The use of active teaching methods in the process of forming general professional competencies of future teachers in the field of technosphere security

Obidina Olga Alekseevna

Postgraduate

Pedagogical State University named after V.M. Shukshin

Abstract. The article is devoted to the problem of the formation of general professional competences of future teachers in the field of technosphere safety and the use of active teaching methods for these purposes. This category of methods is noted as the most productive, since it is characterized by a high level of involvement in the educational process of students, and also activates cognitive and creative activity in the course of solving the proposed problems.

Keywords: formation of general professional competencies of future teachers in the field of technosphere safety, active teaching methods, business game, brainstorming, case studies.

Today, in the context of widespread globalization and digitalization, the issues of ensuring security, including the technosphere, are becoming of paramount importance. So, according to the Federal State Educational Standard of higher education, a future teacher should be formed in the course of training a defense industry complex, among which is: readiness to ensure the protection of the life and health of students (OPK-6) [1].

The priority methods aimed at the formation of general professional competencies of future teachers in the field of technosphere safety are active methods. "They are characterized by a high degree of student involvement in the educational process, activate cognitive and creative activities in solving the assigned tasks" [2]. One cannot but appreciate the contribution, A.M. Matyushkina in the development of active teaching methods in relation to higher education. The author in his works introduces such a concept as dialogical problem learning, this phenomenon best characterizes the essence of the joint active activity of the teacher and students, according to the means of realizing "subject - subject" - relations [3]. Thus, the learning process with the use of active methods at the university, in addition to general didactic principles, is based on a system of specific principles, which include: the principle of balance between the content and the teaching method, taking into account the preparedness of students and the topic of the lesson; the principle of modeling; the principle of incoming control; the principle of correspondence of the content and methods to the learning objectives the principle of problematicity; the principle of "negative experience" [4].

Today in pedagogical science there are various approaches to the classification of active learning methods. In this direction, research was carried out by such scientists as V.N. Kurglikov, A.M. Smolkin, E.V. Zarukina, V.A. Slastenin, Yu.P. Abramov and others. So, A.M. Smolkin divides the methods of active learning for the university into two areas: imitative and non-imitative. "Simulation methods of active learning, that is, forms of conducting classes in which educational and cognitive activity is based on imitating professional activity, and non-imitative methods are all ways to enhance cognitive activity in the classroom" [5, p. 30]. In turn, simulation methods are classified into play and non-play. So game methods include: business games, didactic games, role-playing games, game design, etc. Accordingly, non-game methods include: analysis of specific situations, solving situational problems, group trainings, etc.

The range of non-imitative teaching methods is also quite extensive, it can be attributed to: problem lecture, lecture with a planned error, heuristic conversation, round table, seminars, brainstorming, etc.

Let us consider the most effective active methods used in the process of forming the general professional competencies of future teachers in the field of technospheric safety, including methods: case studies, business games, brainstorming.

So, the case study method gives a positive result in order to develop the following skills: analytical, practical, creative, communicative, social and introspection. The indisputable advantage of this method when studying subjects related to the field of technosphere safety is the ability to optimally combine theory and practice.

"The case study method or the method of specific situations is a method of active problem-situational analysis based on learning by solving specific problems - situations (solving cases)" [6]. The essence of this method is that the assimilation of knowledge and the development of skills occurs as a result of the active independent activity of students to resolve contradictions, as a result of which creative mastery of professional skills occurs. Also, this method contributes to the formation of students' "ethical and value attitude to the world, to people, to themselves" [7]. In the course of work on the solution of the case, the student independently formulates goals, finds information, analyzes it, puts forward hypotheses, looks for solutions to the problem, formulates conclusions, substantiates the optimal solution to the situation. In addition, the use of the case method allows you to see the ambiguity of solving problems in real life.

The content of the cases includes such situations that allow students to see their professional goals most clearly and evaluate themselves as a future specialist, as well as analyze their value orientations and personal qualities.

Another method that is effective in the process of forming the general professional competencies of future teachers in the field of technosphere safety is the method of "business games is a complex methodological teaching method, in which students first of all consider the decision-making process" [8]. The famous Soviet psychologists L.S. Vygotsky described this phenomenon, "the kingdom of arbitrariness, freedom and imagination", where, due to the operation of pure meanings and meanings, imaginary situations are created and "an illusory business game takes place as a means of activating cognitive activity and a way of forming students' professional competencies, the realization of unrealizable desires" [9 , p. 203]. Thus, the use of the business game method contributes to an increase in the level of knowledge, the development of logical thinking, the development of skills and the ability to apply theoretical knowledge in practice in future professional activities. It should also be noted the social significance of this method, in the process of completing the task, the skills of group interaction are developed. In addition, the ability to search for answers to the questions posed, the ability to communicate in the process of discussion is developed, as well as the speech etiquette of future teachers is formed.

A special place in the structure of active teaching methods is occupied by the brainstorming method proposed by A. Osborne in the 30s in the USA. In his book "Guided Imagination" the author reveals the principles and procedures of creative thinking, as well as divides in time the processes of forming an idea and a critical assessment of this idea. So, the main "feature of the brainstorming method is collective thought activity to generate new ideas for solving scientific and practical problems through the free expression of opinions by all participants, searching for non-traditional ways of their implementation" [10, p. 59].

Thus, we come to the conclusion: the use of active teaching methods in the process of forming general professional competencies of future teachers in the field of technospheric safety is the most effective. In the future, we plan to implement the work program of the integrative course "Technosphere Safety in Education" into the teaching process.

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