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## **INTEGRATION OF THE PROBLEM-BASED LEARNING SYSTEM INTO THE PROFESSIONAL LANGUAGE MODULE AT THE LITHUANIAN UNIVERSITY OF HEALTH SCIENCES**

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**Summary.** As the significance of science increases and the cooperation with foreign partners becomes more intensive, education and training of highly qualified specialists gains its importance. At the Lithuanian University of Health Sciences, update and improvement of the curriculum are priority fields in the education and training of health specialists. The field of professional languages is the field that attracts special attention. The University should educate specialists who would be able to cooperate in research and professional activity via free communication in several foreign languages. This study aimed at revealing the peculiarities of the expression of the elements of the problem-based learning system in professional language studies at the Lithuanian University of Health Sciences (LSMU). The generalized results of the study showed that the formation of students' deep approach to studies and their independent work skills may be affected by integrating the elements of the problem-based learning system into the studying process. Empowering the students for successful studies was significantly facilitated by the application of such techniques as mind maps, group work, problem solving, brainstorming, and discussion.

**Keywords:** professional foreign language teaching, problem-based learning, student and teacher competency.

### **Introduction**

In the European Union, education attracts increasing attention alongside economical interests. The EU countries tend to develop common educational processes and education in general. Lithuania's integration into the EU has resulted in a new approach to various issues of education – consequently, to specialist training and its organization. When studying at a higher education institution, students prepare to transfer their experience into a broader context of

values and social phenomena. For this reason, the study program should create conditions for the students to immerse into the sphere of a variety of social interests. This may be achieved through various study subjects. In order to be effective in this respect, the study programs should include subjects of fundamental and applied sciences, humanities, natural sciences, social sciences, etc. (Kirikova, Ramanauskas, Latvelienė, Stankevičienė & Kačergienė, 2014b; Kraujutaitytė, 1998). According to Barnett, any attempts at limiting the studies of these subjects are potentially aimed at forming a less open society (1990). Therefore, best study programs in engineering, medicine, education science, and other fields of higher education are multi-disciplinary. They integrate theory and practice, stimulate independent learning and problem-solving, encourage the students to formulate and substantiate the reasons for their actions, empower the students for group work, and involve them into activity dealing with socially important moral and competence-related issues (Kirikova et al., 2014b; Barnett, 1990).

A variety of factors, such as the need for continuous updating of specialized knowledge, accessing the most recent foreign literature, active participation in international conferences and joint projects with foreign partners emphasize the need to know foreign languages and the importance of the education and training of specialists who, instead of limiting their activity to work in a specific sphere, would - through life-long learning - be capable of cooperating with their partners in science and business, communicating in at least one foreign language (Kirikova et al., 2014a).

Each Lithuanian higher education institution makes every effort to improve the study process in order to ensure that the graduates become capable of adapting to the continuously changing economical, political, cultural, educational, technological, and other conditions. However, despite the significant interest of the society in language learning, the number of hours for the studies of foreign languages is currently being reduced at most higher education institutions. Even though the number of hours given to the teaching of foreign languages is decreasing, the requirements for the quality of the knowledge are being increased. Consequently, a teacher faces the problem of helping the students master the required knowledge within a short period of time.

**The aim of the study:** to reveal the peculiarities of the expression of the elements of the problem-based learning system in the studies of professional language at Lithuanian University of Health Sciences (subsequently – LSMU).

**Objectives:**

1. To discuss the theoretical aspects of the professional language learning process.

2. To reveal students' opinion about the process of the professional language studies through the analysis of a pedagogical experiment conducted at LSMU.

**Methods of the study:** analysis of scientific literature, and a questionnaire survey, using closed-type questions. The study included 12 groups of LSMU students who were studying professional language (6 experimental and 6 control groups). During the statistical analysis of the results in the experimental and the control groups, the chi-squared criterion and the evaluation of the summed-up ratings were used.

### **The main theoretical principles**

Barnett (1990) used the concepts of the conservative and radical liberal education in his discussion on liberal education. The conservative concept sees freedom at the core of liberal education. The study program creates conditions for the manifestation and development of an individual's freedom through mastering extensive and diverse *curriculum*. The *radical* concept describes liberal education as a process of self-liberation allowing for conducting self-analysis, understanding oneself, and seeing oneself anew. For this reason, not only the contents, but also the methods of teaching are important, which should liberate an individual and turn him or her into a free person with respect to knowledge and activity.

Studies at a higher educational institution are not merely a quantitative accumulation of facts or knowledge about processes, but rather a change in the perception of the world (Ramsden, 1995). If learning results in the acquisition of knowledge (which, according to Jovaiša (1993), allows altering one's actions), then, quality learning at a higher education institution means a qualitative change in the learner's activities by improving the learner's understanding of the world

(Lipinskienė, 2001). Undoubtedly, this depends on the student's attitude towards learning (Kirikova et al., 2014b).

The problem-based learning (PBL) system is a relatively new direction in didactics at many universities (Carrera, 2003). This system is in line with the aims of the modern medical education (Woods, 1994). According to Kirikova et al. (2014b), introduction of PBL into the traditional system of studies allows achieving a new quality of studies and a special culture of teaching and learning. Due to the co-existence of the traditional and modern features of the study system, a specific academic environment is created at a university, and thus in the progress of the study system, the preservation of the traditional and the modern is becoming one of the principal aims, which allows prognosticating the changes in the teaching and learning culture (Šveikauskas, 2008).

### **Theoretical aspects of application of the problem-based learning system in the Professional Language module**

During the modern era of scientific and technical development, knowledge of the foreign language has become highly important. In the context of the reformation process of secondary schools and universities in Lithuania, emphasis has been placed on the fact that upon graduation, students of higher education institutions should not only be capable of communicating in several foreign languages, but should also acquire skills in communication, critical thinking, understanding the social context, occupational ethics, professional development and motivation, and life-long learning. In many universities, students complete the studies of general education subjects during the first or the second year of their studies. However, such important abilities as critical thinking, creativity, problem-solving skills, or the development of foreign language skills should continue throughout the period of studies.

There is an opinion (Crawley, Malmavist, Ostlund, & Brodeur, 2007) that studies are significant only when the future specialists acquire knowledge through analyzing problems and applying the solutions in various contexts. Crawley et al. (2007) state that employers prefer employees who are not limited to a narrow field of their specialty knowledge, but rather are capable of integrating and successfully applying knowledge from various fields.

Discussions, debates, role plays, improvisation, and presentation of the artificially created characters and their world during theatrical forums help students free their feelings, emotions, and imagination; as a result, students forget that they are speaking in a foreign language. These methods also shape the student-teacher relationship into that which, according to von Humboldt, could be defined as parity-based – i.e. the teacher and the student become equal partners in their cooperation. Consequently, students become more self-confident and more readily express their thoughts in a foreign language, which in turn, stimulates thinking. Thus, through these techniques, a teacher helps the students become more fluent in a foreign language, and encourages them to actually think in a foreign language. However, because the applicability of these techniques depends on the students' level of language knowledge, they are neither the only nor the main teaching methods – despite their obvious aforementioned advantages (Kirikova et al., 2014b).

According to Klimovienė (1998), the use of various research techniques in the teaching/learning process promotes creative cooperation rather than competition. Such relationships help to achieve mutual trust and honesty and to overcome stress and anxiety, thus promoting learners' self-confidence and improving their foreign language skills in all four fields of linguistic activity – listening, speaking, reading, and writing.

In 2007, as a result of the reform of specialist education and training, a new educational learning system - the problem-based learning (PBL) system – was introduced at Lithuanian University of Health Sciences. The PBL system is considered to be more favorable for the development of students' personalities, compared to the traditional teacher-oriented system, which more or less depends on the teaching contents and the teacher's attitude (Kirikova et al., 2014b; Šveikauskas, 2005; Beachey, 2007). The PBL system helps teachers understand their students better, as discussions stimulate the students to express their opinion, and teachers subsequently improve the contents of the studies when taking into consideration the students' needs (Barman, 2007).

The PBL system is widely used in medical studies, but it can also be applied in foreign language learning. The PBL differs from traditional learning by three main principles: 1) the problem is used as a stimulus for learning; 2) it is an educational technique rather than an isolated method of instruction; and

3) it is a student-oriented technique (Kilroy, 2004). Problem-based learning is a specific technique that consists of a number of individual components; students encounter those components during group work and the analysis of various selected problems. The following criteria have a significant effect on students' learning: active information processing, activation of the previously acquired knowledge and relevant contents, and possibilities for the organization and improvement of the acquired knowledge.

According to Kirikova et al. (2014b), the main idea of PBL is that the problem per se is the stimulus for learning. In other words, PBL offers not merely a possibility to solve problems – instead, it provides a possibility to learn, and problem solving serves only as an impulse for learning. PBL is an integrated teaching/learning technique whose basis is the interaction between the student and the teacher (the tutor), its characteristic feature being systematic independent cognitive activity – i.e. the acquisition of new knowledge and modes of action through the solution of practical problems. Therefore, a teacher's attempts to differentiate students' responses into the right and the wrong ones might result in a clash of opinions. Here, the traditional approach to the development of students' skills becomes controversial when compared to the meta-cognition model, which is aimed at stimulating students' thinking and motivating them for acquiring learning management skills. Students need to learn how to express their thoughts in a comprehensive and non-impulsive manner so that thinking, consideration, and detailed explanation become a habit. The character of the clash of opinions may depend upon the educational competence of the teacher as well as on the students' ability to learn independently (Šveikauskas, 2005).

### **Students' attitude towards integration of elements of problem-based learning system into professional language studies at LSMU**

To improve the organization of the professional language learning process, an attempt was made to apply the elements of problem-based learning when teaching students professional language at LSMU. This study aimed at determining whether the application of the elements of the PBL system (aims of group learning, concept maps, problem solving, discussion, group work, and

brainstorming) affected the students' evaluation of their competency, the formation of the deep approach to studies, the students' attitude towards the teachers' competency, motivation changes, and the evaluation of knowledge.

For the experimental phase of this study, twelve student groups were selected; the size of each group ranged from 8 to 12 students. Thus, each experimental and control group samples consisted of 50 students. The studied groups were selected by applying a non-probability convenience sampling.

Testing was performed prior to affecting the subjects of the study. The testing was followed by the experimental effect, which was only applied to the experimental group. The factors of the experimental effect were set in advance: formulation of the aims of group learning, application of concept maps, problem solving, discussion, group work, and brainstorming. After the experimental effect, the final testing was conducted, which was identical to the pre-experimental testing. This was done for the facilitation of data comparison.

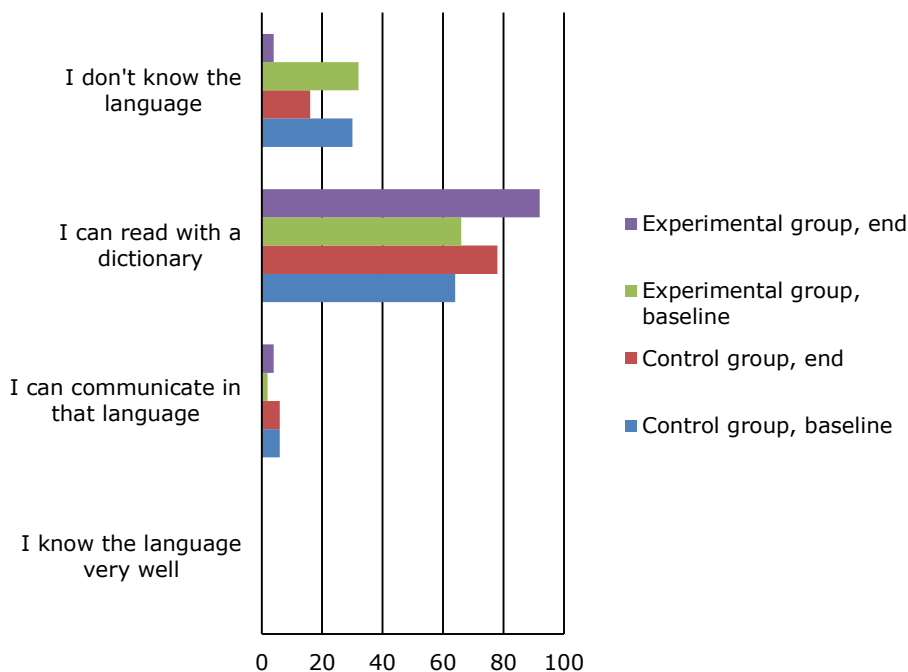
The questionnaire of the study consisted of 61 questions allowing the respondents to express their opinion. The logic of the sequence of the questions was based on the principles of the creation of an effective environment for foreign language learning (Kirikova et al., 2014b). The students evaluated the closed questions of the questionnaire by marking the respective position on the Likert scale ("strongly agree", "probably agree", "disagree", or "I don't know").

## **Results of the study**

The respondents of the study varied with respect to age, yet most (92%) of them were 1<sup>st</sup>-3<sup>rd</sup>-year students. The analysis of the mean learning showed that over one-half of the participants (64%) showed very good results. The percentage of students whose evaluation scores were below 7 points was relatively low – only 9%.

During the first three years of studies, students continue the improvement of their foreign language skills and learn professional medical terminology, and second-year students - in addition to the improvement of foreign language skills acquired at school - may also choose to study a second foreign language. The findings of the study showed that the majority of the students (89%) had learned to communicate in English while learning at school.

However, only nearly one-half (49%) of the respondents stated that they could speak English very well.

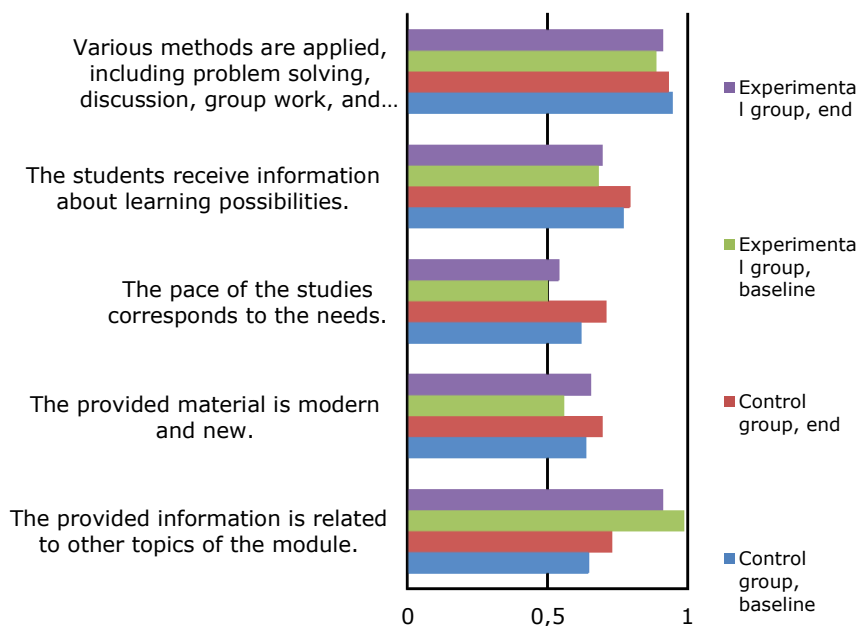


**Fig. 1. The dynamics of changes in foreign language skills in the experimental and the control groups**

As the subjects of the experimental group had chosen the French language module, the pedagogical effect was applied on this group, and better evaluation results were expected. The results of the French language knowledge prior to and after the pedagogical effect revealed clear differences (Fig. 1). Prior to the experiment, 38% of the subjects did not speak French at all, compared to only 9% of such subjects after the experiment. Also, prior to the experiment, 63% of the subjects could read texts in French with a dictionary, compared to 94% ( $\alpha = 0.0001$ ) of such subjects after the experiment. The control group students had chosen the German language module, and experienced no pedagogical effect. Data analysis showed no statistically significant difference between the baseline data and those obtained at the end of the studied period ( $\alpha = 0.8915$ ).



In the questionnaire, the subjects were asked about the teacher's ability to convey the contents of the module and the most recent methods used. The questions indicating the teachers' competencies and levels of significance of the difference in response rates between the experimental and the control groups are presented in Fig. 2.



**Fig. 2. Evaluations of teacher's competencies in the experimental and the control groups**

The majority of the subjects in the control and the experimental groups chose the teachers' ability to use didactic tools and methods including problem solving, discussion, group work, or brainstorming. In the experimental group, a statistically significant difference ( $\alpha = 0.0000$ ) was obtained concerning the association of the provided information with other topics of the module – in contrast to the control group. However, few students in the experimental group indicated that the learning pace met their needs and that that the provided material was modern and new ( $\alpha = 0.0001$ ).

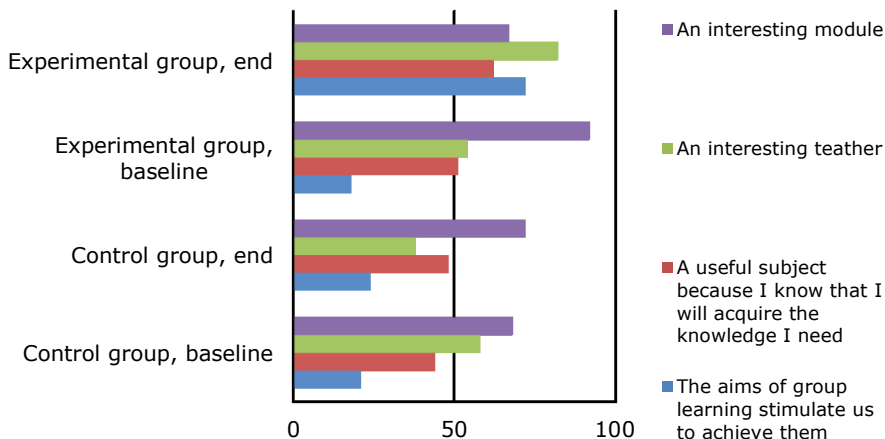


Fig. 3. Motives for studying the module

In order to clarify the factors affecting their motivation, the subjects in the experimental and the control groups were asked the question “Why are you studying this module?” prior to and after the experiment (Fig. 3). The results of the study showed that in both groups, the main motive for the choice of the module was that the respondents found it interesting. This motive was more prominent in the experimental than in the control group.

However, after the pedagogical effect, the respondents’ interest in the module decreased significantly. Before the pedagogical effect, 92% of the respondents in the experimental group chose this module because they found it interesting, whereas the percentage of such respondents after the pedagogical effect dropped to 67%. Meanwhile, the significance of an interesting teacher as a motivator increased in the experimental group after the pedagogical effect, whereas it dropped in the control group. The analysis of the data in the experimental group showed a very clear difference in the students’ opinion on whether the aims of learning promote the assimilation of the learning material (only 18% of the subjects prior to the pedagogical effect compared to 72% after the pedagogical effect).

To evaluate the subjects’ deep approach to learning, we selected 9 questions reflecting such an approach. The data of the study are presented in Fig. 4. When choosing the module of the second foreign language, students either

did not know that language at all or knew only a little. However, both in the control and the experimental groups prior to the pedagogical effect students stated that they felt a lack of additional knowledge and abilities for the studies of the selected module. After the pedagogical effect, the lack of additional knowledge markedly decreased, but the difference was not statistically significant (see Figure 4).

In the experimental group, 4 statistically significant responses were found. After the pedagogical effect, the students indicated that they learned how to distribute their time and thus were capable of completing all of their assignments on time ( $\alpha = 0.0000$ ). They stated that they liked trying something new ( $\alpha = 0.0001$ ) and that they did not have any difficulty in planning and organizing their work ( $\alpha = 0.0000$ ). The respondents also indicated that they associated the newly acquired information with the information they had acquired before ( $\alpha = 0.0011$ ).

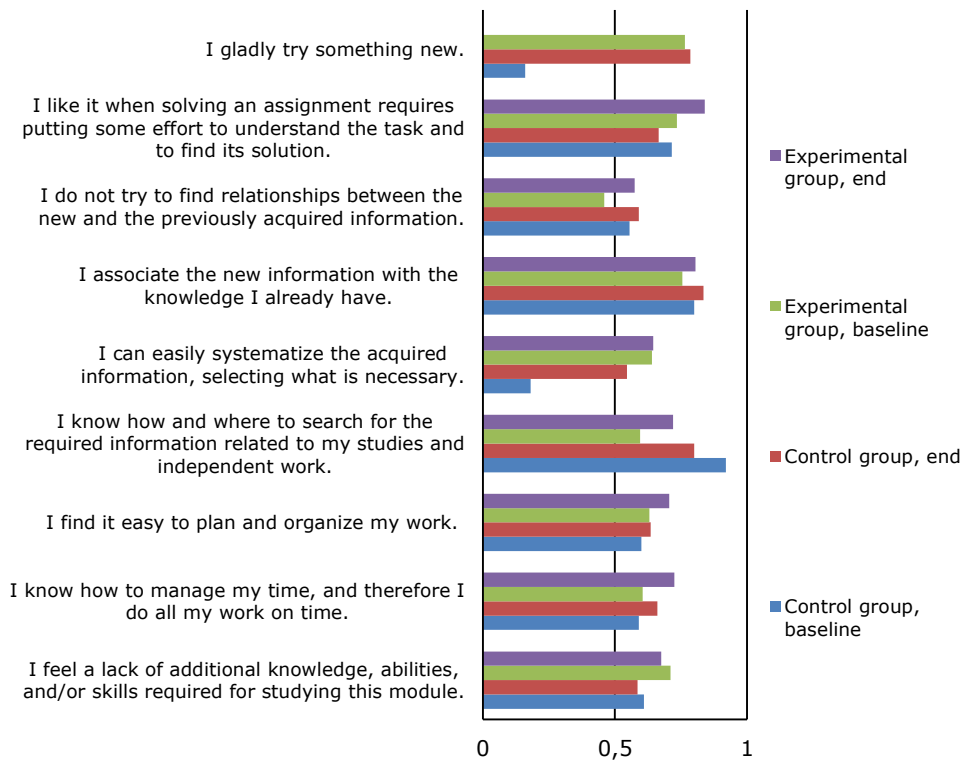


Fig. 4. LSMU students' approach to deep learning

## **Discussion**

The generalization of the results of the study has revealed a number of positive aspects characteristic of an effective learning environment. According to Lipinskienė, “a student’s empowerment for studies means the creation of an educational environment whose conditions provide the learning power to each student, influencing successful studies. These are conditions of competency, studies, and also psychological and organizational conditions” (Jucevičienė et al., 2010). A teacher who strives to build such environment in his or her classes creates a parity-based climate, helps the student perceive his or her system of knowledge and develop understanding, adjusts the aims and the content of teaching as well as the evaluation methods together with the student, helps the student choose suitable learning tools and assimilate the learning content meaningfully, using the deep rather than the superficial approach to learning. In such an environment, the student is given autonomy and responsibility for the results of his or her activity, which allows the student to control the learning process, while tolerance of failures, reflection, self-control, and self-evaluation allow him or her to learn from the mistakes, increase self-confidence, and maintain motivation for quality learning and the deep approach to learning. Another important point is that in such an environment the student gets a possibility to freely choose and use various information, material, and human resources that are required for his or her learning and correspond to his or her needs.

The participants of the study emphasized that they had deeper knowledge after the pedagogical effect: they tried to find relationships between the previously acquired and the new information, they associated the new information with their knowledge, and they also liked when solving an assignment required some effort in order to understand the task and to find solutions. With respect to the creation of an effective learning environment, stimulation of independent work is also relevant. Analytical skills, integration of subjects, the life-long learning concept, and the use of a greater variety of sources of information during the studying process also indicate possibilities for the creation of an effective learning environment, ensuring the necessary competency conditions.

Generalizing the evaluation of student and teacher competency, one can state that the majority of LSMU students can communicate in English and tend to learn another foreign language. Thus, the students' strong interest in languages facilitates their preparation for successful studies. When evaluating teachers' competency, the students emphasized the usefulness of the knowledge provided by the teacher and its relevance for future activity, and also the teachers' ability to use didactic tools and methods. Formulation of the aims of group learning and the use of new techniques significantly influenced the students, stimulating their motivation for successful studies.

Changes in the students' motivation may be directly associated with the creation and maintenance of psychological conditions. The students stated that the most important motive for choosing the module was interest. The pedagogical effect increased the students' competency; as a result, the students' attitudes became much more critical, and the importance of such motivators as an interesting teacher or an interesting module dropped in the experimental group after the application of the pedagogical effect.

During the experiment, the students' attitudes towards evaluation and feedback changed significantly. The inclusion of the elements of problem-based learning (PBL) into the studying process in the experimental group changed the students' attitudes towards the evaluation of knowledge, provided the ability to know the results of one's work at any time, and allowed seeing their successes and failures.

## **Conclusions**

Even though the problem-based learning (PBL) system is widely used in medical studies, it is also applicable in foreign language learning. The PBL system is seen as being more conducive to the development of students' personalities compared to the traditional teacher-oriented system, as the latter to a greater or lesser extent depends on the attitude of the teacher and the contents of teaching.

The pedagogical experiment conducted at the LSMU in the studies of the professional language module revealed the impact of the pedagogical effect on the formation of the students' deep approach to studies. The application of such techniques as concept maps, group work, group learning aims, problem solving,

discussion, and brainstorming had a significant stimulating effect on the students' motivation for successful studies.

The study identified the advantages of the use of PBL elements, which were associated with the creation of an effective learning environment as well as with the assurance and maintenance of competency-based and psychological conditions for such an environment. The study also identified the disadvantage of the application of PBL elements, which was the reduced importance of the ability of a module to attract interest as a motivating factor for studies.

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## **PROBLEMINIO MOKYMOŠI SISTEMOS INTEGRAVIMAS PROFESINĖS KALBOS MODULYJE LSMU**

**Santrauka.** Didėjanti mokslo reikšmė ir glaudesnis bendradarbiavimas su užsienio šalių partneriais sąlygoja gero specialisto rengimą. Rengiant sveikatos mokslų specialistus Lietuvos sveikatos mokslų universitete, prioritetinėmis sritimis laikytini rengimo curriculum atnaujinimas ir tobulinimas. Ypatingas dėmesys skiriamas profesinės kalbos žinių įgijimui ir tobulinimui. Universitetui svarbu rengti specialistus, gebančius bendradarbiauti mokslinėje ir dalykinėje veikloje, laisvai komunikuojančius keliomis užsienio kalbomis. Tačiau pastaruoju metu universitetinėse programose mažėja profesinei kalbai skiriamų kreditų ir valandų skaičius, todėl dėstytojui tenka ieškoti naujų metodų ir priemonių, kaip per trumpesnį laiką parengti tinkamos kvalifikacijos specialistus, gebančius bendrauti profesine užsienio kalba. Tyrimo tikslas – atskleisti probleminio mokymosi sistemos elementų integravimo raiškos ypatumus LSMU studijuojant profesinę kalbą. Apibendrinant rezultatus galima teigti, kad probleminio mokymosi sistemos elementų integravimas turi įtakos studentų gilaus požiūrio į studijas formavimuisi. Problemų sprendimų, minčių žemėlapių, grupinio darbo, diskusijos, smegenų šturmo naudojimas per užsiėmimus padarė studentams ryškų poveikį, tai metodai, kuriais galima lengviau įgalinti studentą sėkmingoms profesinės kalbos studijoms.

**Pagrindinės sąvokos:** probleminio mokymosi metodas, profesinės užsienio kalbos mokymas/is, studento ir dėstytojo kompetencija.