Technologies for organizing research activities of students at the university

Технологии организации научно-исследовательской деятельности студентов в вузе

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Abstract

Scientific and technological progress, constant processes of reformation determine the need of employers for highly qualified graduates who are ready to carry out independent professional activities, quickly and non-standardly solve emerging issues, therefore, higher education institutions in the conditions of a competency-based approach strive to make development of students' competence more practice-oriented. Research activity is one of the most important tools in implementation of this process. The purpose of the article is to analyze the experience of a higher educational institution in the implementation of technologies for organizing research activities of students at the university. The article presents educational technologies that contribute to the development of research processes. Students' motivation engaged in research activities are analyzed. The study allowed us to identify students' motivation to participate in research activities and adjust the situation for the better. The achieved results can be used at universities for the preparation of students of various areas of training.

Keywords: Professional education, research activities, educational technologies.

Аннотация

Научно-технический прогресс, постоянные процессы реформации обуславливают потребность работодателей в высококвалифицированных выпускниках, готовых осуществлять самостоятельную профессиональную деятельность, оперативно и нестандартно решать возникающие вопросы, поэтому высшие учебные заведения в условиях компетентностного подхода стремятся сделать формирование компетентности студентов более практико-ориентированным. Научно-исследовательская деятельность является одним из важнейших инструментов в реализации данного процесса. Цель статьи состоит в анализе опыта высшего учебного заведения по реализации технологий организации научно-исследовательской деятельности студентов в вузе. В статье представлены образовательные технологии, способствующие формированию научно-исследовательских процессов. Проанализированы мотивы студентов к занятию научно-исследовательской деятельностью. Проведенное исследование позволило выявить мотивы участия студентов в научно-исследовательской деятельности и скорректировать ситуацию в лучшую сторону. Достигнутые результаты могут быть использованы в вузах для подготовки студентов различных направлений подготовки.

Ключевые слова: профессиональное образование, научно-исследовательская деятельность, образовательные технологии.

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Introduction

In the conditions of intensive development and continuous updating of vocational education system under the influence of scientific and technological progress and fierce competition in the labor market, the main task of higher education institutions is the development of a competitive highly educated competent specialist who is ready to solve professional problems and tasks quickly and creatively. The requirements for the development of students' professional competence at higher educational institutions include the need to implement research activities (Smirnova, et al 2019). Employers need responsible graduates with the ability to make creative decisions, participate in the development of innovation ready to solve research problems. Research activities of students are one of the most effective forms of their professional competence development today. It allows students to contribute to their independence, and develop the ability to analyze and select necessary information as well as to improve a creative approach to solving issues. The main goals of students' research activities are increase in the level of scientific preparation of students, the development of their professional competence. They are worth highlighting. Professional competence is the goal of all modern professional education. In the context of competency-based approach, higher education institutions seek to pay attention to practical focus of educational activities to provide development of professional competences. It is the research activity that allows a student to be immersed in an activity that leads to emergence of a final educational product that can be introduced into educational activity practice.

Theoretical basis

Features of research activities are considered in the works of V.I. Andreeva, G.A. Balla. IN AND. Zagvyazinsky, I.Ya. Lerner. The role of research activity in the system of training students is traced in the works of A.S. Zheleznyakova, T.A. Zabolotskaya, G.P. Chernousova. The practical experience of conducting research activities of students is concluded in the works of V.I. Krutov, G.A. Nikolaev, T.I. Erofeeva, I.A. Winter. Any human activity as its basis has a definite purpose. The foundation of the goal itself is motives, values, ideals (Vaganova, et al 2019a). Research activities are no exception. In order to build a successful research process, where students act as active subjects, it is necessary to motivate them (Vaganova, et al 2018). To do this, it is necessary to study their main motives and if there are none or if they are not arranged correctly, then the teacher should direct them in the right direction (Ilyashenko, et al 2019b). By motivation, it is customary to understand the totality of factors inducing action which determine the activity of a person (Chirva, et al 2018). Among these factors, motives are among the most important and relatively stable manifestations (Pometun, et al 2018). Motives belong to the internal sustainable psychological causes of human behavior (Denysenko, et al 2018). Scientific research is aimed at obtaining fundamentally new knowledge. However, today this is not its main goal (Rakhimbaeva, et al 2019). The main one is the development of a student's personality as well as the development of certain competencies (Smirnova, et al 2018). Research activity is defined as a special type of intellectual and creative activity implemented on the basis of search activity (Garnevska, et al 2018). However, this is not only search activity. It includes the analysis of the results achieved, forecasting and reflection (Bulaeva, et al 2018). In the process of preparing students, research activities perform several functions: educational (expanding existing knowledge, gaining new experience, mastering various technologies, consolidating the conceptual apparatus of specific disciplines) (Klinkov, et al 2018); developing (development of cognitive interests, the development of creative thinking) (Koshechko, et al 2018); activity (forms the experience of the student's practical activities, develops the independence of decisions made, forms the ability to apply a research approach to various types of activities) (Vaganova, et al 2019b); stimulating (allows you to motivate the student to carry out research, the development of research competencies) (Ilyashenko, et al 2019a).

According to the form of research activity organization they distinguish: individual, group, mass research works (Ihnatenko, et al 2018). Among the individual ones, one can distinguish articles, term papers, graduation projects, final qualification works (Vaskovskaya, et al 2018). Group research is carried out on the basis of competitions, olympiads, quizzes, trainings, discussions, games (Markova, et al 2019). Conferences, symposia, and forums (Nikonova, et al 2019a) are among the mass forms of organizing research activities(Vaganova, et al 2019c). Research activities can be divided into those that are carried out as part of the educational process at the university (Bartkiv, et al 2018), and those that are performed outside of school hours (Ivanova, et al 2019). We determine the need to identify students with special

motivation for scientific activity among the main directions of the development of research activities (Kamenez, et al 2019). The main indicators of the effectiveness of research activities include: student publications (both individual and in collaboration with teachers) (Nikonova, et al 2019b); students' participation in scientific conferences, seminars, symposia; student works and projects participating in research competitions (Makhometa, et al 2018); student awards (letters, diplomas, certificates, prizes and certificates); grants received by students for winning research competitions (Sedykh, et al 2019).

Methodology

We conducted a study of students' motivation to participate in research activities. In 2017, a study was conducted of motivation in 100 second-year students studying in the direction of "Vocational training (by industry)" by the method of diagnosing educational motivation of students A.A. Reana, and V.A. Yakunin (as modified by N.Ts. Badmaeva). We studied the motives of prestige (MP), the motives of creative realization (MTR), professional motives (PM) and motivation for avoidance (MI). Most students performed only mandatory types of research activities during the training session. As a result, it was found that the leading motivation factors for participation in research activities in 2017 were avoidance motivation (45%). To improve the situation, the university introduced

competitions of research activities. Students took special educational courses to participate in them that allowed students to understand significance and functions of research activity in their professional development. In 2018, the study was repeated (without changing the number of respondents).

Analysis

In 2017, we conducted a study in the field of identifying motives for students to participate in scientific research activities. 100 students of the 2nd year whose major is "Vocational training (by industry)" took part in methodology for diagnosing educational motivation. We studied the motivation of prestige (MP), the motives of creative realization (MTR), professional motivation (PM) and motivation of avoidance (MI) (Abramova, et al 2018). Professional motivation, prestige motivation, creative implementation motivation are positive and arise from the needs of the person himself (Vaganova, et al 2019d). These are incentives it necessary to exert students' efforts to achieve necessary results in research activities (Vaganova, et al 2019i). Negative motivation includes avoidance motivation arising from fear of criticism from teachers (Vaganova, et al 2019f). The identification of students' motivation in 2017 showed that a large percentage of respondents noted avoidance motivation. Figure 1 shows the results of a study of motivation in 2017.
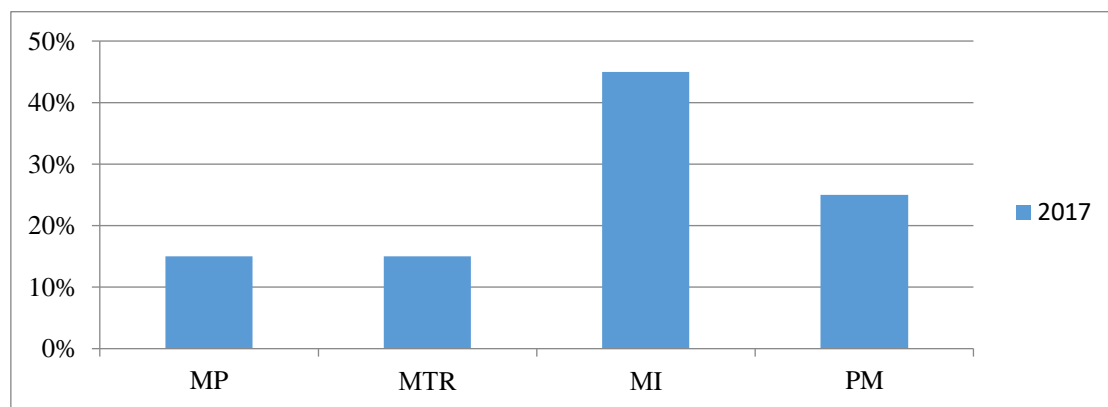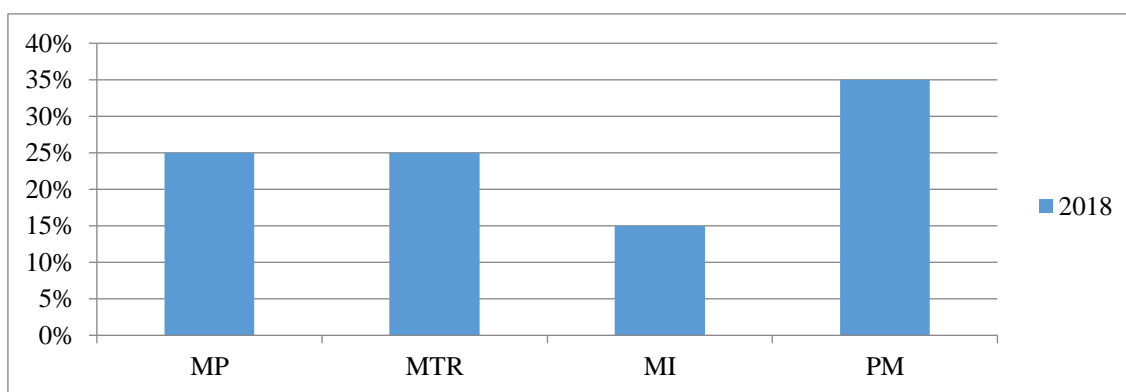

Figure 1. The results of the study of motivation for student participation in research activities at the university (2017)

Motivation for avoidance was identified in 45% of respondents. This is a fairly large percentage of the total number of respondents. To correct the situation in a positive direction, the following measures were implemented. The university organized competitions for research work. To participate in them, students were offered to take courses that cover essence, functions, prospects and benefits of research activities for students' professional development. Lectures held as part of the courses covered the requirements for the preparation of work, especially the performance of a particular part of the work. In case of questions, students could contact the lecturers in electronic form at any time. Students' research activities were carried out both in classroom conditions and independently, using the Moodle electronic educational platform, as well as through the use of Skype. In the process of scientific research, technologies of problem-based learning, contextual, project-based learning and discussion technologies are actively applied. All of them are interconnected. Each student's work includes a problematic issue that is somehow related to future professional activities. Its solution allows students to immerse themselves in the study of the specifics of their future profession and improve the quality of training. In the process of discussion, a problematic issue is considered from different perspectives and in this process a clear scientific position of the student is revealed. He learns to prove it, to argue his decisions. All this is accompanied by inclusion of interactive technologies which provide students with mobility and efficiency in completing assignments. Electronic tools contribute to a better perception of development. In addition, the student can at any time refer to educational materials located on electronic courses.

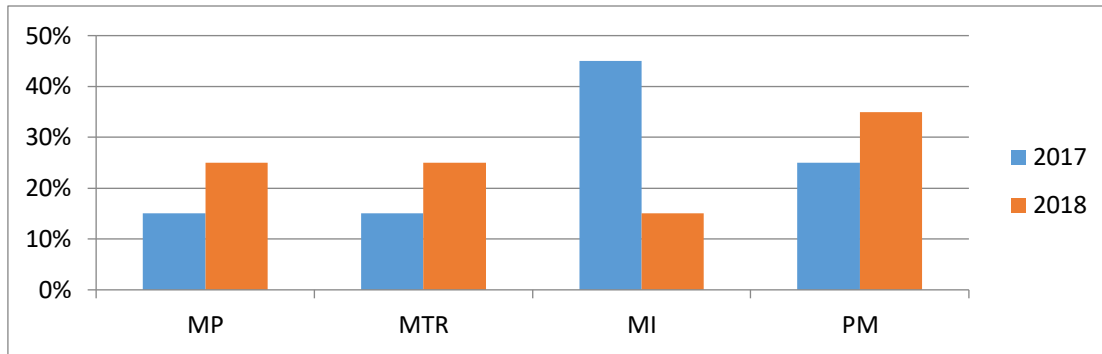Figure 2 shows the results of a second study of students' motivation.

Figure 2. The results of the study of motivation for student participation in research activities at the university (2017)

Repeated research revealed a significant reduction in the percentage of avoidance motivation. The implemented competitions of research activities and the courses accompanying them contributed to the awareness of students of the need for research activities for their professional development.

Figure 3 shows comparative results for 2017 and 2018.

Figure 3. The results of the study of motivation for students to participate in research activities at the university (2017, 2018)

The percentage of professional motivation rose from 25% to 35%. The students also realized that with the help of research activities it is possible to realize themselves from a creative side and thereby increase their competitiveness in the labor market in the future. Motivation for creative realization from 15% rose to 25%.

After the introduction of new competitions of research activities with the accompanying educational courses, the students' activities became more active. At the end of 2018, individual student scientific publications were counted (% of the total number of publications co-authored with the teacher), the number of winners of all-Russian scientific conferences (% of the total number of participants from the university), and the number of students who won prizes in international research conferences (% of the total number of university participants). For comparison, we present the results of 2017 and reflect them in Figure 4
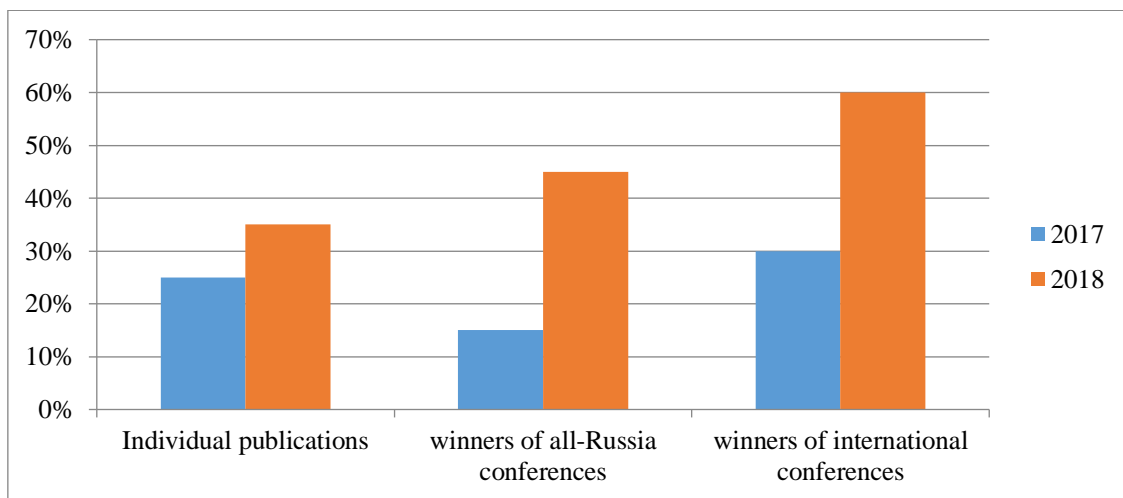
Figure 4. Students research activities for 2017, 2018Students' interest in research activities has increased significantly.

Students began to study professional issues independently. Individual publications began to appear in scientific publications more often. Their percentage rose from 25% to 35%. The number of winners of all-Russian conferences from the university has increased. If in 2017 this percentage was only 15%, up to 45% in 2018. The percentage of winners of international conferences increased from 30% to 60%.

Conclusion

Students' interest in research activities has increased significantly. Students began to study professional issues independently. Individual publications began to appear in scientific publications more often. Their percentage rose from 25% to 35%. The number of winners of all-Russian conferences from the university has increased. If in 2017 this percentage was only 15%, up to 45% in 2018. The percentage of winners of international conferences increased from 30% to 60%.

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