

RESEARCH OF THE LEARNING PROCESS IN PROFESSIONAL UNIVERSITY

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***Abstract.** The purpose of this article is to offer an insight into the results of the situation analysis of teaching technical disciplines in professional universities. The aim of this study is to better understand the impact of learning environment organization into students' groups at youth age while teaching technical subjects. Qualitative research method (unfinished sentence method) was used to study the opinion of students about the organization of teaching/learning process. Quantitative method of research (vector modelling by B. Ясвин) was used revealing prevailing types of learning environment in professional university.*

***Keywords:** professional university, learning environment organization, students' groups at youth age, sustainable development strategy.*

Introduction

Considering the crisis of higher education in the current period and the lack of qualified specialists in the construction industry, as well as the massive migration of young specialists raises concerns regarding the prospect of technical universities in Latvia. At the beginning of the 2015/2016 academic year, the total number of students in higher education institutions in Latvia was 84,282. In comparison with the previous academic year the number of students decreased by 2 % (Izglītības un Zinātnes ministrijas 2015. gada publiskais pārskats, 2016). At the beginning of the 2016/2017 academic year, the number of students at Riga Technical University and Daugavpils University has decreased by 4 %, at Rezekne Technology Academy – by 7 % (Augstākās izglītības finansējums, 2017). In 2015, twice as many working-age people emigrated from Latvia (16.8 thousand), compared to the number of immigrants at the same age group (7.2 thousands) (Demogrāfija, 2016: 9). In 2015, due to the long-term international migration population number in Latvia dropped by 10 640 (Demogrāfija, 2016: 107). In 2016, due to the international long-term migration, population number in

Latvia dropped by 12 229 (Demogrāfija, 2017: 121). Similar problems are observed not only in Latvia. Nowadays many scientists all over the world focus on the crisis of higher education - Roger L. Geiger, professor at Pennsylvania State University, Geoff Thompson chair of governors at the University of East London, Tuguz Fatima Kazbekovna, professor at Adyghe State University and others. Kofi Annan, winner of the Nobel Peace Prize and former general secretary of the United Nations, famously said: “Education is the premise of progress, in every society, in every family” – and currently the UK academia is not able to achieve it (Thompson, 2017). A recent Pew Research Center poll showed that 75 percent of adults think that higher education has become unaffordable — and most of them believe that it’s not worth the money (Loconte, 2017). Joseph Loconte (2017) remarks the necessity of meaningful conversation about the fundamental purposes of higher education and the best way to achieve them.

The answer of this question can be found in the 2030 Agenda which is a plan of action for people, planet and prosperity. The new Agenda for Sustainable Development also notes the need of providing inclusive and equitable quality education at all levels, including tertiary technical and vocational education. All students should have access to learning opportunities that helps them acquire the knowledge and skills needed to exploit personal opportunities and to participate fully in society taking into account their different capacities and circumstances. The 2030 Agenda is determined to ensure that economic, social and technological progress occurs in harmony with nature (Transforming our world: the 2030 Agenda for Sustainable Development).

Thus, the main aim of an effective professional university is to educate not only a knowledgeable, qualified specialist, but also an individual with the following abilities (in accordance with sustainable development):

- to work successfully in a team;
- to foster inter-cultural understanding, tolerance, mutual respect and an ethic of global citizenship;
- to be capable sustainably manage the natural resources;
- to be ready for shared responsibility.

During students’ educational process a teacher has to organise the teaching/learning process so that it should promote students’ development through common knowledge constructing and decision making. Therefore the first phase of the study deals with an exploring the students’ views on the organization of teaching/learning process in a technical university.

Theoretical background

Analysing the psychological literature, we come across different views on the classification of age group, which identify biological and socio-historical

factors. Thus, the different scientists' opinion about the youth age group chronological range tend to vary. Age is defined as a time-limited part of the individual's psychic development, which is characterized by a combination of certain physiological and psychic changes (Petrovskis, 1979; Выготский, 1999; G. Svence, 2003; Jirgena & Mārtinsons, 2007; Rungule & I. Karklina, 2009). In accordance with the Youth Law (version 2010) of the Republic of Latvia young people are persons from 13 to 25 years of age (Youth Law, 2008). Student's youth age is from 17 to 27 years respectively. Summarizing the analysed works, we can conclude that the age of 17-25 years can be considered as a youth when the most serious, deep relations with other people are formed and professional and personal self-determination takes place, which involves deliberate choice and creative approach in problem solving and decision-making.

In traditional training programmes, especially in technical disciplines, the attention is not being paid to students' creativity and creative potential for escalation. The teaching/learning process is more focused on the reproduction of the study material rather than on the creation of something new. During the educational process, students would need to integrate diverse knowledge and skills, because the quality of education these days is determined by directly integrated body of knowledge. In favour of the teaching/learning process reorganization in technical universities the changes were implemented according to the socio-cultural aspect. As it is highlighted in the introduction, the growing changes in society and in the field of science bring the problem of teaching and learning into focus in technical university.

Therefore, the research object in the first phase of the study is organization of a teaching process in a technical university.

Research subject - the model of students' integrative collaboration in a technical university (van Gejeka, 2013).

Research aim - to develop and experimentally verify students' integrative collaborative model for teaching process reorganization in a technical university in the second phase of the study.

Research questions in the first phase of the study - what are the main reasons for the technical university students' dissatisfaction with the organisation of a teaching/learning process?

Research tasks in the first phase of the study - to explore students' views on the organization of teaching/learning process in a technical university.

Methods and methodologies

In the first phase of the study theoretical methods (pedagogical, philosophical and psychological literature analysis and evaluation to summarize and generalize findings about the key questions of the research as characterization

of youth, etc.) and empiric methods (qualitative research methods: unfinished sentence method, questionnaires) were used to study technical university students' opinions about the organization of teaching/learning process in a technical university in order to emphasise the opportunities of receiving vocational education in Latvia. Qualitative methods (unstructured questionnaire) spotted some organizational problems in teaching technical subjects in professional university. In order to find out students' opinions about the learning process organization at their university, a survey was conducted within this study (the method of unfinished sentences). The survey is one of the most popular data mining methods (Mārtinsone & Pipere, 2011). This method allows us to obtain the initial information, which includes the respondents answers to the written questions that contain the research problem at the empirical level, as well as the content of the received answers (Kristapsone, 2008: 225).

Unfinished sentence methods aim is to determine students' opinions about the learning process organization of youth age groups.

Procedure. Several individual surveys were organized, asking respondents (which study technical subjects as “Reinforced Concrete Structures design”, “Metal Structures design”) to fill in the questionnaire with requested information, continuing 23 unfinished sentences. Two Latvian professional universities from different regions have been chosen as a research area with students aged 17-27 years. The questionnaires were anonymous. The number of respondents were 101:

- 1) Rezekne Technology Academy (RTA), course 3, 38 respondents;
- 2) Riga Technical University (RTU), course 3, 63 respondents.

Several students were not enthusiastic according with necessary to answer the questions of survey and expressed dissatisfaction with the length of the questionnaire.

Qualitative analysis of the survey results with unfinished sentences:

Only a few respondents (10 %) answered the first sentence “I like ...” with “I like to study”. The following answers were repeated:

“I like to relax.”(RTU -16 %, RTA-19 %)

“I like the practice time when you don't have to sit at school.”

“I like to meet friends.” “I like to sleep.” etc.

To the second sentence “The happiest moment is ...” respondents gave the following answers:

“.. good grades.” (25 %)

“... spend time with your family.”

“.. relax.” (6 %)

“I have not had any.” (RTA-5 %) etc.

To the sentence 3 “I want to know ...” respondents replied:

“... everything about my profession.” (RTU-27 %, RTA-29 %)

“.. everything “ “.., who I am.”

To the sentence 4 “At lecture ...” respondents replied:

“... it's often boring”, “I am sleepy”, “...it is uninteresting”,

“I'm sad”, “I do not like to learn.” (RTU-10 %, RTA-8 %),

“...is interesting” (RTU-4 %, RTA-8 %).

To the sentence 5, “I regret that ...” respondents answered:

“...I don't do anything in time.” (RTU- 30 %, RTA – 30 %)

To the sentence 7, “My studies are hampered by...” respondents replied:

“... some teachers.” “... a long learning time.”

To the sentence 12 “Teacher in his/her work...” respondents replied:

“...is very positive, friendly, and favourable.” (RTA – 40 %)

“...dominates.” (RTU – 10 %)

...,...normal, positive, but sometimes negative; neutral, disinterested.”
(RTU – 10 %)

To the sentence 14 “I suffer ...” the respondents answered:

“... from the great amount of work.”

“... from laziness,”

“... from time-lag”.

To the sentence 15 “I will be unhappy ...” respondents answered:

“... if it will be necessary to make a presentation in front of the public.”

“... if I will not be able to finish the university or exams.” (17 %)

To the sentence 17 “During the practice work...” respondents answered: “... I hardly focus,” “... I am always in rush”, “...I have a stress”.

Students' answers to the questions about studying in the university also included dissatisfaction, pessimism and excitement:

“My crazy teachers, society.” “I feel the excitement, the tension.”

“My nerves are tense.” “I did not succeed in the university.”

“The future will not be better.” “I like to relax, drive, etc.”

Summing up the answers, it was concluded that sometimes students do not feel satisfied with their work in the university, can't adequately motivate themselves to study and don't consider the learning environment as attractive and motivating, but rather overly dogmatic. Although the majority of respondents evaluated the learning environment positively (“likes this place (university), but ...”), every one of them, however, noted that it should be “changed ...” which confirms the topicality of the research. Such answers as “the problem - money, lack of time,” point out the reasons why students consider university as one of the most serious problems in their lives which limits their development and freedom.

The results of the research lead to a question about the most important learning environment factor as relationships with peers or relationships with educators. The analysis of the results of structured interviews provides a partial answer to these questions. Analyse of the answers to questions No. 9, 11, 12, 17

was focused on the study of university teaching creativity and identifies the following respondents' answers:

“It's boring to be in the classroom.”

“The position of a teacher seems to be aggressive.”

“Design of the classroom is grey, boring.” (RTU – 80 %)

So, students describe the learning process as boring, relying on reproduction and pointing to the authoritarian position of the teacher. Overall, the results of the survey show that there is no creative learning environment in the studied universities.

In the second part of the study, quantitative methods of research (vector modelling) revealed prevailing types of learning environment in the lectures of technical subjects. The method of “vector modelling” by В. Ясвин (2001) was adapted by the authors, and allowed them to build up a coordinate system, which consists of 2 axes: “activity-passivity” and “independency-dependency”, making four different areas (see fig.1).

A microanalysis of the learning environment was carried out on the basis of student responses to 6 simple questions. The first three questions were designed to identify the availability of opportunities for student control in the development of the learning environment and the other three questions were formulated to elicit particular opportunities for developing student personal activities. An each answer allows us to mark it on the corresponding vector.

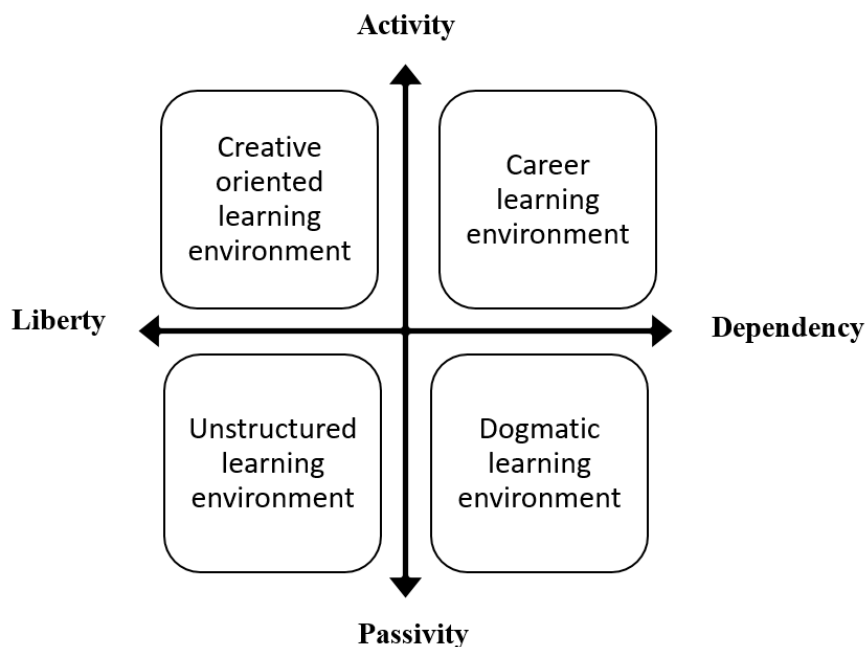


Fig. 1. **Spectrum of possible vector models of learning environment**

Therefore, the indicators of learning environment states represent the inner or subjective awareness of the students on the lesson, which is reflected in their

answers. The typological sample is based on two characteristics: age (youth age) and specialty (construction).

Results

It has been pointed out that in RTU a dogmatic (43,4 %) and career oriented (41,51 %) learning environment types prevail (see fig. 2). In dogmatic type of environment a developing personality is characterized by total dependency. The authoritarian teaching styles are more common there. Approximately three quarters of RTA students characterise the learning environment in their university as career oriented. In such type of environment a developing personality is characterized by almost total activity and dependency, which is least acceptable to the people in a democratic society, but very beneficial for a non-democratic government.

In addition, the diagram demonstrates approximately half the RTA students were very satisfied with the creative learning environment. However, in RTU these students are a small minority. This can be explained by the organization of the educational process in RTA in a completely new modern building, commissioned just 3 years ago.

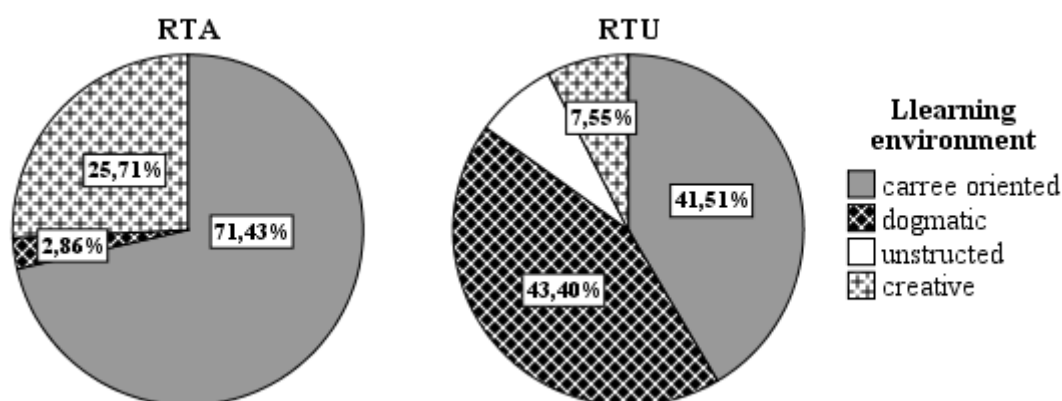


Fig. 2. Microanalysis of the learning environment in Riga Technical University (RTU) and Rezekne Technology Academy (RTA)

While in the RTU the repair of the old university building was started only a month ago. Consequently, it is important to organise a teaching/learning process in such a way that it would allow students to be satisfied with the teaching and with the facilities (building, rooms, equipment), to take an active position in dealing with creative tasks, would teach them to think creatively, to draw conclusions, to resolve conflicts amicably, to seek information, to understand the different knowledge spheres of mutual relationships and to be independent researchers.

Conclusions

The research deals with the issue of demand for highly-qualified, skilful and competitive specialists able to work in interdisciplinary team and organize collective work. Undoubtedly, the results of research indicated a necessity of learning environment reorganization in professional university, which logically lead to the second phase of the research - development of the practice scenario in order to prove the efficiency of integrative method in technical subjects teaching such as “Reinforced Concrete Structures”, “Metal Structures”, basing it on the integrative students’ collaboration widely using the teamwork. Accordingly, the authors of the conducted research suggest to use a team project method (learning environment reorganization model) during the students workshops at Riga Technical University. In accordance with Youth Law of the Republic of Latvia (version of 2010) one of the main tasks in youth work is to support and promote youth initiatives and provide favourable conditions for their intellectual and creative development (Youth Law, 2010). Therefore, this study is timely.

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