



The Impact of Student-Centered Learning Technologies on Professional Development

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ABSTRACT The target of the present paper is the modern educational technologies that lead to the effective organization of the educational process, development of students' critical thinking skills and the ability to work for the task individually and in the team, increasing the student responsibility for results of the study and promote the initiative. Modern educational technology is perceived as the system of means, forms, and methods of organizing educational interaction, providing effective management and implementation of educational processes based on the objectives set and somehow designed information models of learned reality - the content of the education. The student acquires competences in the educational interaction organized by educational technology: interactive learning forms, project-based learning, problem-based learning, modular learning technology, which stimulate students' cognitive activity. The central didactic principles of these technologies are expressed in the practice of realization of professional educational programs.

INTRODUCTION

University education should provide the development of a professional personality. Therefore, the purpose of professional education is not only educating a skilled specialist but also a person who is capable of solving personal and social problems. The transition to student-centered learning expands the role of educational technologies in the implementation of educational programs. Educational technologies are an integral part of the innovative development of professional education (Ganieva et al. 2014; Shaidullina et al. 2014; Bezukladnikov and Kruze 2015; Zeer and Streltsov 2016; Gabdrakhmanova et al. 2016).

Modern educational technology is known as a system of means, forms, and processes of organizing educational interaction, guaranteeing the effective management and implementation of educational processes based on a set of objectives, and in a specific way, the designed information models of assimilated reality - the education content. Innovative educational technologies are an ordered aggregate of activities and procedures, the purpose of which is the personality development, instrumentally ensuring achievement of the diagnosed and anticipated result in professional-pedagogical situations that establish the integration

unity of teaching methods in the interaction of students and teachers in the process of developing an individual activity style (Zeer 2009; Matukhin and Zhitkova 2015; Borisenko and Volodina 2015; Ibatova et al. 2016; Barakhsanova et al. 2016; Dusenko et al. 2016).

Many researchers consider the methods of interactive learning. For instance, VLE (à virtual learning environment) is employed in the European space to cause the process of teachings to be more interactive (Kim and Bonk 2002), and consequently, more student-centered. A virtual learning environment assists in guaranteeing that the learning of students is not limited to a particular building, location, or time. As far as project-based learning the teacher needs to have the entire arsenal of research methods, be able to organize research and independent work, be allowed to organize and conduct the discussions, not imposing the personal viewpoint without suppressing authority, and also be capable of integrating knowledge from various fields for solving the picked problems of projects (Zhanguzhinova et al. 2016; Wulf 2019).

Applying a tutor-method in teaching is one of the most practical methods of pedagogical support, which is on the basis of humanist philosophy, the concept of pedagogical support, and also the pedagogy of cooperation (Andreyeva 2011).

These definitions highlight the essential points of student-centered technologies of professional education: a destination for personal development, integral organization of teaching forms, methods and means, facilitative interaction of students and teachers, individual style of pedagogical activity. The purpose of these technologies is to achieve the following objects: professional and personal potential actualization of the education subjects, professional development of mobile personality, the construction of individual educational plans for students, development of project culture, guaranteeing the facilitative interaction of professional education subjects (Mayer et al. 2008). Academic and extracurricular activities are integrated and must be based on the core values of future professional activities (Borytko 2010).

Objectives

The target of the present paper is the modern educational technologies that lead to the effective organization of the educational process, development of students' critical thinking skills and the ability to work for the task individually and in the team, increasing the student responsibility for results of the study and promote the initiative.

METHODOLOGY

Student-centered learning is an approach to education that addresses the problems associated with more traditional education forms focused more on the student and his needs than on the teacher and his contribution. This approach provides various possibilities in the development of the curricula, the content of the course, and the interactivity of the learning process.

In student-centered learning technology, the functions of a teacher and a student change: the teacher become an interaction tutor-consultant and not just fulfilling informing and supervising functions. The student acquires greater independence in choosing the pathways of learning material. Student-centered learning technology promotes differentiation and individualization of student learning activities, the realization of an individual educational route.

According to the definition of the international organization "Education International," student-

centered learning is a type of thinking and culture of a higher educational institution, as well as a method of teaching which is mostly related to constructivist learning theories and is supported by them. Student-centered learning is characterized by innovative teaching methods that stimulate learning on the basis of interaction with students and are aimed at students as the active participants in their education, which forms universal core competencies. To build the process of mastering the discipline on the basis of a competence approach, the lecturer must accept and master student-centered learning skills.

A distinctive feature of these technologies is that the student from the object of learning becomes the subject, and the learning material (knowledge) from the subject of assimilation is a means of achieving some creative goal.

The technology goal is to form the leading features of the student's personality: creativity, spirituality, intellect, professionalism, moral and physical health promotion, self-development providing, self-discipline, self-realization. Students acquire the competences in the course of educational interaction, which is specially organized by educational technology: learning interactive forms, project-based learning, problem-based learning, modular learning technology, which stimulate student's cognitive activity. The main tasks solved with the help of these technologies can be divided into three groups:

- 1) Formation of student's positive motivational and value attitude to the chosen professional activity and training for it;
- 2) Forming students' ideas about the university, profession, setting for active inclusion in the academic process and the university social life;
- 3) Students' social adaptation to new conditions. Some situations are created for the students to realize their potentials in professional activities.

Research methods included epistemological analysis (methodological, comparative analysis and synthesis of modern paradigms, approaches in education); comparison, generalization, and systematization of models of students' learning in the university; questioning of university lecturers.

RESULTS AND DISCUSSION

It is necessary to speak about the VLE system when expressing the technologies of interactive forms of education. A virtual learning environment

(VLE) is a system developed to support teaching and learning in an educational institution. VLE is regularly implemented via the Internet and provides a collection of tools for evaluating the quality of the work done (multiple choice) for communication, content downloading, student work return, peer review, student group administration, stage organization, questioning, etc. These systems include wikis, blogs, RSS, and 3D virtual learning spaces. VLE is applied in the European educational space to make the learning process more interactive (Kim and Bonk 2002), and consequently, more student-centered.

There are learning systems similar to the VLE system (Learning Management System –LMS, Content Management System –CMS, Learning Content Management System– LCMS, Management Learning Environment –MLE, Learning Support System - LSS, Online Learning Center - OLC, Open Course Ware - OCW, Learning Platform - LP). In some programs, including “Elluminate,” a virtual learning environment can be identical to a face-to-face communication environment in the classroom, which includes a direct connection to the lecturer. Students can use emoticons “to hold up their hands”, to reveal that they are confused or understand the lecturer’s words, and even can applaud what the lecturer says. Students can also speak to the lecturer when they are called to talk. Students have the opportunity to write on the “virtual class board” in many of these virtual spaces, which provides them the possibility to display their work to the rest of the class.

Many virtual learning environments provide a lecturer the opportunity to exchange multimedia files (audio, video) and also transfer important documents of various formats to students (Word, PDF, Excel, etc.). Heppell writes in proximity to his book “Virtually there”: “Learning breaks out from narrow chests, in which were caught as trapped in the 20th century; teacher’s professionalism, reflection, and ingenuity lead learning there it is interesting for students and teachers. A virtual learning environment helps to make sure that students learning is not limited to a specific building, or location, or time” (Kim and Bonk 2012; Kayumova and Sadykova 2016).

The project-based learning (PBL) as a method of teaching has become very common today among educators involved in both theoretical research and their practical implementation in higher education institutions.

The project-based method as a part of the learning process can be determined as educational technology to acquire new knowledge for students based on real-life practice and develop specific skills by system organization of problem-oriented research. The project is “learning through doing.”

Project classifications are as follows:

- ♦ The project can be individual or group determined by the number of students; in content and linkage to academic subjects;
- ♦ The projects are divided into monosubject (one subject) and interdisciplinary (two or more subjects)
- ♦ The project activity is shared as short-term (mini-projects), medium-term and long-term by the duration of the projects;
- ♦ By the dominant type of project activity: information, research, creative, and practical-oriented projects.
- ♦ The project activity is a system of interrelated stages determined by its structure.

Working on any project includes three main stages: pre-project preparation stage, planning stage, organizational and research stage, and the stage of presenting the results. Logics of each of these stages represent the role content participants activities in the project: students, lecturers, consultants.

The stage of the presentation of the results (the final stage) includes the following elements: preparation the presentation of the results; public presentation of the project work; the work analysis; evaluation of the work of the project team overall and of each of its participants (Awang et al. 2013).

Project work results in a full assessment of each student’s knowledge and skills. Evaluation should be on the basis of the main elements of the project work, and with respect to the relevance of the preferred topic, quality of the main product, and the quality of the work process. The evaluation for the project work is provided by scientific advisors and can be utilized as a result of the assessment on the subject.

The evaluation for the project work is supplied to the team as a whole. An individual evaluation of each member of the group based on the degree of their real participation in the general work is provided based on the general group assessment (Eremeeva et al. 2017; Fakhruddinova et al. 2017).

The lecturer’s role in project technology is the development of participants’ motivation, consul-

tations on the selection of the project theme and the content, support in the selection of sources, and also all the participants' coordination. The lecturer functions as an expert, who works on the project presentation, evaluate the work and assesses each participant's contribution to the project.

The lecturer requires to have the entire arsenal of research methods, to be able to organize research, independent work and hold a discussion without imposing one's viewpoint and authority influencing; to be able to integrate knowledge from the various fields for solving the problems of the project (Zhanguzhinova et al. 2016).

Problem-based learning is an educational technology, by which students study the subject in the circumstances of complex, multifaceted, and close to real problems. Students who were working within a group determined what they have already known, what they need to know, how and where to get access to the new information, which can result in the problem solution.

The problem situation is converted into the problem task base on the analysis. The problem task poses the following questions: "How to resolve this contradiction? What can we explain this?" A series of problematic questions transform tasks in the solution search model, where various determination ways, means, and methods are considered (Mayer et al. 2008).

Some examples of problem situations based on the contradictions, which are typical for the cognitive process are as follows:

- ◆ The problematic situation as a result of contradictions between school knowledge and new students demolishing the theory;
- ◆ Understanding the scientific importance of the problem and the absence of a theoretical basis for its solution;
- ◆ The diversity of the concept and the absence of reliable theory to explain these facts;
- ◆ Practically accessible results and absence of the theoretical support;
- ◆ The contradiction between the theoretically possible problem solution and its practical inexpediency;
- ◆ The contradiction between a considerable number of actual data and the absence of an approach for processing and analysis for them.

All these contradictions emerge because of the disbalance between theoretical and practical information, the excess of one and demanding the information, or vice versa. The main concern in problem-based learning is the process of searching and selecting the right and optimal solutions.

The problem solution requires the inclusion of creative thinking. Reproductive processes of thinking activity, associated with the reproduction of the learned patterns, are ineffective in the problem situation. The activation of creative thinking is promoted by subject-object-subject relations and occurs when the problem is solved collectively.

The lecturer acts as an intermediary and provides suitable material, for example, by asking problem questions, providing suitable resources, conducting a discussion in a group, and developing evaluation tools. Students are responsible for their group, organization, and direction of the learning process with the support of a tutor. Foreign experience confirms that one of the most potent methods of implementing pedagogical support is the application of the tutoring method in teaching, which is based on the philosophy of humanism, the concept of pedagogical support, and the methods of cooperation pedagogy (Andreyeva 2011).

The authors of the problem method attach high importance to replacing the "from knowledge to the problem" strategy with the "from problem to knowledge" strategy. The lecturer involved in problem-based learning should comprehend the structure and typology of problem situations, the methods for their resolution, and also pedagogical approaches that determine the tactics of the problem method.

Modular learning technology as an alternative to traditional teaching emerged and achieved excellent popularity in educational institutions of the USA and Western Europe in the early 60s, XX century. The basis of modular learning technology is that the student achieves specific aims independently (or with appropriate guidance) while working with the module. The module is the destination functional unit, in which the educational contents and the technology for mastering them are combined.

The module involves a target action plan, information bank, and methodical guidance for completing didactic goals. The content of learning for this technology is given in completed independent information blocks. The uptake of content is

conducted according to the didactic goal, which includes not only the volume of the studied content but also of the approach and level of its uptake.

A modular program is developed with the application of modular learning technology, which includes an integrated didactic purpose and a collection of modules to accomplish this objective. The modules consist of large blocks of academic content. The main scientific ideas of the course are highlighted around individual blocks, and the contents of the subject are structured for making up the program. Subsequently, a complex didactic object is formulated that possesses two levels: the level of learning content and the level of orientation to its application in practice and throughout further education.

The maximum time is supplied for independent work with modular learning technology. The student learns goal-setting, planning, organization, self-control, and self-evaluation, which provide them the chance to realize themselves in the learning activity, determine the level of knowledge, and recognize gaps in knowledge and skills.

The modular learning technology also presupposes control, analysis, and correction, along with self-management:

- ◆ Firstly, a preliminary control of the students' knowledge and skills is conducted to have information about the readiness for work on the new module; is performed if necessary;
- ◆ Appropriate correction of students' knowledge
- ◆ Mutual control, reconciliation with the sample, current and intermediate control are conducted at the end of each learning element in the form of self-monitoring;
- ◆ The ultimate control is conducted after completion of the work with the module.

The integral design of student-centered learning is presented in the European project "The Time of a New Paradigm in Education: Student-Centered Learning," as follows:

- ◆ Its advantages for students and teachers;
- ◆ Role in thinking modifications;
- ◆ Implementation of the student-centered learning by lecturers (students' motivation, selection of methods of teaching and learning, selection of methods for evaluating the students, application of course evaluation in student-centered learning, utilizing the information technologies for developing the student-centered learning);

- ◆ The implementation of the student-centered learning by the educational institution (design of the curricula and the application of learning results, the internal assessment of the quality, the progressive professional development of academic staff, the application of information systems to support student-centered learning);
- ◆ Maintaining a culture of student-centered learning (changing the students work with the information in the learning group, recommendations for the systematic development of student-centered learning etc.).

The basis of student-centered learning is on the knowledge that all the educational institutions, teachers, and students are different. They operate in a wide variety of contexts and cope with various subject disciplines. Hence, student-centered learning is an approach for learning that needs support structures that are satisfactory to specific circumstances and styles of teaching and learning that are suitable for those who present teaching and learning (Hoidn 2016).

A transition from traditional forms of knowledge transfer to create conditions for independent learning, support for active self-study, and coordination of control with the content and structure of the curricula are needed to make teaching more effective and student-centered (Sagitova 2015). This requirement is also determined by the Federal State Educational Standards; therefore, teachers require to master the technologies for organizing student's independent work, which "launch" a mechanism for motivating self-study and self-control.

Students adhere to various learning styles. Student-centered learning realizes that students possess various pedagogical demands. Some learn more beneficial by operant conditioning, and others learn practical expertise. Some students receive much knowledge by reading the literature, and others demand to analyze and discuss the theory to comprehend. Consequently, the lecturer should be concentrated on assisting students in deciding appropriate about the individual style of learning methods and making regular feedback about academic achievements.

Students have to control their studies and be able to participate in the design of courses, curricula, and assessments. It is essential to consider students as enthusiastic partners who care about how the education functions. The best method to

achieve a higher focus on student learning is to involve the students in discovering how their education should be structured (Zhanguzhinova et al. 2016).

The analysis of the results of the lecturers' questionnaire survey at the Institute of International Relations KFU revealed that the answers were "no" to most of the questions related to the students' cooperation in the design of the curriculum programs, and the selection of methods of teaching and evaluation. Hence, lecturers gave 98 percent of negative answers to the questions termed as "Are there discussions with students about the content of the curriculum?", "Are the students' needs and student diversity is taken into account when designing the learning outcomes?" Seventy-eight percent of negative answers were received, and the questions "Is the coordination of the goals of the educational process between lecturers and students?", and "Are there any program in your institution that provides activity learning?" received 68 percent of positive answers and more than half of the interviewed lecturers confirmed that they employed peer assessment and peer teaching, the group work method, and project-based learning in the teaching of students (Bezkladnikov and Kruze 2015).

The search character of the student's activity develops the motivation to knowledge deepening, which is the need for self-education, to study advanced experience, to increase student's skill, and the desire for personal self-improvement. The lecturer forms conditions for the novel type of student teaching named student-researcher type. Such teaching can be conducted together with other people in a huge group, but all personal developments in the learning process are strongly individual (Dusenko et al. 2016). Therefore, in the process of learning the academic discipline, lecturers choose research (heuristic) assignments according to the psychological and pedagogical diagnostics that operate for the student's internal motivation. Because learning can be productive only if the student is internally motivated, the student must be an active "element" of the learning process, with the purpose of subjectively "discovering" new knowledge and skills.

Teaching needs interaction between students and academic staff. It is a necessity that students and faculty to collaborate in developing a common knowledge of the problems resulting in the

learning process and the problems they encounter as the principal interested parties. It is required to seek common solutions operating for both groups. Such cooperation has a positive effect on the audience, as both groups will frequently see partners in each other. This partnership is a fundamental element of the student-centered learning philosophy, based on the fact that teaching and learning should occur in a constructive interaction between the two groups.

Nowadays, the question is how actively lecturers adopt and teach students the active listening techniques, interaction, and accept students as the same partners in communication, which is a learning requirement for personal and professional development.

CONCLUSION

Consequently, on the basis of a meaningful description of substantiated scientifically, student-centered learning technologies unquestionably possess personality-activity character and several advantages which make them indispensable for achieving quality education in any discipline. These technologies provide the organization of students' attitudes, abilities, and knowledge. Such methods lead to the development of the learning process more productively, which assist in developing the students' skills of critical thinking and tolerance to other perspectives and also the ability to work individually and in the team on the selected assignment, as well as increasing the student's responsibility for learning consequences and contribute to the initiative development. The more in the arsenal of the lecturer choices for courses, the more effective the interaction with students, which should become the main rule of the university faculty. The problem which is published in the paper may be valuable for academic staff and supervisors not only in higher levels but also vocational schools, students of pedagogical skills, researchers who work on student personal and professional development, the content required for the implementation of student-centered learning technologies in educational activities at universities.

Further investigation should concentrate on the quality of education associated with the application of student-centered learning technologies, selection, and structuring the content of teaching for lecturers of educational institutions with the

purpose of optimal selection of efficient student-centered learning technologies. Such programs should be developed employing the participation of academics and students, and the scientific generalization programs are required to be involved in research institutes. Moreover, substantive and procedural components of the program should be openly presented at seminars and conferences. Investigating further programs that can be held in institutes is of the interest of future works.

RECOMMENDATIONS

To complement the scope of this paper, it is suggested that in future studies, the issues raised in this article be explored in terms of other aspects such as professional development in personal and community life.

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