DEVELOPMENT OF FUNCTIONAL MATHEMATICAL LITERACY OF STUDENTS HAVING MODERATE SPECIAL EDUCATIONAL NEEDS: APPROACH OF PEDAGOGUES FROM VOCATIONAL REHABILITATION CENTRES

Matemātisko prasmju attīstīšana jauniešiem ar vidējām speciālām vajadzībām: profesionālās rehabilitācijas centru pedagogu pieeja

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Abstract. *The article deals with the approach of pedagogues from vocational rehabilitation centres towards the importance of the development of functional mathematical literacy for vocational training of students having moderate special educational needs. It has been attempted to reveal the expression of the abilities of functional mathematical literacy of young people having moderate special educational needs, its importance for vocational training, to discuss the possibilities of the improvement of the education process of mathematics in a heterogeneous classroom, where students with moderate special educational needs learn. 124 pedagogues from Lithuanian vocational training centres and vocational schools who teach young people having moderate and severe special educational needs have participated in the research.*

Keywords*: functional mathematical literacy, practical application of mathematical knowledge, students having moderate special educational needs, teaching and learning paradigm, teaching (learning) methods.*

Introduction

Problem and its relevance. One of the main goals of modern education and vocational education systems is to help a person to gain competences, general and special abilities, to create conditions for persons with various needs and abilities for lifelong learning, to improve their vocational qualifications. In documents forming educational policy and strategy and regulating vocational training (A Memorandum on Lifelong Learning of the European Commission (2000), Lisbon Strategy (2000), Strategy of Ensuring Lifelong Learning (2004), National Lisbon Strategy Implementation Programme (2005), Strategic Provisions for the Development of Education in Lithuania: Education Guidelines for 2003-2012 (2002), Law on Education of the Republic of Lithuania (2003) and Law on the Amendment of the Law on Education of the Republic of Lithuania (2011), General Programmes for Basic and Secondary Education (2008)) the aims of contemporary education and vocational training that are closely related to and complement each other are indicated. The mission of education in these documents is perceived as an

assistance to a student in perceiving contemporary world, gaining the basics of literacy, cultural and social competence and becoming an independent and responsible person creating own and community life, while the mission of contemporary vocational training is education of qualified specialists who are able to act independently, to make decisions and compete in the labour market of the European Union.

In the present situation of the Lithuanian economy, when market economy and enormous problem of unemployment appeared a flexible employee able to quickly adapt becomes needed. It is relevant to every person and especially to a person with disability striving to successfully integrate in the society. In the law of the Minister of Education and Science of the Republic of Lithuania "On the approval of organizational order of education of students having special educational needs" (Žin., 2011-09-30, Nr. V-1795) it is indicated that students with special educational needs having finished individualized programme of basic education since 1 September 2012 are advised to continue studying not according to adapted programme of secondary education but according to vocational training programme or according to the programme of the education of social skills. For persons having special educational needs according to the order stated by legal acts (the law on the amendment on the law of vocational rehabilitation of the Republic of Lithuania (Žin., 2007-04-19, Nr. 43-1627), the law of the Minister of Education and Science of the Republic of Lithuania "On the approval of the description of admission order of persons wishing to obtain the first qualification to vocational education institutions where the Ministry of Education and Science implements the rights of the State as the owner" (Žin., 2008-07-03, Nr. 75-2985)) the conditions are created to study together with other students according to vocational rehabilitation programmes adapted for them, get educational assistance and obtain qualification. According to the data of the Ministry of Education and Science of the Republic of Lithuania at the moment only 19 per cent of all vocational schools of the country implement vocational training programmes meant for students having special educational needs (Mažylienė, 2011). The biggest possibilities in choosing professions are open to the young people who have mild special educational needs and can more easily adapt to changes in labour market and more successfully adapt in the society. Unfortunately, young people having moderate, severe and very severe educational needs have rather narrow choice of vocational training programmes in Lithuanian vocational training centres. At the moment such people may obtain vocational qualification studying in vocational schools, Lithuanian Rehabilitation Vocational Training Centre, special educational institutions and vocational education centres of labour market. Schools in this case get an important role – to help students having special educational needs coordinate their aspirations and possibilities, suitably choose a profession, form general abilities, teach to apply them to constantly changing needs of the society (Baranauskienė, Valatkienė, 2010, Luneckienė, Jurkuvienė, Stankuvienė, Palačionienė, 2011; Mažylienė, 2011). To train a young person with disability ready to work in the society is not an

ordinary task. In vocational training of these young people an important place is taken by general abilities and necessary skills (communicational, self-organizational, social, practical, literacy, ability to operate with numbers, work skills, ability to be initiative, ability to live independently and apply surrounding things to own needs (Word, 1997; Elijošius, 2001; Mineikienė, Vismantienė, 2001; Baranauskienė, Ruškus, 2004; Baranauskienė, Juodraitis, 2008). It is very important for students having special educational needs to form these skills and abilities in prevocational period studying in mainstream or special schools. Only due to appropriate teaching and training young people with special needs may gain necessary skills that extraordinarily influence their vocational preparedness and allow more successful competition in labour market.

Mathematical literacy is one of the more important general skills of young people having special educational needs that is most often described as understanding of documents, texts, quantitative values, practical application of mathematical knowledge (Mineikienė, Vismantienė, 2001). According to the authors documental literacy is the ability to find and use information presented in various ways (maps, tables, schedules, diagrams, etc.), while quantitative literacy is the ability to apply arithmetical operations with numbers encountered in various printed material (bills, cheques, advertisements, notices, etc.). The concepts of literacy, also the development and concept of mathematical literacy is widely analyzed in the works of Zybartas (2000), Būdienė (1998), Dudaitė (2007). During the decades in Lithuania in mainstream school much attention was paid to the development of academic knowledge and less to the development of functional mathematical literacy. Systemic teaching was to little related to future life of a student, not oriented towards the being of adult. However today, according to Jovaiša (2001) when market economy becomes more and more prevalent, one cannot do without the basics of business, commerce, organization of economy, work economy and practical skills. Lessons of mathematics give the main knowledge and skills necessary for mathematical literacy. Educational process in these lessons is oriented towards a student, his/her individuality, originality, makes education closer to students' actual social environment, abilities of practical application of knowledge. It conditions new relevance and new requirements for teaching (learning) mathematics at school. Contemporary education theory and practice with regard to changing life requirements raise a task for teachers of mathematics to constantly review the contents of the subject, assess and reorient educational priorities, help each child to develop the most important and essential general abilities and value attitudes that will help in future to choose a profession, to find a place in a rapidly changing society, to successfully work and act in the society, to feel good and be happy (Baranauskienė, Tomėnienė, 2010; Tomėnienė, 2010, 2011). Undoubtedly, it is especially relevant organizing education of students having moderate special educational needs at school during prevocational period. All this encourages to change the contents and process of teaching mathematics and mathematical literacy in the way it would become valuable and important for future

learning, vocational activity and self-expression of a young person with disability. Thus collaboration between teachers working at schools and vocational schools becomes relevant. With this purpose the survey of pedagogues from Lithuanian vocational training centres and schools have been performed, and 124 teachers of professions and subjects from Lithuanian vocational training centres and schools who educate young people having moderate and severe special educational needs participated in it. It has been interesting to analyze the aspects of developing functional mathematical literacy of students having moderate special educational needs (***research object***) in the prevocational period. Problematic ***questions*** – What is the attitude of pedagogues of vocational training of people with disabilities towards the importance of functional mathematical literacy for future vocational training of students having moderate special educational needs? What didactic paradigms, methods, structure and dynamics of didactic process should be applied in a heterogeneous classroom where a student having moderate special educational needs learns?

Aim of the research **–** to reveal the attitude of pedagogues of vocational training for people with disabilities towards the importance of functional mathematical literacy for vocational training of students having moderate special educational needs.

Methodology and methods of the research.

Methods of the research – Analysis of scientific and methodical literature, questionnaire survey, quantitative data analysis. Statistical analysis (descriptive analysis of frequencies, arithmetical means (M), standard deviations (Sd)) of the data has been performed using programme packages of processing statistical information 17.0 and Microsoft Office Excel 2007.

Questionnaire written survey in the form of anonymous questionnaire meant for pedagogues of vocational training of people with disabilities has been chosen as the main method of the research. The questionnaire consists of three blocks: demographical block (data about the respondents – gender, age, education, qualification category, duration of work) has been presented, the second block of questions is meant to assess actual level of mathematical literacy of young people with special needs studying in vocational training centres, their ability to apply mathematical knowledge in their practical and vocational activity, the third block presents the questions about the possibilities of the improvement of the process of mathematical education, of choosing the directions of activity and education during the period of prevocational training.

While creating the survey questionnaire the requirements set for the creation of questionnaire have been regarded: it has been reasonably, briefly and logically explained why the research is performed; the presented questions are concrete and the variants of the responses are understandable to make the respondents' efforts minimal. Therefore, in the questionnaire for pedagogues only one open-type question is presented when it is asked to write what mathematical abilities have the biggest importance for teaching (learning) a subject (profession), the other

questions are of closed type when it is necessary only to choose one of the presented answers or choose several answers in order to know pedagogues' personal opinion; at the end of each question the option "other" is indicated, which gives possibility for a pedagogue to express his/her own opinion.

Sample of the research. Selecting the participants of the research the method of target sampling has been used – "when the researcher himself/herself decides which respondents it is more expedient to choose" (Luobikienė, 2000). In the present case the sample group of the quantitative research consisted of 124 teachers of professions and subjects from Lithuanian vocational training centres and schools who educate young people having moderate and severe special educational needs. In choosing the participants of the research the attention was not paid to their age and gender.

Results of the research

Having reviewed the essential issues of mathematical literacy and its concept referring to the research of the scientists (Steen, 2004, Niss, 2003, Carss, 1997, Briggs, 2002, Gillman, 1999, Johnston, 1994, Manaster, 2001, Dudaitė, 2008) it has been noticed that one of the main elements is the applicability of mathematical knowledge in practical and real-life situations, the ability to solve the problems one faces. Literacy is not meant only for the people who are the best at mathematics.

The necessity of the change of the principal attitudes towards teaching (learning), the need to look at the preconditions and possibilities of individual's cognitive development and evolution from pragmatic constructivistic aspect encouraging to look for new ways of modelling harmonizing with the new system of education was accentuated by Dewey (1938, 2008), Bruner (1966, 1973), Vygotskij (1982, 1999), Kolb (1984), James (1995), Arends (1998), Jensen (1999), Piaget (2002) etc.

The analysis of the responses to the questions of demographical block has shown that the bigger number of women rather than men has been surveyed, i.e. 75,8 % of women and 22,6 % of men. 1,6 % of the respondents did not indicate their gender. The pedagogues' age is very different: mostly the pedagogues of vocational training centres and vocational schools of the age of 41-60 participated in the research and it makes up 68,5% of all the respondents. Pedagogues' education show their competence in their subject and profession, their preparedness to analyze changing goals and contents of education, the aspects of developing functional mathematical literacy of students having special educational needs, and qualification is one of the most important factors of the quality of education, therefore, it has been interesting to know how many pedagogues and having what kind of education, qualification category, speciality and duration of work participated in the research. It has become clear that the majority of the respondents (N=110; 90%) have higher education, 6% of the respondents have college education, 4 % of the pedagogues did not respond to this question. The majority of the respondents (N=114) have pedagogical education, however, 10 respondents do

not have this kind of education. Out of 114 respondents having pedagogical education 27,4% have the qualification category of teacher, 49,2% – senior teacher, 18,5% – teacher methodologist and 1,6% – expert. More than a half of the respondents who participated in the research (56, 2%) in vocational training centres and vocational schools teach the theory of speciality and practical teaching of speciality; 29,8 % of the pedagogues teach the theory of speciality or practical teaching of speciality; 13,7% teach general cultural subjects. The mean of the duration of pedagogical work of the pedagogues who participated in the research is 18 years, the mean of general duration of work is 22 years. It means that the majority of the participants of the research have big experience of work with young people having moderate and severe special educational needs, therefore, their answers are quite important and valuable.

The analysis of the responses to the questions of the second block meant to assess the actual level of mathematical literacy of young people with special needswho study in vocational training centres, their ability to apply mathematical knowledge in practical and vocational activity has shown that the level of mathematical literacy of young people having special educational needs coming to study to vocational rehabilitation centres is not sufficient (M=2,00), these students are rarely able to apply mathematical knowledge in learning their profession (M=2,26) and in real-life situations (M=2,43). According to the respondents the students experienced difficulties in applying the knowledge of mathematics gained at school in vocational activity. The results of standard (Sd) deviations show that the respondents quite similarly assessed this question. Learning mathematics, according to the respondents, is inseparable from student's ability to relate new information with already possessed experience of education. If a student does not gives sense to knowledge, does not relate it to real life and think it over, it is questionable whether he/she will be able to use it in new situations and vocational activity.

It has been attempted to find out the general abilities of what type are developed among students having moderate special educational needs. Presented abilities are the main parts of mathematical literacy (see Figure 1).

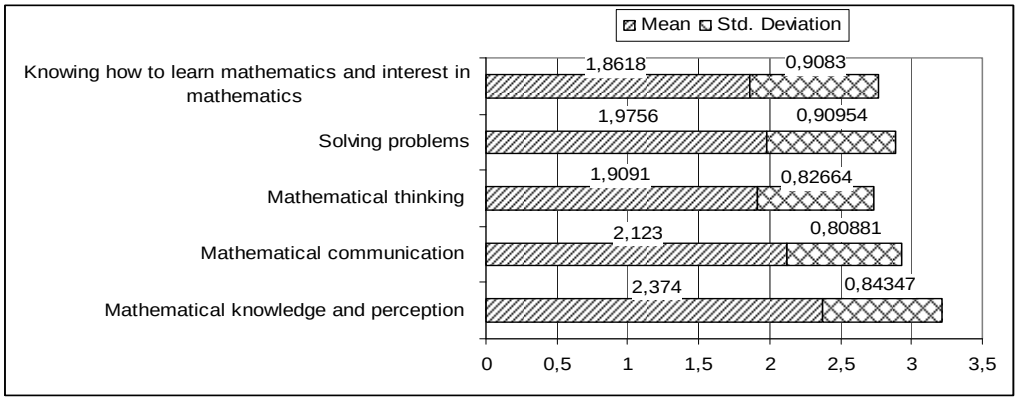

Figure 1. **General mathematical abilities of students with special needs (N=124)**

From Figure 1 it is seen that students' general mathematical abilities, i.e. *mathematical knowledge and perception, knowing how to learn mathematics and interest in it, problem solving, mathematical communication, mathematical thinking*, are rather poorly developed. Students lack mathematical knowledge, perception and abilities. In general programmes of primary and basic education (2008) it is stated that one of the more important abilities that should be gained by every student is mathematical communication and mathematical thinking. From Figure 1 it is seen that these abilities are developed the least. The results of standard deviation show that the opinion of the respondents who participated in the research is quite similar on this question.

Pedagogues have been asked to assess the essential mathematical abilities of students with special needs. The data reveal that students are the best of *using calendars* (M=2,05), *calculator* (M=1,97), *uncomplicated tables, schedules* (M=1,86). The presupposition can be made that such results are conditioned by frequent practical applicability of the aforementioned abilities. Young people encounter calendar, schedules of public transport, tables every day planning their activity for shorter or longer periods (e.g., counting how many days are left until holidays or vacations, in how many days concrete works should be made, etc), going from their homes to educational institution, shop, etc. In senior grades during the classes of mathematics all students are allowed using calculators, mobile phone calculators to calculate the results of mathematical expressions and operations. Using the calculator students with special educational needs may more quickly and successfully perform the tasks, compensate the vacancies in performing operations and calculations. Students having moderate special educational needs, according to the respondents, should be allowed using calculators during the lessons of mathematics and other subjects during the first stage of education, but the teachers' duty is to explain in what cases calculators should be used for calculating and in what cases own skills and abilities of calculating by heart can be used. In pedagogues' opinion students with moderate SEN experienced the most difficulties in *applying knowledge about scale in concrete practical situations* (M=1,13), *recognize, describe and apply simple sequences, regularities, rules or structures to describe practical situations* (M=1,15), *apply the knowledge of the size of angle and standard procedure of calculating volume to solve practical and mathematical tasks and problems* (M=1,17). Sd deviation shows that pedagogues assessed these abilities very unanimously (S= 0,00 or S=0,02).

In the process of developing mathematical literacy it is very important to develop and improve students' competences the basis of which consists of activity areas of mathematics, abilities and attitudes described in General Programmes (2008). The respondents were suggested assessing knowledge, skills and special abilities of what areas of mathematical activities are dominating among students having special educational needs. Pedagogues were suggested assessing the knowledge of their students gained in basic school according to the main areas of mathematical activity and levels of achievements (higher, main, satisfactory,

unsatisfactory) and rank mathematical areas indicated with letters according to their frequency: to write in the picture the letter indicating the most developed, in their opinion, area of mathematical activity on the first (highest) step. To write the letter indicating the least developed activity on step 7 (the lowest) (see Figure 2).

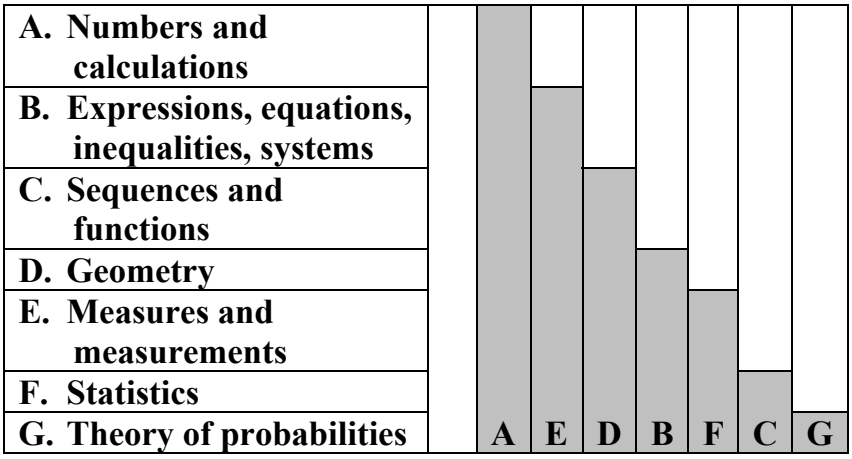

Figure 2. **Domination of knowledge, skills and special abilities of the areas of mathematical activities**

From Picture 2 it is seen that among students with moderate special educational needs knowledge, skills and special abilities from the areas of mathematical activities of *Numbers and calculations (M=1,32)* and *Measures and measurements (M=2,91)* are the most predominant. Students, according to the respondents, were the best at reading, writing, comparing numbers (M=2,38, 7,3% of higher level of knowledge, 22,6% of main level, 58,1% of satisfactory level), perform arithmetical operations (M=2,38, 4,3% of higher level of knowledge, 33% of main level, 47% of satisfactory level). The obtained data are related to mathematical abilities of the eighth-formers of all the country stated during the investigation of national students' achievements in 2007. In the subject report of this investigation it is indicated that the eighth-formers were the best at solving presented tasks in the area of calculation. In the opinion of the pedagogues of vocational training centres students' abilities also are not sufficient in the area of Geometry (M=4,31). Students especially experience difficulties in solving the tasks the conditions of which require substantiating something or using the concepts of perimeter, area, surface, volume. Misunderstanding of these concepts became especially distinct in stating the level of knowledge, too, because satisfactory (38%) or unsatisfactory (49%) level of knowledge is dominating. Knowledge and abilities of students having moderate special educational needs from the areas of mathematical activity such as *Statistics* (M=4,64), *Sequences and functions* (M=5,06) and *Theory of probabilities* (M=5,50) are the least developed. The level of knowledge of more than two-thirds of the students corresponds to satisfactory or unsatisfactory level.

Sd deviation shows that pedagogues assessed the question about the areas of mathematical activity very differently.

So that the students not only have knowledge from various areas of mathematical activity but also understand and be able to apply this knowledge in practical activity it is necessary to develop all general mathematical abilities and attitudes indicated in General programmes (2008): *mathematical knowledge and perception, mathematical communication, mathematical thinking, problem solving, knowing how to learn and interest in mathematics*. Only due to these abilities and attitudes students will understand the schoolwork of mathematics, will be interested in the subject itself. The obtained results of the research have shown that general mathematical abilities of students having moderate special educational needs are poor. The respondents have indicated that the least developed are *knowing how to learn mathematics and interest in mathematics* (M=1,86), *mathematical thinking* (M=1,91) and *problem solving* (M=1,98). The means of *mathematical communication* (M=2,12) and *mathematical knowledge and perception* (M=2,3) in the system of five possible assessment points have distributed only among two and three points.

In order to learn profession, according to the majority (80-98%) of the respondents, knowledge and practical abilities of four main mathematical topics (•Natural numbers. Addition, subtraction, multiplication and division of natural numbers; •Fractional numbers. Operations with simple and decimal fractions; •Primary geometrical concepts, calculation of perimeter and area; •Basics of economy) are the most necessary. The respondents have distinguished main mathematical abilities that should be developed in classes of mathematics and that are often applied in real-life situations and are necessary for successful teaching of concrete professions (e.g., to apply in the simplest cases the elements of mathematical thinking; to relate numbers and elementary arithmetical operations with concrete objects and situations of the closest environment; to be able to use calculator, means of measuring, tables, schedules, calendars; to be able to find missing information to perform uncomplicated tasks; to read and understand clearly formulated conditions of simple tasks, raise questions and choose appropriate operations, to think over strategies to solve uncomplicated real-life and work problems; to perceive the necessity and relations of general measuring units, to use them to express measuring results; to determine by measuring the parameters of various objects and situations of the closest environment; to apply standard procedure of calculation of perimeter, area and volume to solve practical and mathematical tasks and problems, etc.). Consequently, mainstream school should give priority to the development of general abilities necessary in life and in any area of vocational activity.

According to the specialists the least necessary topics under doubt and discussion are the following: •Trigonometric expressions and their manipulation (77,4% of the answers), •Progressions, •Limit of function and differential calculus (77% of the answers each), •Axioms of stereometry (76% of the answers),

•Exponentiation with rational exponents (75% of the answers), • Functions and • Square equations (72% of the answers). The analysis of literary sources, General Programmes (2008), Recommendations of the application of general programmes of basic education for education of students with special needs having low and very low intellectual abilities (2010) shows that in contemporary context it is much more important to develop the ability to use mathematics in various situations than to teach how to perform certain complicated theories or operations that are actually applied by students only in the lessons of mathematics and are easily forgotten. Therefore, the respondents suggested, if possible, not including the aforementioned topics who are not understandable for students having moderate special educational needs in the content of the subject of mathematics; orienting teaching rather to learning quality, gaining of basic knowledge and skills, their consolidation and practical application.

Analyzing the questions about the improvement of education process it has been interesting to find out what ways and forms of work in the opinion of pedagogues from vocational training centres are the best to apply in the classroom so that the majority of students having moderate special educational needs could successfully participate in the class activity and gain positive results of education. It has become clear that one of the most appropriate ways of work is *group work* (M=2,77). The respondents have indicated that applying this method more than a half of students having special educational needs are able to successfully work in the classroom. The presupposition can be made that working in small groups students have the possibility to collaborate, get advice from friends, share works and activities among themselves, make experiments and express thoughts more courageously, learn from the others, give arguments. More than a half of students experience more difficulties in working productively in the majority of lesson time and individually. Students experienced the most difficulties in working on their own (M=2,07). 93% of the respondents indicated that less than a half or individual pupils manage to make their homework successfully.

The third block presents the questions about the necessity and possibilities of the improvement of the process of mathematical education at school, domination of educational paradigms in teaching mathematics for students having moderate special educational needs, choosing methods during prevocational training. The statements have been chosen referring to adapted comparison of classes and activities that are traditional and based on the principles of constructivism and pragmatism by Brooks J.G., Brooks M.G. (1999) (cit. Jurašaitė – Harbison, 2008), educational paradigms of teaching and learning. The majority of the respondents have indicated that the most important educational paradigm that should dominate in working with students having special educational needs is the paradigm of learning. According to the pedagogues, teaching during the lessons of mathematics should be based on students' experience, environment and learning "everywhere and always" should be in the first place and various sources of information and means of learning should be considered important (M=6,42), teacher should be a

teaching adviser (counsellor), specialist, adviser (M=5,28), next to traditional teaching methods teacher should use non-traditional, active methods (M=4,59). In pedagogues' opinion, teachers and specialists should the least follow such paradigms as *only teacher is the active participant who has a goal and acts according to it (M=2,94), teacher in classes often uses explanation, questioning, writing, text reading, lecture, demonstration (M=3,78)*. Sd deviation shows that pedagogues contradict to the statements reflecting teaching paradigm, a student cannot be a passive receptor of information; teacher is a transmitter of facts and abilities.

In pedagogues' opinion, teaching and learning should be based on pragmatic and constructivistic approach, therefore, it is important to be interested in the peculiarities of student's development, his/her thinking abilities, gained experience, learning motivation, practical application of mathematical knowledge modelling various real-life situations. It is emphasized that learning is an active two-sided process the aim of which is not to transmit and receive information but improve student's individual perception through active practical performance.

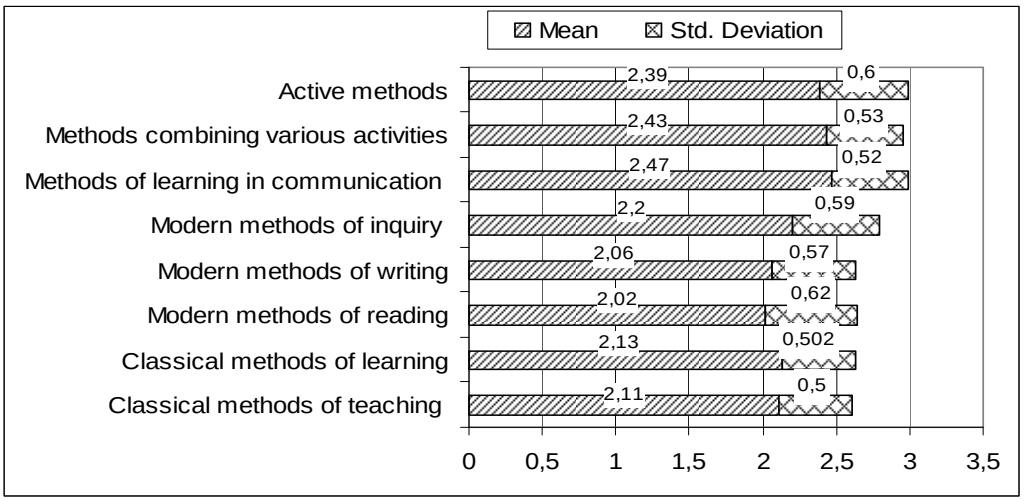

Figure 3. **Teaching and learning methods applied in individualization of the programme**

According to the respondents, individualization and differentiation of teaching, application of active teaching methods should help to develop general abilities of students having special educational needs, their positive attitude to competently use knowledge and skills in personal, vocational and social life. In order to achieve more efficient success in learning and better results teachers should pay special attention to learning and teaching methods that would help students to develop the abilities of the practical application of knowledge (concepts, rules, etc.), their relation to real-life environment. In the process of education it is necessary to apply various modern methods of teaching and learning stimulating students' motivation of learning, helping a young person to get ready for life and learning a profession. Figure 1 gives the data about the methods of teaching and learning that, according to the pedagogues of vocational training

centres, teachers of mathematics should apply adapting or individualizing the programme of mathematics for students with special needs in mainstream school.

From the obtained results of the research it has become clear that the respondents suggest that teachers of mathematics should apply in the process of education of students with special needs all teaching and learning methods presented in the table paying more attention to the application of the methods of *learning in communication* (M=2,47), *combining various activities* (M=2,43) and *active* methods (M=2,39). Applying active teaching and learning methods a student is involved in learning by more different forms. He/she is not only a passive listener. He/she may creatively express himself/herself, implement his/her aspirations in learning process.

Conclusions

1.Development of functional mathematical literacy should become an important component of prevocational training of students having moderate special educational needs because all the pedagogues of vocational training centres accentuated the importance of functional mathematical literacy for vocational training of students having moderate special educational needs.

2. The research has shown that the level of students' functional mathematical literacy is insufficient. The main parts of mathematical literacy: *mathematical knowledge and perception, knowing how to learn mathematics and interest in it, problem solving, mathematical communication, mathematical thinking*, are poorly developed. The most developed areas of mathematical activity are *numbers and calculations, measures and measurements*. In the process of education more attention should be paid to the formation of the abilities of other areas of activity showing practical applicability of mathematical knowledge.

3. It has been noticed that young people having special educational needs during lessons were the best at working in a group, and only individual persons were the best at working individually. The development of mathematical literacy of these students should be based on pragmatic and constructivistic approach. Directions of education should be oriented towards a new paradigm of learning that brings education closer to students' actual social environment and abilities of practical application of knowledge. The paradigm of learning should essentially change goals of education, relationship between an educator and a student, methods, educational and learning environments.

4. In the process of education it is necessary to apply various modern methods and ways of teaching and learning stimulating student's learning motivation, helping a young person to get ready for life and learning a profession.

Summary

The article deals with the approach of pedagogues from vocational rehabilitation centres towards the importance of the development of functional mathematical literacy for vocational training of students having moderate special educational needs. It has been attempted to reveal the expression of the abilities of

functional mathematical literacy of young people having moderate special educational needs, its importance for vocational training, to discuss the possibilities of the improvement of the education process of mathematics in a heterogeneous classroom, where students with moderate special educational needs learn. 124 pedagogues from Lithuanian vocational training centres and vocational schools who teach young people having moderate and severe special educational needs have participated in the research. Questionnaire written survey in the form of anonymous questionnaire meant for pedagogues of vocational training of people with disabilities has been chosen as the main method of the research.

The research has shown that the development of functional mathematical literacy should become an important component of prevocational training of students having moderate special educational needs because all the pedagogues of vocational training centres accentuated the importance of functional mathematical literacy for vocational training of students having moderate special educational needs.

The level of students' functional mathematical literacy is insufficient. The main parts of mathematical literacy: *mathematical knowledge and perception, knowing how to learn mathematics and interest in it, problem solving, mathematical communication, mathematical thinking*, are poorly developed. The most developed areas of mathematical activity are *numbers and calculations, measures and measurements*.

The development of mathematical literacy of students with disabilities should be based on pragmatic and constructivistic approach. Directions of education should be oriented towards a new paradigm of learning that brings education closer to students' actual social environment and abilities of practical application of knowledge. The paradigm of learning should essentially change goals of education, relationship between an educator and a student, methods, educational and learning environments.

In the process of education it is necessary to apply various modern methods and ways of teaching and learning stimulating student's learning motivation, helping a young person to get ready for life and learning a profession.

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