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TRAINING OF FUTURE CHEMISTRY TEACHERS BASED ON INNOVATIVE TECHNOLOGIES

Akhmadjon Mirzaevich Jumanov
Associate Professor, Department Of Chemistry,
Kokand State Pedagogical Institute, Uzbekistan

Annotation: This article presents information about the role and importance of innovative technologies in the professional training of future chemistry teachers studying in the educational direction "chemistry" of higher educational institutions, their tasks, the organization of creative activity of students when using them.

Key words: innovations, innovative learning technologies, organization of creative activity of students.

The quality of education of the Republic of Uzbekistan in its modern understanding determines the need to bring educational services in line with the changed needs of people, their communities, and the state. In accordance with the realities of today, the category "new quality of education" means a change in the perceptions of the subjects of the didactic and educational process about the results and conditions of education, which is primarily due to the reorientation of education to the application of knowledge, and not to knowledge itself (the requirement of production and the labor market), the active use of innovative educational technologies (the requirements of time), the value of continuing education (the ability to learn in order to quickly obtain a new qualification).

In the scientific and pedagogical literature, such concepts as "innovative pedagogical technologies", "innovative teaching technologies", "innovative ability of the nation", "innovative education", "innovative higher education" are widely used, however, the increasingly expanding use of the concepts of "innovation", "technology" in education is not accompanied by a unified understanding of them entities. Thus, according to Academician of the Russian Academy of Sciences T.S.Nazarova, there are about three hundred definitions of pedagogical technology in the literature [1].

Following B.E.Starichenko, we believe that the concept of pedagogical

technology logically follows from the analysis of the hierarchy of technological concepts

in education [2]. Thus, it follows from the scheme presented in Fig.1 that it is necessary to distinguish between teaching technology and educational technology.

Teaching technology is a set of pedagogical techniques of a teacher, methods of studying topics and technology of pedagogical measurements, which ensures reproducible and effective achievement of the set learning goals in the subject area and unambiguous monitoring of learning performance at all stages.

Since in the educational process of the university, along with the technological lines of training in individual disciplines, the tasks of organizing and managing the training of a specialist as a whole are solved, the form of organization of trainees turns out to be a key factor determining the ways of interaction between the trainee and the trainee. Within the framework of educational technology, the goals and results, the main stages, methods and organizational forms of the didactic and educational process, a set of used pedagogical teaching technologies are planned. Along with this, the technology of education also includes methods for solving problems of managing the educational process at various levels, that is, management technologies. Thus, educational technology is a combination of organizational forms, pedagogical learning technologies and educational process management technologies, which ensures the achievement of the accepted educational standard by all students.

The analysis of literary sources shows that at this stage there are two main approaches to the definition of the term "innovation". The first one is based on the idea that some objects, processes, subject areas, etc. are new, that is, in this context, "innovation is a synonym for the words "innovation", "innovation", "invention". In our opinion, the second approach, connected with the identification of the essence of the basic concept of "innovation", which came to pedagogy from economics, is more productive. Its essence is as follows. The development of any social system, as well as the processes taking place in it, are characterized by periodically occurring imbalances, deviations and other destructive phenomena, an example of which are all kinds of crises: political, economic, environmental, etc. The need to compensate for the consequences of such destructive phenomena generates a search for something new that has not previously taken place, or for some reason for reasons not used. This is where the concept of an "innovation process" arises,

understood as a means of removing the consequences of destruction.

Innovation presupposes the emergence of a new one inside an already existing, functioning one [3]. Innovativeness appears when the teachers and heads of the educational institution themselves cannot solve the tasks of training specialists within the framework of traditional forms (and content). There is a situation of demand for new technologies corresponding to new goals and objectives.

The problem is to determine what fundamentally new innovations should be introduced into the didactic and educational process of the higher pedagogical school, into the activities of teachers and students.

Based on the changed goals and objectives presented by society to the higher education system, the following functions of innovative teaching technologies in higher education at the present stage are distinguished:

• initiation of creative activity of students;

•equipping them with ways of productive activity;

• formation of skills to work with a variety of information sources;

•stimulating individual choice and motivation of creativity;

• creating conditions for the development of critical thinking, experience of creative activity;

•development of skills to build communication when solving a problem;

• development of self-management skills in research activities.

On the other hand, in the context of the competence approach, as well as taking into account the problems characteristic of school science education, the training system of a future chemistry teacher should be aimed at developing his skills to solve the following tasks of professional activity:

• effective formation of students' motivation to learn;

•designing lessons involving active actions of students to master the subject material;

• organization of effective extracurricular activities of students in the subject;

• development of students' skills in search, analysis, automated processing of information from various sources, including computer networks;

• development of students' critical thinking, manifested in the ability to see the problem, analyze ways to solve it;

•effective organization of student interaction in the learning process;

• formation of students' skills to design their own educational trajectory, taking responsibility for their own education and others.

Optimal conditions for the successful implementation of the above types of activities are created with an information-activity approach in teaching, focusing on such a way of organizing joint activities of a teacher and a student, in which the teacher, forming a motive, provides the necessary conditions for various types of student's educational activities through the introduction of innovative technologies based on ideas into the traditional learning system:

-humanization, individualization and differentiation of learning, which provide a personality-oriented approach to students with different abilities and different levels of knowledge, the possibility for the student to choose his trajectory of studying the subject;

-open and active information interaction between the student and various sources of information;

-active independent cognitive activity of students [4].

On the basis of the Kokand State Pedagogical Institute, when preparing a future chemistry teacher, we mainly use those innovative technologies that can later be used by students in their professional activities – didactic games, communication technologies (ICT), technologies and methods of problem-based learning, methods of graphical information folding (logical and semantic models - LSM, "Fishbone" and others). In the course of preparing students for future pedagogical activity, we also use the situational analysis method, which allows us to introduce the student (teacher) to the algorithm of situation analysis, provides an opportunity to independently analyze the situation, diagnose the problem and offer our ideas and ways to resolve the situation for discussion with other trainees. As a result of the discussion, other points of view and ways out of the situation are clarified.

This method is used in practical classes as a logical continuation of the work started at the lecture.

The method of analyzing cases, incidents (from Latin casus – a confusing, unusual case) rather, it is aimed at the formation of the necessary psychological qualities and skills, rather than at the development of knowledge. It combines professional activity with gaming, as a result, it allows students (teachers) to form skills and techniques for a comprehensive analysis of situations arising in

pedagogical activity.; the ability to extract the missing information necessary to clarify a similar situation, to acquire the skills of applying theoretical knowledge to analyze practical problems, the ability to logically and accurately state their point of view; justify, defend their position, independently make a decision based on a group analysis of the situation, the ability to benefit from their own and others' mistakes, based on feedback data.

The "incident" method is used by us in the practice of teacher training for the development of decision-making skills in conditions of insufficient information, as well as the rational collection and use of information for decision-making.

The essence of the method is to analyze incidents. Trainees receive only brief information about the incident, their task is to find additional necessary information, for this they are forced to ask questions "for development", then take out the information received for analysis and evaluation of its significance (effectiveness).

The use of situational methods contributes to the development of students' interest, positive motivation, analytical and evaluative skills, teamwork skills, the ability to find a rational solution to a problem and be responsible for it.

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