EFFECTIVENESS OF INNOVATIVE TECHNOLOGIES IN MASTERING CHEMISTRY

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Abstract: *in this article, the role of innovative technologies in the passing of chemistry and the effectiveness of classes with the use of innovative technologies were calculated by studying the general mastery indicators of students.*

Key words: *innovative technology, general learning, traditional lesson.*

It is known that today, when science and technology are developing at a rapid pace, the amount of scientific knowledge, understanding and imagination is increasing dramatically. This, on the one hand, ensures its differentiation due to the development of new fields and departments of science and technology, and on the other hand, creates the process of integration between sciences.In such conditions, the demand for highly qualified pedagogues is increasing, who have the ability to educate a mature generation in the spirit of universal and national values that have been formed for centuries, who have mastered the fundamentals of science, pedagogy and psychology methods, who have a high level of professional training and modern pedagogical and information technologies. it is necessary to train creative pedagogues with practical application skills and qualifications.

Currently, the wide application of pedagogical innovations in the educational process is a global trend of world development. Due to the increase in the scope of pedagogical innovations and the rapid development of the modernization process in the country, special attention is being paid to the systematic introduction of innovations into the field of education.However, the level of implementation of pedagogical research on the implementation of new content, forms, methods and tools of teaching in educational processes cannot be considered sufficient at the moment [1-2].

Effective and solid acquisition of knowledge and skills by students in the teaching of chemistry depends, first of all, on the interaction between the teacher and students, the used educational methods and technologies. Therefore, it is highly effective to organize practical training classes in cooperation between the teacher and the student, and to use various interactive methods in the classes [3-5].

The teacher should not only show the student the way to get knowledge, but also be a partner of the student in achieving it. There are didactic conditions that must be observed in the selection of methods used in the educational process and their effective use, and the methods chosen by teachers, taking them into account, must correspond to

the educational goals. The goals set for each stage of educational-cognitive activity are implemented in a combination of different methods. Therefore, in order to achieve the goal of the lesson, the type of lesson (lecture, practical, laboratory), science and its topic, which technology to use in the lesson is the most important [6-9].

Based on these, we used innovative technology to teach chemistry lessons to the first-level students of the Bukhara Institute of Engineering and Technology, Faculty of Energy. As a test, four groups were selected, the first two of them were traditional, and the other two were given the same topics using innovative technology. The students' learning indicators on the subject were studied by mathematical analysis of the results of the tests. Based on the obtained results, the results of the traditional lessons of each group of students and the lessons in which innovative technologies were supported in the classroom were obtained (Table 1).

Table 1.

Mastery indicators of students of Bukhara Engineering-Technology Institute, Faculty of Energy 604-23,606-23 MEM and 616-23,618-23 EE groups

Type of lesson	**Grades**			
	2	3	4	5
Traditional lesson (604-23,606-23 MEM group)	0	31	19	3
Lesson supported by innovative technologies (616-23,618-23 EE group)	0	17	36	4

Based on the obtained data (Table 1), the general mastery indicators of the students of the traditional and innovative technology of the Pyramid were also calculated.

$a_1=\frac{1}{53}(5*3+19*4+31*3+0*2)=\frac{184}{53}=3,47 \qquad a_1=\frac{3,47*100}{5}=69,4\%$

$b_1=\frac{1}{57}(4*5+36*4+17*3+0*2)=\frac{215}{57}=3,77 \qquad b_1=\frac{3,77*100}{5}=75,4\ \%$

Here, a1 are the indicators of mastering the traditional lesson, b1 are the overall mastering indicators of the lesson supported by the Pyramid technology. When

comparing the results of the general mastering, it was observed that the mastering is higher in the classes where the innovative technology is supported.

The obtained results showed that the mastery of MEM groups 606-23 and 604-23 is lower than that of EE groups 616-23, 618-23, in which the student is considered as an object of the educational process, i.e. as a passive person. . In the groups passed on the basis of innovative technology (616-23, 618-23 EE), it is based on the "Teacher - education - student" system, in which the student becomes a subject, that is, an active participant in the educational process. In this case, the student becomes an organizer who creates conditions for research, independent observation, and a manager who controls it. Effective use of innovative technologies in chemistry classes has resulted in a 6% increase in overall learning efficiency.

In short, using innovative technologies in chemistry lessons is more interesting and effective for students compared to traditional lessons. The main reason for this is that students' activity is required in classes organized with innovative technologies. At the same time, quickness, responsiveness and organizational skills are formed. Another advantage of Pyramid's innovative technology is that it encourages students to work in groups. When tasks are performed in groups, the students with low mastery in the group are led by students who master well. That is, students in the group exchange ideas with each other and come to a final conclusion.

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