успех в проектировании внутрисемейных отношений ученые связывают с самоменеджментом родителей. Именно родительская самоэффективность как цель и результат положена в основу концепции авторской программы «На пути к понимающему родительству».

Идея трехблочного содержания программы и форм ее реализации соответствует запросу субъектов детско–родительских отношений, выявленному на основе проведенного анкетирования.

В целом, современные родители описывают детско–родительские отношения как содержательные и динамичные, однако, как показало анкетирование, нуждающиеся в уточнении «проблемности» в восприятии картины мира ребенком, обогащении знаний о Детстве во всех его аспектах и укреплении позиции компетентного взрослого в понимании, принятии и со–бытийности мира ребенка.

Summary

The child–parent relations have initiated a wide range of psychological and pedagogical research in the world of science. The variety of approaches to typifying the styles of family relationships between children and parents allowed us to identify the common points that indicate the need to adopt the strategy of helping to the child–parent relations in the modern family. This strategy emphasizes the leading role of the adult (parent), who acts in building of

the relationships with the child in accordance with the principles of acceptance, respect, modeling their behavior as a model of the demonstrating the best human qualities and trusting relationships. In accordance with this strategy, parents form parental self–efficacy as the goal and result of the author's program «On the way to understanding parenting».

The program includes three blocks: «The value of the family. Love» (ideas about raising of the child taking into account the life support of the family, family traditions), «Communication in the family. Dialog» (communicative culture, family leisure, family member activity, parental self–efficacy), «Family boundaries. Mutual respect» (rules governing the interaction of the family members with each other and with society, self–knowledge and self–education, communication of generations). General principles of the program: 1. The principle of sharing pedagogical initiatives (and not the «know–it–all» of the particular parent). 2. The principle of expert evaluation (the optimality of solutions is checked through the experience of all participants). 3. The principle of formation of the parental competence (expansion of the behavioral repertoire of interaction with the child). The program is implemented in four stages: 1. Diagnostics. Formation of groups on a voluntary basis. 2. Drawing up the long–term work plan (based on the results of the diagnosis and the request of parents). 3. Organization of meetings with the group (based on the schedule and topics of the work plan). 4. Reflection (identification of the effectiveness of the program implementation).

The forms of educational work with the family within the framework of the stated program are diverse – from individual and group consultations, children's and parents ' living rooms to case studies, role–playing games and group trainings.

The results of the survey of parents showed that the majority of respondents did not experience difficulties in communicating with their child and are interested in the phenomenon of childhood in all its manifestations, but they demonstrated an ego position in the self–presentation of the parent to the child, in the perception of his potential problems and needs of the child.

Thus, the idea of the three–block content of the program and the forms of its implementation corresponds to the request of the subjects of child–parent relations.

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HIDDEN POTENTIAL OF CHILDREN'S ART EXHIBITIONS AND THEIR IMPACT ON THE INCREASE IN TEACHER'S SELF-EFFICACY

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Abstract. *A key element contributing to the quality of teaching in all educational areas is teacher's belief in their professional competencies. The paper describes the impact of high or low teacher's self-efficacy beliefs on the quality of their teaching, as well as the ways to promote self-efficacy. We see a gap in knowledge regarding the issue of whether kindergarten teachers are able to recognise the sources of self-efficacy offered by their practice. The aim of the research was to find out whether teachers can use the potential of children's art exhibitions to strengthen their teacher's self-efficacy, not only to present children's art works. A qualitative approach has been applied to the research that involved 30 kindergarten teachers awarded for an excellent level of art education. The research has shown that even the most highly qualified teachers benefit from the exhibition in terms of being professionally inspired and motivated. These are mainly self-efficacy supports in the category of vicarious experience and social persuasion. The impact of perceived personal well-being is also very significant. These findings highlight the importance of self-evident activities, such as the presentation and exhibition of children's art works. They can thus serve as a guide in the conception of exhibitions and conscious support for teacher's self-efficacy.*
Keywords: *teacher's self-efficacy, self-efficacy, children's art exhibition, pre-school education.*

Introduction

The teacher's belief in their ability to work pedagogically is essential to fulfilling their professional mission (Bandura, 1997; Pajares, 2006; E. Skaalvik & S. Skaalvik, 2010). The educational background of a teacher (Manning, Garvis, Fleming & Wong, 2017) and the degree of their professional self-efficacy (Garvis, Pendergast, 2010; Garvis, Twigg, Pendergast, 2010; Lemon, Garvis, 2013) have a direct influence on the quality of pupils' education and are considered key to learning even at the lowest levels of education. After completing their university training, opportunities for increasing or deepening the competencies of teachers are considerably limited in both their availability and extent. The reasons for this are not only operational but also personal or financial (ČŠI, 2014). Nevertheless, pedagogical practice offers significant space for learning. To see an educational

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opportunity in pedagogical practice requires a teacher that is highly sensitive to the pedagogical process and committed to the profession. It is therefore necessary to identify and to analyse the processes associated with common practice. They can be key to supporting teacher's self-efficacy and creating learning opportunities for educators.

Teacher's Self-Efficacy and its Impact on Teaching

Perceived self-efficacy, that is, the *"beliefs in one's capabilities to organise and execute the courses of action required to produce given attainments"* (Bandura, 1997, p. 3), informs the quality of life in an unprecedented way (Bandura, 1994; Pajares, 2005, 2006). The awareness and belief that I can do things form the basis of human motivation, success and personal well-being (Bandura, 1997, 2006; Pajares 2006). A high level of self-efficacy beliefs influences motivation and efforts exerted to achieve goals, allowing one to overcome difficulties in a better way and perceive them as challenges rather than obstacles (Bandura, 1986, 1994; Pajares 2005, 2006). In the field of pedagogy, this construct is defined as *teacher's self-efficacy beliefs* (Bandura, 1994, 1997; E. Skaalvik & S. Skaalvik, 2010; Tschannen-Moran, Woolfolk Hoy & Hoy, 1998). It testifies to the teacher's belief in their professional skills and ability to influence students' learning. Teachers with high self-efficacy have been shown to better motivate students to learn, are passionate, devote more energy to lesson preparation and teaching itself, and are better protected from burnout (Housego, 1990; Garvis & Pendergast, 2010; Garvis, Twigg & Pendergast, 2010; Lemon & Garvis, 2013; Oreck, 2006). Conversely, teachers with low self-efficacy tend to approach teaching routinely, are less successful in motivating students, pay more attention to discipline and formal aspects of teaching (Pajares, 2005; Garvis & Pendergast, 2010, Lemon & Garvis, 2013, Bandura, 1994). In areas, where the teacher can rely on a clearly defined curriculum, subject standards, and textbooks in which the content of the curriculum is legibly outlined, teaching delivered by a teacher with low self-efficacy is likely to be only less lively. The content of the curriculum itself should not be fundamentally negatively affected by this. The situation is more serious in the case of subjects whose quality depends directly on the teacher's ability to shape the curriculum. The readiness of the teacher to choose the subject matter, to transform it and to mediate it didactically to the pupils (Shulman, 1987; Janík, 2009) requires high professional background, experience and strong motivation. All these are components that constitute teacher's self-efficacy beliefs.

Curriculum and Art Training of Future Teachers

The area of "Art and Culture" is an educational area where the content of the curriculum and the quality of teaching depend primarily on the teacher and their self-efficacy beliefs. Curricular documents in the Czech Republic are relatively open, and especially in art education they presuppose the active role of the teacher in shaping the content of the curriculum (Maňák, Janík & Švec, 2008; RVP ZV, 2017). At lower levels of education, the teacher is given considerable freedom to influence the content of the curriculum and flexibly adapt it to the current situation in the classroom or the current topics dealt with in other subjects. The curriculum for pre-school education is mostly realised through activities and is formulated as educational possibilities (RVP PV, 2018). In this way, teachers can exercise almost an unlimited measure of freedom in realising their ideas and choosing the content of artistic activities. Given the wide professional scope of these teachers (generalists teachers, kindergarten teachers), and thus the lesser depth of acquired knowledge in individual areas, a curriculum for art education defined in a free and open manner is an obstacle rather than an advantage.

Nevertheless, in fulfilling the curriculum in art education, students' relationship to the subject and to their own creative and artistic skills is more important than the number of hours devoted to art preparation at university (Garvis & Pendergast, 2010, Lemon & Garvis, 2013; Lummis, Morris & Paolino, 2014; Štěpánková, 2019). Low self-efficacy thus forms the most significant obstacle to achieving quality in art education (Bandura, 1997; Garvis & Pendergast, 2010; Lemon & Garvis, 2013; Collins, 2016; Štěpánková, Píšová & Slavíková, 2016).

Sources of Teacher's Self-Efficacy in Art Learning

For teachers, their own professional experience and related activities can become opportunities to reinforce self-efficacy beliefs. In art education it is children's art exhibitions that have this potential. They are conceived as spaces for sharing good practice, and they are much more than just an opportunity to present the creativity of children and the professional skills of the teacher. Their formative power comes from own 1. mastery experience, 2. vicarious experience, 3. verbal and social persuasion, and is completed by own 4. emotional states displayed in reaction to the multi-layered situation. The above moments are considered to be the most important sources in building and enhancing self-efficacy (Bandura, 1986, 1994, 1997).

The Study

The main goal of the research was to find out whether teachers perceive children's art exhibitions as a potential source for strengthening their self-efficacy in art field, and what specific moments of children's art exhibitions are of special importance to them. The research has been carried out in compliance with a qualitative research method. It was realised in the period between September and December 2020 in connection with the 18th children's art exhibition (MŠ Kampanova, n.d.). The selection of respondents was intentional. All respondents were teachers who regularly participate in children's exhibitions, and whose guidance in the area of children art was awarded as an example of good practice. In this group, it is possible to guarantee high level of professionalism in the field of didactics of art education, we can also expect a higher teacher's self-efficacy and sensitivity to practice as a source of learning. If even these teachers should fail to recognize the learning potential of children's exhibitions, it can be concluded that less experienced or less professionally equipped teachers are not able to perceive the opportunities offered by their practice. A total of 42 kindergarten teachers were contacted, 30 participated in the research.

The research was organised into three phases: 1. source analysis and research dealing with the importance and various sources of teacher's self-efficacy, 2. a survey and 3. an interview in a focus group (3 x 10 kindergarten teachers). Questioning teachers was limited to two open-ended questions that required a longer answer from respondents. In this paper, we present only a part of the research concerning the professional benefits of children's exhibitions for teachers. The aim was to give teachers a room to think about the questions at hand, in order not to reduce their response to a choice from given options, and thereby reach a better understanding of the situation (Hendl, 2005, Miovský, 2006; Gavora, 2010). Subsequently, the content analysis of the text was performed, the text was coded, and the topics were assigned to individual categories designed based on the theory of self-efficacy and teacher's self-efficacy. The semi-structured interviews in the focus groups were aimed at a closer examination of the topics arising from the questioning concerning the sources of self-efficacy support as defined by A. Bandura's social cognitive theory (Bandura, 1986, 1997). They were carried out through MS Teams, interviews were recorded upon the consent of the participants. The phenomenon of the group (Miovský, 2006) made it possible to define some topics more precisely or to open new ones.

Research question concerning teachers: *What do you see as the greatest benefit of participating in children's exhibitions for you as a teacher? How does it enrich you professionally?*

Research Results

Teachers' statements about the professional benefits of participating in children's exhibitions have shown that subjectively perceived benefits correspond with the main sources of self-efficacy (Bandura, 1986, 1997). It was interesting to uncover specific experiences teachers perceive as valuable. In the greatest detail, teachers described phenomena associated with the category of *vicarious experience*. This points to a role model being an important part of the process of strengthening self-efficacy. A role model as a source is considered irreplaceable, especially for those who do not have enough personal experience (Pajares, 2005, 2006; Bandura, 2006). The research also shows that visual experience mediated by the senses is a valuable source of inspiration not only for those who are just learning but even for experienced teachers. All responses included some kind of reference to this type of experience. It was described as a source of inspiration in terms of *art techniques, themes, art materials, children's guidance*. It also pointed to the need to compare one's artistic guidance with the practice of other teachers.

- *The greatest benefit for us is that we can view artworks of other children.*
- *We also had the opportunity to compare our work with other teachers, to be inspired by them.*
- *We also greatly benefited from children's exhibitions, where we had the opportunity to see artworks from other kindergartens and enrich ourselves with other artistic ideas and techniques.*
- *For us the most considerable benefit lays in the fact that thanks to the displayed works, it is possible to see how other schools work with children, what topics they work on, what techniques they use.*

Following the inspiration and the possibility of comparison, the respondents mentioned the exhibition as a source of internal and external motivation for further work with children, and as an incentive for professional growth. The exhibition was also perceived as a goal on which they can focus when working with children. The children's success was perceived by the respondents as an appreciation of their efforts. The expert jury and the presence of other teachers at the opening ceremony significantly increases the recognition. Bandura defines this category as *verbal and social persuasion*, that is, the support and appreciation from others.

- *As teachers, we were very surprised and pleased to see you take notice of the work of teachers and recognise them for their excellency. You are the only one who encourages educators in their further activities in this way, you also support their self-confidence, you confirm that they do their job well.*
- *We were very encouraged by the excellent results of the children.*
- *The level of artistic success was our pride in the school's evaluation and annual reports, as well as during an inspection.*

- *I am glad I can offer something extra to children in our kindergarten. Artmaking that we engage in enriches both me and them. I see the exhibition as an appreciation of this extra effort.*

Emotional states (emotional arousal) are closely linked to the previous category, but form another very important source of teacher's self-efficacy support. The children's exhibition is not just about exhibiting the work, but about the experience and emotional perception of the situation, mutual sharing and meeting others in the professional community. Therefore, teachers emphasised the importance of being physically present at the opening ceremony for both teachers and the children. Unlike a competition, an exhibition does not determine winners and losers, and thus creates such conditions that allow one to experience success and strengthen positive emotions.

- *An exhibition of works and a subsequent announcement in the premises of the Faculty of Education of the University of Hradec Králové is very valuable for us and the awarded children.*
- *The competition was spectacular. It was carried out at an excellent level. It presented us with a number of challenges, but also inspired us and enriched us in terms of artistic possibilities and techniques. At the same time, it was very nice to participate in it not only by submitting works, but also to be physically present and enjoy the view.*

Mastery experience is described as the most important source for strengthening self-efficacy (Bandura, 1994, 1997, 2007; Pajares, 2005, 2006). The exhibition is an opportunity to present the results of one's work with children while it also shows how one's own mastery experience is perceived. In connection with this category, teachers described the exhibition as an incentive for their learning and as a way to increase their motivation to create art with children, a desire to broaden their horizons, to look for new pedagogical challenges.

- *The artwork of other schools motivates me to constantly look for new information and activities.*
- *I perceive it as beneficial for my work when I can participate in an art competition and exhibition.*
- *Every year, during our visits we would find inspiration for our pedagogical work and constantly broaden our horizons.*

During the interviews, attention was paid to the general statements such as *the exhibition enriches me, inspires me, it is beneficial*, which needed to be specified. The research has shown that the motivating factor for further work is one of the most significantly perceived benefits of the exhibition. It was both external inspiration by techniques and procedures, as well as internal motivation, which has given satisfaction from the work. In this context, the satisfaction of one's work due to children's achievements was very important, that is, the awareness of professional effectiveness to pedagogically act and achieve change in pupils' education (Bandura, 1994, 1997; E. Skaalvik & S. Skaalvik, 2007; Tschannen-Moran, A. Hoy & W. Hoy, 1998) (*Every success of my children makes*

me happy. *Small successes of children are a motivation for me to continue working*.). There was a strong need for external appreciation (*a proof that we do the job well*) and recognition (*we devote a lot of energy to the work even in our free time*). For the teachers, the exhibition was a means of self-presentation and a way to *make visible our kindergarten and the work we do.* At the same time, it served as a subconsciously used protective factor against professional burnout and stereotype.

Table 1 ***Sources of Self-efficacy***

	Sources of self-efficacy (Bandura)	**Sources of self-efficacy (teacher's perception)**	**Perceived personal benefits**
1.	mastery experience	vicarious experience	strengthening inner motivation
2.	vicarious experience	verbal and social persuasion	satisfaction from work
3.	verbal and social persuasion	emotional states	external recognition of one's work
4.	emotional states	mastery experience	self-presentation

The first column of the table presents the most important sources of self-efficacy according to Bandura (1997), the second column lists these categories sorted according to the importance that teachers attach to shows as sources of self-efficacy, the third column lists the personal benefits of children's art exhibitions as perceived by teachers.

Discussion

The above findings show that 1) teachers perceive the motivational aspect of children's art exhibitions very strongly, without necessarily being aware that they strengthen their professional self-efficacy. 2) '*Vicarious experience*' is given the greatest importance of the categories that influence professional efficacy. At the same time, we can observe that children's art exhibitions and activities that belong to the portfolio of common activities of teachers are indeed an important source of information and knowledge. The scientific interest in the 'small events', such as the presentations of children's art works, can provide interesting insights into teachers' motivation, their personal and professional needs, as well as natural sources of learning and education. The researched sample of teachers does not present a representative sample. If these teachers with great professional expertise and presumed higher self-efficacy see children's exhibitions as a source of professional support, it is necessary to think how to use their experience within teacher training as well as the organisation of children's exhibitions. It shows that the concept of the exhibition is important especially in the presentation of diverse

practice, which encourages professional discussion and mutual sharing of experience. Discussions and feedback should be part of large exhibitions as well as smaller ones, e.g. within a school or kindergarten institution. Exhibition organisers should not forget the emotional aspect of the event, and the importance of the experience for the motivation of both teachers and children. Despite the limitations of the study (n = 30) given by the number and selection of respondents, we can show that from the point of view of the profession, children's exhibitions allow teachers to:

- strengthen professional self-confidence,
- be inspired by the work of their colleagues,
- feel support and encouragement for further work,
- experience positive emotions associated with one's profession,
- show the founder of the school and the parents the results of their pedagogical work.

Most importantly, however, thanks to the format of the exhibition, teachers can show to children what they can do while showing to parents what can do their children.

Conclusion

The study is based on the social cognitive theory of self-efficacy by A. Bandura (1986, 1994), a derived concept of teacher's self-efficacy (Tschannen-Moran, A. Hoy & W. Hoy, 1998), and focuses on children's art exhibitions as a source for building and strengthening teacher's beliefs in their professional effectiveness. To be able to use the potential of one's pedagogical practice as a source of knowledge and learning is important for the quality of teaching and the well-being of the teacher. The results of the presented qualitative research (n = 30) show that children's exhibitions provide teachers with the opportunity to apply their abilities, to get inspired, to increase their motivation to work, and to feel strong emotions. These are the main sources of self-efficacy. In regards to children's exhibitions, teachers have most appreciated the opportunity to share good practice and the inspiration that comes with it, which is referred to as *vicarious experience*, as well as *social persuasion*, which has the effect of strengthening one's motivation. The knowledge offered by this study is applicable in the training of future teachers as well as in the preparation of children's art exhibitions. It can be concluded that the opportunity to share good practice, to engage in discussions, to receive feedback and emotional support are ways to support the learning and internal needs of the teacher and increase quality in art education.

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CONSCIOUS PARENTING IN UKRAINE AND FINLAND

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Abstract. *The current state of upbringing is characterised by a blurring of methodological foundations for understanding the spiritual basis of upbringing of a personality, and an exaggeration of the role of the rational component in this process. We can trace the lack of attention to the social nature of upbringing. The process of upbringing is often excessively individualised and isolated by the framework of a particular person, real living conditions, etc. Such an approach complicates social interaction at the level of personal communication and impedes the integrity of educational influences. The formation of conscious parenthood as a basic value of a civilised society can help to achieve this.*

A pedagogical retrospection on the valuable pedagogical experience of the past is chosen as one of the information blocks. The idea of developing moral feelings, will and responsibility is revealed through the traditions of Ukrainian folk pedagogy, pedagogical analysis of traditional rituals that accompany the stages of human maturation and are preserved in our time.

It is important for Ukraine and Finland to realise that the ideal of education is created in the family circle and its basic values are inner spirituality, ethical responsibility, versatile education, open-mindedness, effective desire for the good of the Motherland, honesty, mercy, charity, gentleness, politeness, restraint, courage and patience in the hardships of life.

As a promising direction for developing the issue of conscious fatherhood, we see the creation of opportunities for sharing experiences, forming family and community education traditions, sharing experiences of constructive cooperation between teachers and parents with team-building resources in the implementation of an individual child success programme.

Keywords: *child, cultural visibility, fatherhood, parenting, pedagogical retrospection, social interaction.*

Introduction

Problem statement. The European scientific and educational community has a decisive mission: to contribute to the preservation of peace and harmony in society. The production of strict quarantine measures in 2020, the activation of

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distant formats of interaction between participants in the educational process all over the world have shown that the most valuable thing in a person's growth is his or her immediate family and friendship circle.

The importance of parenting or parenthood in relation to a child cannot be overemphasised. With the implementation of quarantine measures in 2019-2021. The level of development of collective life in children's social groups has decreased considerably, with the vast majority of forms of collective interaction moving to virtual activities and games activities.Therefore, in our opinion, the process of qualitative renewal of cooperation between teachers, educators and parents / persons implementing the functions of parenthood in relation to the child is in demand. Based on the peculiarities of the present educational transformation, the aim of this article is to analyse the phenomenon of conscious fatherhood in Ukraine and Finland. We have noted that the current upbringing of personality is characterised by the vagueness of the value basis of education, exaggeration of the importance of the rational component, when all educational efforts are aimed at the development of life competences. The spiritual basis of growing up has been neglected. We have carried out a retrospective reconnaissance and tried to draw relevant pedagogical parallels, which prove: it is important to prioritise the social nature of upbringing. In the context of progressing ideas of corporatism, excessive individualisation and specificity of child upbringing harms the integrity of this process. Strict adherence to the real living conditions and regional component in the organisation of education in the content of a certain degree contradicts the mobility and openness of modern man, educational processes. We argue for the expediency of conscious parenthood as a basic value of civilised society, using the logical links of the historical experience of Ukraine and Finland as an example.

Purpose of the study: to reveal the historical formation of conscious parenthood as a basic value of civilised society, using the experience of teachers in Ukraine and Finland as an example.

The value-based and attitudinal nature of the research subject determined the choice of research methods: analysis of applied principles of child education in Ukraine and Finland, moral and scientific-pedagogical argumentation of the content, forms and methods of cooperation between teachers and parents, dissemination of actual experience in the new conditions of intercultural interaction of Ukrainian and Finnish educators.

Theoretical Framework

For many current theories of parenting conscious parenting is a basic concept. For example: anthropological upbringing of labour education in K. Ushinskiy (1990), upbringing of a sense of security in the collective by

A. Makarenko (1973), education of individuality by Sukhomlynskyi (1977), development of mental powers of the child by Lokk (2020), J. Pestalotstsy (2009), nature-appropriate education by G. Skovoroda (Skovoroda, 2006), civic education by H. Vashchenko (1994). Behaviourism, cognitivism and constructivism provide the psychological underpinnings of the concept of conscious fatherhood. Behaviourism, for example, helps to establish rules during the educational process and manage the group based on Pavlov's (1954) doctrine of two signalling systems and involves repetitive actions, verbal reinforcement and incentives to participate.

Cognitivism gained progression in the early 1900s in Germany on the basis of Wolfgang Köhler's Gestalt psychology (Keler, 1998). In the theory of cognitivism, education involves the learner reorganising information, seeking new explanations and adapting old ones. This transformation of knowledge is accompanied by a change in behaviour according to Z. Piazhe (2008).

Constructivism is based on the assertion that we construct new ideas on the basis of previous knowledge and our own experience. This way, learning is individual for each learner. The child adapts its patterns of understanding by reflecting on previous theories or eliminating misconceptions.

It is therefore important to have a knowledge base for constructivist approaches to be effective. Brunner's spiral curriculum as an example of constructivism in action (Stevens-Fulbrook, 2019; Major theories and models of learning, 2020).

Research Methodology

In the study of the phenomenon of conscious fatherhood we proceed from the value and semantic orientation of upbringing. The methodological basis is chosen for the construction of a holistic modern system of education and its implementation in practice through the principles of systematic and integrated approach to education, synergy, continuity of generations, dialectic subject-object relations of the educator and students and their parents, existential-personal communication, socio-cultural identity, nature-identity and ethnic basis. This makes it possible to practically form the new formations necessary for human existence. Such value orientations contribute to the integrity of upbringing, which over time will be transformed into self-education.

A comprehensive approach in the study of the phenomenon of conscious fatherhood involved the consideration of a group of phenomena as a whole; the unity of goals, objectives, content, methods and forms of interaction between teachers, the general public and the parents of students. An urgent need for such an approach arose due to the fact that the upbringing process in recent decades is actually seen as a sum of separate structural components. In addition, the

formation of individual qualities - competences, rather than a holistic personality, is noted; the assessment of the educational impact of the whole population, including parents, the inclusion of the educational impact in social practice, the constant testing of educational efforts and their effectiveness.

Results and Discussion

In the formation of the idea of conscious fatherhood in the unity of Ukraine and Finland in the upbringing of the younger generation there were common blocks of ideas: increasing the level of morality in society because of the increase in the number of educated and spiritually developed people; harmonising moral and mental education, developing children's emotional intelligence, will and responsibility; creating a child-friendly environment in the immediate surroundings for upbringing.

We conducted a survey among parents of pre-school children in Kharkiv and the Kharkiv region and among parents of Finnish children (Table 1) The survey was conducted anonymously using social media, with the assistance of the Department of Science and Education of the Kharkiv Regional State Administration.

The aim of the survey was to find out the level of parents' interest in parenting and the holistic development of the child's personality and to collect empirical material on common forms of cooperation between teachers and parents of children. A similar survey was conducted among parents in Finland.

Table 1 ***Results of a Survey of Parents of Preschool Children in Ukraine (Kharkiv, Kharkiv region) and Finland***

Question	Response option	Result (Ukr)	Result (Fin)
1.Where do you get information on parenting, your child's development?	From the internet	42,3	60
	Attending seminars, lectures for parents (for fee)	2	7,5
	Getting information from an educational instinstitution.	55,7	32,5
2. Do pre-schools provide parent education and development measures?	Yes	79,1	62,5
	No	6,2	2,5
	Not enough	14,7	35
3. Do pre-school educational institutions carry out measures for the upbringing and development of children for parents?	Yes	69,2	42,5
	No	30,8	57,5
4 What information does the pre-school provide on your child's development?	The psychological state of the child	24,7	45
	Development (ability) to succeed	48,8	82,5
	Make recommendations for the child's further development and upbringing	60,1	50

5. Or do you listen to the teacher's advice?	Yes	74,1	55
	No	0,6	2,5
	Partly	25,3	42,5
6. How often would you like to receive information on your child's education and development from a pre-school?	Once every 3 months	68,2	57,5
	2 times a year	7,2	25
	Once a month	1,7	5
	Once a week	22,9	12,5
7. In what format would you like to receive information on child development and parenting?	In the form of reminders, check lists	12,5	27,5
	In an individual format once every 3 months, or twice a year.	50,2	25
	Individual consulting	17,7	40
	Closed social networking group	19,6	7,5
8. Do you think higher education institutions should introduce the discipline of "Childhood Education and Training" for all students?	Yes	85,3	67,5
	No	14,7	32,5

The results indicate the relevance of obtaining systematised information about education from educators at different levels of education. Discussions have arisen about the teaching of the course "Child rearing and education" for students of all specialisations. We have received proposals to introduce this course in high schools, vocational and pre-professional education institutions. After all, where there are subjects from media culture, digital literacy, sex education, and consciously choosing a profession, the issue of shaping vital competencies is successfully addressed.

It should be noted that educational institutions in Kharkiv and the Kharkiv region provide professional guidance, advice on children's development and upbringing for parents. Parents take an active part in various activities. So, for example, in the institution of pre-school education №416 of Kharkov. Kharkiv involves parents in cooperation in various activities, such as making thematic posters, entertainment, musical performances (Doshkilnyi navchalnyi zaklad (iasla-sadok) №416 Kharkivskoi miskoi rady, 2014). Active educational work is carried out by representatives of the parents' committee of preschool education institution №275 (Zaklad doshkilnoi osvity №275, 2014) Parents are maximally involved in the process of education and development of children, which means trust and respect for the teacher by parents and this is evidenced by the results of the survey (Table 1).

While in Ukraine, work with parents aims at harmonising the educational impacts of the institution and the family, in Finland the focus is on learning about the natural characteristics of individual children (Karkhurykhman and Karkhumyaki kindergarten, 2018). Finnish kindergartens involve parents in the discussion, namely through various activities for children, parents, teachers, and the direction to create a modern space for children that meets the needs and demands of the 21st century (Khattula Preschool Plan, 2019). They pose a

question for all participants in the educational process: "How do you see the everyday life of a child in kindergarten?", "How does the change in status and teaching staff affect children and parents?", "What is important for children in kindergarten?" and more (Pelastakaa lapset, 2019).

It should be noted that in today's digital society, it is a good idea to listen to the opinions and wishes of children, to discuss with parents and teachers and to find a solution which is suitable for this group, kindergarten, taking into account the interests of all participants in the educational process. So there is no universal advice, but the issues that need to be raised and solutions sought are the modern recipe for the success and development of society. After all, given multiculturalism, which is present almost everywhere in the world and requires soft integration without compromising cultural self-identification.

The analysis of the answers made it possible to summarise that educational institutions carry out a sufficient number of parenting and parental education activities both in the city. Kharkiv and the Kharkiv region as well as in Finland. There is great interest and demand from parents for the introduction of discipline in youth education institutions at the Department of Pedagogy at Kharkiv National Pedagogical University named after G.S.Skovoroda. (Kafedra pedahohiky Kharkivskoho natsionalnoho pedahohichnoho universyteti imeni G.S.Skovorody) programme "Teacher Training to Work with Parents" Kyiv B.Grinchenko (Prezentatsiia tvorchykh robit z kursu "Pedahohika simeinoho vykhovannia" studentamy spetsialnosti "Sotsialna pedahohika", 2017).

Turning specifically to the history of the development of Ukrainian culture, numerous explanations of the essence and role of the mother and father, the nature and rights of the child in the pedagogical monuments of Ukrainian literature seem interesting. An a priori understanding of the role of personal example of parents in a child's life: in family relations, in relation to the history of the people, native nature, speech, behaviour, work and everyday life, learning and social and cultural growth, the desire and ability to bring up children, guided by the values of humanity and civil conscience, conscience and honour.

The above-mentioned ideas are vivid and relevant even for us, modern people, in the Book of Velesa, a folk folklore. The Ukrainian folklore expresses the opinion that one masters knowledge and experience through hard work: "Nobody was born wise", "Nobody was born a scientist", "Wise people are not born, but wise ones are made", "You study not until you are old, but until you die" (Ukrainski narodni pryslivia ta prykazky, 1984).

Pedagogical retrospection and expedient updating would require the work of I.Chrysostom (Ilin, 1997). He was convinced that to educate a child in charity is a matter of intelligence and great will. Successful upbringing and material prosperity ensure a good upbringing aimed at forming good behaviour and

morals. I.Chrysostom regarded the frivolity of parents in bringing up their children as a common evil, a dishonour (Ilin, 1997).

The Ukrainian in the world is positioned with the Cossacks. In the study of the phenomenon of conscious fatherhood, the Cossack era has also had interesting developments. The objectives of Cossack education were formulated as follows: laying the solid foundations of the Orthodox faith, physical conditioning of the future warrior; development of an irreconcilable attitude to vice in any of its manifestations; cultivation of mental love of God and of others; the formation of a readiness for self-sacrifice. The growth of a child in a Cossack family took place in stages. The first was the transmission of religious and folk traditions, norms of behaviour from generation to generation in the family circle. As you know, the Cossacks had a great respect for a woman-mother, who gave birth to a child and kept her alive for the first year. Historically in the Ukrainian culture there was a tradition that after the first year of life a child would be taken care of by its father. In the Cossack folklore the father symbolizes an unshakable authority in the relations with people, a model of courage and bravery. The young Cossack, entering the mature period of his life, always felt his father next to him as a symbol of ancestors (Yavornytskyi, 1990).

The upbringing of the future Cossack began at birth. The child was baptised on the eighth day of its life, and was given a name in accordance with the Holy Scriptures only. As soon as the baby's first teeth appeared, he was taken on horseback to the church to pray to St. John the Warrior so that he could grow up to be brave and faithful to the Orthodox Church. There was such a tradition at the Sich: children, who were either thrown under the gates of churches and other public buildings or were kidnapped in campaigns from foreign families in order to be converted into the Orthodox faith, as well as those who were abandoned by their single mothers, thus hiding their shame, who were orphaned, lost, etc. - Cossack brothers were subjected to their parental care (Drahomanov, 1876).

G.Skovoroda (2006) is a descendant of a famous family of Cossacks. The philosopher revealed his understanding of humanity in the phenomenon of conscious fatherhood in his pedagogical concept, in which he defined the heart as the basis of human growth. In the Enlightener's opinion, the sense and aim of educational influences was to cultivate the young man's gratitude to his parents, nature, and people. A person capable of being grateful even to enemies and opponents can achieve peace of mind, the so-called "hearty cheerfulness" (Skovoroda, 2006).

A. Makarenko (1973) held a similar position on the establishment of conscious parenthood as a value orientation. The pedagogue emphasized the exclusive role of true parental authority of demanding love to the child which is

provided by one's own upbringing. An important aspect of manifestation of conscious fatherhood according to A. Makarenko is joint productive work of the child and his parents for the common good of the family, the child's feasible participation in all affairs of the family: patriotism, honesty, diligence, decent behavior in the family and outside it (Makarenko, 1973). This is in line with the Adlerian concept (Adler, 1997), which is based on the social character and the recognition and respect of the unity of family members. Accordingly, parenting involves changing the behaviour of all family members. The emphasis in parenting is on creating a certain atmosphere in the family. Children learn the value imperatives of "equality", "cooperation" and "natural results" for their parents (Adler, 1997). Interestingly, among the means of parenting in the Adlerian concept, the priority is to avoid power struggles in the family and to take into account the needs of the child. Parenting aims to help each parent to understand their child, to enter into his or her way of thinking and to learn to understand the motives behind his or her behaviour.

Family values, according to V. Sukhomlynskyi (1977), are the result of a vital selection of spiritual and moral laws of family existence and demonstrate an attitude towards the environment. It is known that parents cannot direct the child's life and activities fully, they can only pass on the moral guidelines that will determine the child's life activities in growing up. Family education contributes to the formation of the child through passing on the experience of previous generations, developing the habit of honouring ancestors, mutual support and assistance. In this way, the value of family unity, and therefore of the community and the nation as a whole, is formed. One cannot ignore the fact that under the influence of family value orientations, other spiritual values are selected at the personal level of the child. Sukhomlinsky rightly noted that when public spiritual values and ideals contradict personal ones developed under the influence of the family, part of the child's value system is rejected or destroyed, leading to a spiritual crisis that manifests itself primarily in disorientation and moral devastation. Such examples are, unfortunately, frequent in present Ukrainian society. This confirms the importance of creative use of the pedagogical heritage of the famous enlightener (Sukhomlynskyi, 1977).

We consider the considerations of Urszula Kazubowska (2019), who explored the importance of values in the context of identity formation, to be evidence of the systematic nature of such a position.

The conclusions of Marja Leena Böök & Johanna Mykkänen (Böök, Mykkänen, 2019) are similar to our reasoning. In this vein, it is interesting that Finnish parents adhere to such conditions of child rearing. They try to guide their children rather than control them. To love as they are. To give them the right to choose. Let them take responsibility for their own learning, etc. Father and mother share responsibilities equally. Parents respect their children, their

choices and their interests.They value individuality. Relationships are built on an equal level, male to female and parent to child. Problems are solved in the form of a dialogue in which the child is left with his or her own ideas, decisions and views. Parents share and respect the child's choices, take part in their interests and activities, and guide them, without reproach or punishment. Every child has a different pace of development, they learn from their mistakes, fall and rise. They look for themselves. In the meantime, parents watch and support their child with unselfish love. In the end, the child becomes what she should be. The idea of developing moral feelings, willpower and responsibility is systematic in the educational process with the support of conscious parenthood. We defined the basis of conscious fatherhood in Ukraine as moral experiences and the procedural actions of creating a moral, spiritually enriched experience that is realized in an act. Scientifically valuable is defined as the statement that feelings more fully reveal the true motives of man than his thinking. Therefore the practical part of the study focuses on creating methodologically valuable cognitive content for parents of 5-6 year old children. The content of this content should be modeled after informational messages (Volkova, Vorozhbit-Horbatiuk, 2020).

Pre-school education institutions in Ukraine are constantly updating information for parents on their official web pages. Parents receive advice from teachers, practicing psychologists and doctors. Various activities in which preschool children take part are highlighted (Doshkilnyi navchalnyi zaklad (iasla-sadok) № 353 Kharkivskoi miskoi rady, 2012).

An analytical comparison provides an opportunity to concretize the valuable findings of Ukrainian and Finnish educators. For example, Ben Furman (Furman, 2019) is known in Finland for his author's informative psychological programme, the implementation of which includes the development of procedural moments of mentoring, methodological support of education, team building, education and upbringing of children. actualization of considerations on historical and pedagogical sources. We have identified some overlap in the pedagogical heritage of K. Ushinskiy (1990), who developed pedagogical psychology based on the ideas of anthropology. A common form of school-family cooperation initiated by K. Ushinskiy (1990) was school reports, the purpose of which was to inform parents about the children's behaviour, attentiveness and performance in learning, developmental characteristics of interests and tastes. And today's parents have the opportunity to find out everything they are interested in about their child at school, and doing homework will supplement their understanding of school activities.

The pedagogical considerations and conclusions of Finnish educators are in line with the recommendations of G. Skovoroda (2006) on kinship work, the value of the developmental resource of industrial work according to

A. Makarenko (1973), the priority of empirical research in the field of educational psychology and pedagogy according to V.Sukhomlynskyi (1977). In the theory and practice of parent education in Finland, a programme of pedagogical education for parents has been developed and methodologically supported: social guides, encyclopaedic publications, popularising the values of family life among young people, for example the books Arja Sääkslahti "Liikunta varhaiskasvatuksessa", Eliisa Leskisenoja "Positiivisen pedagogiikan tyokalupakki" (Leskisenoja, 2017).

Active dialogue communication is also relevant today: parents talking about their children's lives, doing good deeds incognito, talking and leading by example. It is worth noting that the choice of educational influences, assistance in creating a close social environment - people and activities for the child (play, work), and personal examples are still in demand today. The concept of sensory communication also has a place in parenting programmes in Finland, in our opinion. A manifestation of this concept is the practice of organising parenting through so-called client-centred therapy sessions (creating conditions for self-expression, shaping positive experiences of fatherhood). Among Finnish parents, the value proposition of this concept is that it is important to develop the competence of successful fathering - active listening, expressing feelings in a way that is accessible and understandable to the child; relying on the principle of "both sides can be right" in family interactions.

Conclusions

Analytical comparisons provide an opportunity to concretise the valuable practices of Ukrainian and Finnish educators. Open virtual space allows for a variety of social networking cells, but it should be noted that Ukrainian institutions have more open information about contemporary activities than Finnish ones. Ukrainian teachers are open to cooperation and exchange of experiences, but unfortunately Finnish teachers are more closed. Considering modern information technology, speech is no longer a barrier to communication. We Ukrainian scientists and educators would like more frankness from foreign countries' pedagogical systems with pre-school and school education.

To summarise the above, let us note. Parenting is a broad concept that essentially involves meeting the parents' need for pedagogical support, the child's need for educated parents, and the formation of social competences.

Valuable, in our opinion, is the desire of Ukrainian and Finnish pedagogues to preserve the nature of childhood: nothing can be demanded of a child's age other than that which is peculiar to children. It is rash to demand from a child constancy, and firmness, which are the result of experience, physical and spiritual maturity of an adult. Children should be given the opportunity to be

children, help them to be good children, and good adults they will become later. Upbringing should always be tailored to the personality traits and obvious natural abilities of the pupils.

Among the prospects for further development of the topic, we see the search for constructive ways of open interaction between teachers, parents and children - pupils of Ukrainian and Finnish educational institutions of different levels.

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THE PROGRAM "PHILOSOPHY FOR CHILDREN": POSITIVE EXPERIENCE OF THE USA

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Abstract. *The article deals with the peculiarities of theprogram "Philosophy for children" and possibility of its introduction at both junior schools and the lyceums in Ukraine. The aim of the article is to show the positive attitude of American educators to the program. The results of the research show that logical reasoning and intellectual creativity are not mutually exclusive, and can be formed within a single program. The authors claim that "Philosophy for children" program is undoubtedly relevant and needs not only active development but also promotion and dissemination among representatives of the academic philosophical community, educators, representatives of the relevant institutions of state power and general public.*
Keywords: *critical thinking, curriculum, education, philosophy, positive experience, program, skills.*

Introduction

Reforming the national education system leads to a change of the technocratic paradigm of education and young generation upbringing to a humanistic, person oriented. Such a system should prepare the person for process of adaptation to life in a world characterized by dynamism, work intellectualization, rapid technology flow, a large number and variety of contacts. According to the philosophy of New European time (Abbasi, Pirani, Sarmadi, Taghvaee, 2017; Chetty & Suissa, 2017; Gregory, Haynes, Murris, 2017; Haynes, Murris, 2017; Gregory, Laverty, 2018 & Michalik, 2018) a person is a conscious being, capable of accepting himself, thinking critically, analyzing and adjusting behavior according to life circumstances.Therefore, modern Ukrainian pedagogical science and school practice are in search of a

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new educational strategy, which would be directed to the development of essential forces of the child's personality.

Orientation towards the development of students' thinking, the formation of moral and reflexive behavior in them, make it urgent to search for a means of effective solution of these problems. Considerable theoretical and practical capacity can be found in the scientific works of American scientists who under M. Lipman's leadership (Lipman, Sharp, & Oscanyan, 1980) developed the program "Philosophy for Children" for school-aged children. Its content and technology are aimed at teaching children philosophy, engaging into which helps them to develop critical thinking skills and tolerant behavior.

Looking into the history of development we might admit that the course "Philosophy for Children" was created over a long period of time (the first development dates from the early 70's of the 20th century) with the active participation of teachers and child psychologists.

The result was the development and justification of its conceptual foundations, the development of significant scientific and methodological support, which includes theoretical works, didactic manuals for teachers, texts for children translated into 40 languages. However, work in this area does not stop. The content and technology of the course implementation are open for discussion, which creates prerequisites for engaging pedagogical public to identify existing problems and make suggestions, discussions and experience exchange take place. It confirms the viability of the approaches formulated by M. Lipman and his colleagues (Lipman, Sharp, & Oskanyan, 1979) their practical feasibility.

The aim of our research is to show the attitude of American educators to the program "Philosophy for children" (Shirman, 1982; Trickey, Topping, 2004; Bleazby, 2013; Reed-Sandoval, 2018; Pritchard, 2018; Siegmund, 2019; Siegmund, 2020; Murris & Haynes, 2020) to analyze the development of this program and to characterize the possibilities of its implementation in the Ukrainian school system.

Literature Review and Methodology

The theoretical foundations of the Philosophy for Children course are the natural inclinations of students which are used during the process of its implementation. Taking into account the ideas of J.Piaget and L.Vygotsky (Piaget, 1933; Vygotsky, 1997) and practical experience, the developers pay particular attention to the fact that philosophical lessons should by no means be an artificial innovation. According to M. Lipman, they "must rely on such human qualities as curiosity, wonder, the need to learn the world in a playing method and enjoy the game. In other words, philosophy can be for the intellect

the same thing as a sports game is for the development of the musculoskeletal system" (Lipman, Sharp, & Oskanyan, 1979, p. 8).

The program of Philosophy for Children is aimed at teaching children to philosophize, not philosophy itself. That is, philosophy here is not a matter of study, but a means of reflecting the world and attitude to it. Establishing a close connection of philosophy with practice is different from the traditional paradigm of learning: the focus is not on remembering information (memory work), but on active "creation" of philosophy that requires effort from the intellect and solution of problems related to students' real life (Lipman, Sharp, Oskanyan, 1979, p. 20). These issues are of particular importance for young school-aged children, when major mental processes and personality traits are formed, such as arbitrariness, an internal plan of actions and reflection, which enable the child to regulate his or her activity and behavior at a "certain level of independence, taking into account the peculiarities of the activity itself" (Masharova & Khodyreva, 1998).

Doing philosophy helps the child move from the superficial level of things to their deep, essential level. J. Dewey wrote: "There is no phase in the development of education, economy, politics or religion where critical thinking does not help to come into the world because, according to Matthew Arnold, it was not born yet" (Dewey, 1967, p.18).

The course developers are aware that philosophy promotes self-improvement when it is the result of students' practical work. Engaging in philosophy, they learn to have an open discussion, following the appropriate rules of behaviour and communication. To do philosophy together is "not only a way to criticize such foundations of our culture as inherited ideas and values that stand on the way to freedom. It is also a way of creative updating the old and generating new life prospects. It is a way to teach yourself to think by yourself, to think in a new way, to enrich each other's experience, to enable your child to identify their problems and to make qualitative hypotheses about their successful solution" (Yanovs′kyy, 2001, p. 20; Kizel, 2016).

Since its introduction, the program Philosophy for Children has been evaluated in various schools in the United States. The first evaluation, held at Randall School, Montclair (New Jersey) dates back to 1970. The next evaluation of the program was conducted by Hope Hoan in 1975 in New York. In 1976, a large-scale program review was conducted by Virginia Shipman in New York-Prompton Lakes (Shipman, 1983). The main purpose of this examination was to answer the question if the work of the students under the program Philosophy for Children is successful according to such parameters as: 1) reasonable thinking; 2) speed in the formation and perception of ideas; 3) academic training; 4) reading and math. The following test was used to evaluate the results:

Skills type:

1. Reasonable thinking (Methods: A test framework for evaluating formal reasoning, developed by the Educational Testing Service and known as Q-3. Intellectual Output Test taken from the California Intellectual Test).
2. Arguments with alternatives and opportunities (Methods: The test "What could it be?"; The test "How can this be used?"; The test "How many reasons are there for it?").
3. Productivity in the formation and perception of ideas (Methods: The test "What could it be?"; The test "How can this be used?"; The test "How many reasons are there for it?").
4. General training (Methods: Student's diary).
5. Success in reading and math(Methods: "Metropolitan" Prompton Lakes Success Test: California Core Skills Test) (Childhood and Philosophy Special Issue [CPSI], 2017).

Research Results

Obtained data showed the significant success of students in various fields. In addition, the results show that logical reasoning and intellectual creativity are not mutually exclusive and can be formed within a single program (Shirman, 1982). Another reason for the positive attitude of many American educators to the program Philosophy for Children is its authors' dedication to critical thinking. As one of Montclair University professor M.Weinstein points out, "only in the case of critical thinking practice genuine learning, affirmation of democracy, alleviation of contradictions based on the details of certain contexts can be found" (Vaynshteyn, 2001, p. 50).

Critical thinking is not considered as one of additional aspects of the curriculum at school, but as something that is deeply integrated into the very essence of the whole system of learning. Let's take a look at the basic thinking skills offered by the program Philosophy for Children (The skills were identified in the result of the large-scale inspection conducted by Virginia Shipman in New-York-Prompton Lakes in 1976) (Table 1).

Table 1 ***Thinking Skills that M. Lipman's Program Philosophy for Children is Directed to*** *(Lipman, 1980, Lipman, 1988, Lipman, 1991, Lipman, 2003, Lipman, Sharp, Oscanyan, 1980)*

Skill 1. Accurate formulation of concepts	
Description	**Examples**
When applying a concept to a particular set of cases, children should be able to determine	Discussion plan for exploring the concept of "friendship":

whether these cases really fall within the scope of the concept, and to find those that are beyond it.They should be encouraged to provide counter-examples when they believe that the boundaries of the concept are not well defined. Discussion exercises and plans focus on boundary cases.	1. Do people have to be peers in order to be friends? 2. Can two people be friends and not really like each other? 3. Can friends sometimes cheat on each other?
Skill 2. The ability to make appropriate generalizations	
A set of facts is given. The student should be able to highlight the similarities and regularities and make some generalizations that are appropriate for all of these facts and similar ones. In addition, the student should be aware of the dangers contained in these generalizations.	The exercise: what kind of generalization can be made: 1. I feel myself badly when I eat raspberries. I feel myself badly when I eat strawberries. I feel myself badly when I eat blackberries. 2. The Rolling Stones are young people and rock stars, the Bee Guys are young people and rock stars. “Thousands of young people are rock stars”. “Min Jeans” are young people. Are they rock stars?
Skill 3. Formulation of cause and effect relationships	
Students should be able to identify and give verbal formulations which relate to specific cause and effect relationships. In addition, they should be able to find examples of errors such as “After this - therefore, as a result”.	1. I always blink my eyes when I see a mouse, and I only blink my eyes when I see a mouse, should I assume that the reason for the blinking is that I see the mouse? 2. In which part of the sentence is the reason given, and in which - the consequence? – “The rivers were spilled because there were heavy rains”.
Skill 4. The ability to draw direct conclusions from a single link	
Students should be able to perform logical generalizations andto know the rule of true and false treatment. In addition, they should be aware of and able to construct exceptions to this rule, such as identical statements.	1. If a true statement begins with the word “none”, then its appeal will be true, and if it begins with the word “all”, then its appeal is false. 2. Add a word that will make this statement identical: “All adults ...”
Skill 5. The ability to draw syllogistic conclusions from two references	
Students should be able to draw correct conclusions from true syllogisms and identify at least some examples of false conclusions.	1. “All dogs are animals, all collies are dogs, therefore, all collies are animals”. 2. “But if you put the word ‘fish’ at the end of the first two statements, the word would seem to cross everything, and your conclusion would be wrong”.
Skill 6. Knowledge of basic rules of standardization	
Students should be familiar with the basic rules of standardization and be able to apply them.	1. Include the following statements to the sentences that contain the word “all”: “Every American is a patriot”, “Americans are patriots”, “Any American is a patriot”. 2.The following words shall be added to the

	sentences containing the word "none": "Submarines are never airplanes", "No submarine is an airplane". 3. In sentences beginning with "some", the subject and predicate are rearranged, after which they can be considered as sentences beginning with "all".
Skill 7. Knowledge of the rules regarding ordinary logic and logic of relations	
Students should be aware of the rules governing transitive and symmetric relationships. They also need to know the standardization rule that allows you to convert nontransitive relationships into transitive ones.	1. If Sue is sadder than Sally, then Sally cannot be sadder than Sue. But if Lola can not stand guys, it does not mean guys can not stand Lola. 2. If oilfuel is more viscous than oil and oil is more viscous than water, oil fuel is more viscous than water. 3. The following statement is given: France is more than England. France is smaller than Canada. Flip the ratio to one of these sentences to make the transition possible (e.g., Canada is larger than France).
Skill 8. Determination of logical consistency and contradiction	
Students should recognize consistency or empathy in a given set. In addition, they must be able to formulate and apply formal rules of contradiction.	1. If I really care about animals, I will never eat them. 2. If two sentences are mutually contradictory, and one of them is true, then the other will be false. Example: "Some matches that burn, do not curl up"- contradicts the statement "All matches that burn, curl up".
Skill 9. The ability to draw conclusions from conditional syllogisms in propositional logic	
Students should be able to distinguish between right and wrong conclusions when working with hypothetical syllogisms (If… then…).	In hypothetical deduction, it is possible to assert an antecedent or to deny the consequent. It is inadmissible to reject the antecedent or the denial of the consequent. For example, let's say, with the truth of the links: If I click on this button, it will burst. It did not explode. Apparently, I did not press the button - (denial of the consequent).
Skill 10. Question formulation	
Students should be aware of the errors in the question and be able to formulate the questions in order to avoid the difficulties.	Questions may be based on incorrect assumptions, they may be vague, overloaded, internally contradictory or, simply, meaningless. E.g.: how many digits are there in the largest number?
Skill 11. The ability to identify the links that underlie the utterances	
A true statement is given, the student should be able to find the links that underlie it and	1. Lisa supposes that the truth or falsity of a statement depends on what we accept as a

determine which links are true statements accidental.	reference. If something contradicts ourviews, and they are true, they may be false. 2. Find the assumptions that are the main: "I like your hair. Which hairdresser did you go to? "
Skill 12. Understanding "part-whole", "whole-part" relationships	
Students must learn to avoid errors related to the problem of the whole and the part of thewhole, that is, the judgment that if an element has a feature, then it is inherent in the whole group of elements. It is also important to avoid the opposite nature when attributing the whole or group to the constituent elements. Pupils should be well aware of the double content of expression "being part of something".	1. Misunderstanding of the "part-whole" attitude: "If Michael has good facial features, then he must have a handsome face". 2. Misunderstanding of the whole-part relationship: "If Marry has a pretty face, then she must have good features". 3. If Hawaii is part of the United States and the United States is part of North America, then is Hawaii part of North America?
Skill 13. Understanding when to avoid, when to allow and when to use ambiguity	
It is necessary to be able to find and avoid ambiguities in information that is logically analyzed, since in this case they are too harmful. In the social sphere, ambiguities can sometimes be tolerated, because quite often they cannot or should not be excluded. In poetry ambiguities are very valuable, they enrich the idea. Students should be able to distinguish between the ambiguities that result from the originality of some words and the ambiguities that result from the particular arrangement of words (i.e, semantic and syntactic ambiguities).	1. Harry does not know if Bill regretted throwing a stone at him. Bill's behavior is ambiguous. But, after all, Harry invites Bill to play the 'freeze-melt'. 2. "Has somebody almost touched you?" - What is meant here - physical touch or some interest? There may be different content here.
Skill 14. The ability to recognize incomprehensible words	
Misunderstood words have no clear application limits. Students should recognize such words and distinguish between contexts in which such words are acceptable and those in which they are inappropriate.	1. "At what exactly temperature does the water become warm?" 2. "Can a society be democratic and not have a representative system of government?" 3. "Can a multi-party society be undemocratic?"

In the proposed technology by American researchers (Lipman, Sharp, Oscanyan, 1980; Lipman, 1980; Lipman, 1988; Lipman, 1991, & Lipman, 2003) the application of philosophy for children, the main thing is philosophizing on the material of philosophically enriched stories. Almost all of them are named after the protagonists, making it possible to personalize the philosophical problems, are inherent in the content and make them accessible to primary schoolchildren.

Anotherblock technology of"Philosophy for Children"is about changing the content and form of the lesson, transforming it into a "Socratic method". This is achieved through the creation of a community of researchers, based on a dialogue, engaging in which students learn to ask questions, criticize weak reasoning, build reasoned judgments, take responsibility for their contribution to the overall context of the debate, be aware of others, depend on others, respect their views, jointly engage in self-correction, master the skills of making good judgments.

"Philosophy for Children"is aimed at helping children to actualize their intellectual and spiritual capacity, which forvarious reasons, may be suppressed or left unused because of limited education; development of cognitive skills, critical and creative thinking. The critical thinking skills that are the subject of the program "Philosophy for Children" are described in the following table:

Table 2 ***The Formation of Critical Skills within the Program Philosophy for Children*** *(Lipman, 1973, p.93)*

General philosophical skills	Open thinking (cooperation relations, ability to take into account the opinion of others)	Logic (analysis and synthesis skills):
The ability to: - ask questions related to discussion issues; - not to resort to stereotypes in statements; - skills to make arguments (to avoid unverified judgments and statements like "Everybody doesit"); - hypothesis (prediction) skills; - hypothesis testing skills (check if it will work in different situations); - add-on skills (develop not only your own predictions, but also others).	Implies the desire to: - accept reasonable criticism (to avoid situations of "deaf protection", not to defend opinion only in order to achieve this); - not to be a slave of a single conviction (not to rush to accept any argument as the only correct one); - respect others and their rights (not to criticize persons, but their point of view, to accept the position of others, despite the negative attitude towards them).	- skills to draw an analogy; - seek to explain the unknown and obscure; - see similarities and differences; - provide convincing evidence; - see hidden predictions; - make reasonable conclusions; - make thoughtful, validated judgments.

Attempts to introduce elements of philosophy, in most cases logic and psychology, into school education in Ukraine were already observed in the late 19th and first half of the 20th century. However, due to lack of specialists, this subject has been removed from the curriculum. The purpose of the national course "Philosophy for Children" is the formation of certain skillswhich makes it consistent with the American version. The content of such skills has no much difference, although Ukrainian experts largely limit their number and distribute

in such directions: the skills of critical, tolerant and creative thinking (Lushin, Rzhevskaya, Dannikova, 2003; Sukhomlyns′ka, 2003).

In our opinion, this approach is more appropriate than Lipman's. The teacher does not face a significant field of diverse skills, the formation of which is the basis of the educational process. This specifies the purpose of this activity and allows you to identify which of the skills need additional attention from the teacher.

The works of American researchers in the field of philosophy for children have increasing interest in contemporary Ukraine. Thus, in 1999 an agreement was concluded between Kirovograd State Pedagogical University named after Vladimir Vinnichenko and Montclair State University in the United States of America. Its content is directed to the development of school and university curricula with an emphasis on the formation of critical thinking as an important component of the process of democratization of education and society (Polyarush, 2001).

Since 2018 a new methodology for teaching in schools has been introduced in Ukraine. The technique involves the reduction of theoretical load and the acquisition of knowledge on the technique of "question-answer". Education experts recommend not only the theoretical workload in schools but also the need to provide teachers with the necessary resources. Particularly widespread in Ukraine is the demand for the "Philosophy for Children" methodology in the context of the emergence of NUS (New Ukrainian School). Today, this technique has also been successfully implemented in 80 countries, and its essence is still to teach children to debate, to reason, to find their own arguments and to accept the interlocutor's arguments. According to some scientists, it is necessary to move away from the traditional "cramming" of information in schools, and instead to teach children to include logic and defend their opinion. The experience of the UK has become indicative of the implementation of the "Philosophy for Children" methodology. According to research conducted in 2015 with the participation of three thousand children from 48 schools, it has been found that students who have studied under the "Philosophy for Children" program have the best track record in maths and literature. In addition, students' performance increases (Kontseptsiya novoyi ukrayins′koyi shkoly, 2016).

Nowadays, the implementation of the methodology is still working on individual initiative groups, including the Laboratory "Philosophy for Schoolchildren" at the Philosophy Department of the National Pedagogical Dragomanov University, headed by Nadiya Abramenko, a special research group on philosophy at school at the M.V.Ostrogradsky Poltava Regional Institute of Postgraduate Teacher Education under the direction of Tatiana Bondar, at the Social and Humanitarian Disciplines Department of Dnipro State University of Internal Affairs under the direction of Yuriy Narozhny.With

regard to philosophy at the senior school level, one of the possible strategies here could be to isolate the philosophical and humanitarian lyceum as an educational segment between middle and high school. However, projects aimed at establishing the "lyceum" as a separate educational unit are almost absent in Ukraine. Although, there are many institutions with the name "lyceum", more often it is not about general humanitarian education, but specialization in popular areas: economic, legal, media, etc.

Another type is the lyceum at higher education institutions, almost the only example of which is the Ukrainian Humanities Lyceum of Taras Shevchenko National University of Kyiv. There is also a Regional Humanitarian Lyceum for gifted children from the Vinnytsia region at Hrushevsky Bar Humanities and Pedagogical College. This approach is also only a partial solution aimed at preparing for admission to this university, while according to scientists, the lyceum should be "what it is in countries where it has existed for a long time: a separate educational link". As a valid example of a separate institution can be cited Chernivetsky Philosophical and Legal Lyceum, teaching two subjects of philosophical focus which is carried out on the textbooks "History of Philosophy" by Victor Ogneviuk and Irina Utiuzh (Form 10) and "Philosophy" by Vasyl Kremen (Form 11).

On the whole, the question of the introduction of elements of philosophical education at both junior schools and the lyceums is only beginning to be raised without going beyond single initiatives, but it is undoubtedly relevant and needs not only active development but also promotion and dissemination among representatives of the academic philosophical community, educators, representatives of the relevant institutions of state power and the general public - that is, work that must precede any systemic change in society (Yasna, 2016).

Conclusions

Today, the scientific investigation of American researchers (Siegmund, 2019; Siegmund, 2020; Murris, Haynes, 2020; Trickey, Topping, 2004; Bleazby, 2013; Pritchard, 2018) in the field of studying the Philosophy for Children program studying draws a great attention in Ukraine.The conceptual foundations of the American version of Philosophy for Childrenare being introduced into the educational process and are particularly relevant in the context of the development of a new Ukrainian school (Kontseptsiya novoyi ukrayins′koyi shkoly, 2016). The main focus is on the formation of students' critical thinking, the development of the foundations of scientific research, curriculum methodology, human ecology and philosophy for the child. Unfortunately, implementing the foundations of the program has an episodic nature, and therefore it makes it difficult to study the application of this

approach in the domestic education system and limits the ability to make a qualified assessment.

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