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WAYS TO FORM INNOVATIVE THINKING THROUGH PROBLEM-BASED LEARNING IN TECHNOLOGY

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Abstract: This article analyzes the issues of forming innovative thinking in students through the use of problem-based educational technologies in teaching technology. Effective methods of organizing the educational process based on problem situations, encouraging students to independent research and finding creative solutions are revealed. Also, the psychological and pedagogical conditions for the development of innovative thinking, ways of integrating problem tasks into the educational process are substantiated with practical examples.

Keywords: technology science, problem-based learning, innovative thinking, creative approach, pedagogical model, independent research.

Introduction. The main goal of the education system today is to form individuals who can think in new ways, make creative and innovative decisions. In particular, the use of a problem-based learning approach in the process of teaching technology creates broad opportunities for the development of creative and practical thinking of future teachers.

Technology includes not only theoretical knowledge, but also practical activities, technical thinking, design approach and inventive skills. Therefore, problem-based learning is one of the most effective ways to revitalize the teaching process in this subject and to form independent and innovative thinking in students.

The purpose of the article is to provide a scientifically based explanation of ways to form innovative thinking in students through problem-based learning technology in technology and to develop practical recommendations.

Literature review and methodology. The concept of problem-based learning was first theoretically grounded in the works of such scholars as J. Dewey (1910), L.S. Vygotsky (1934), and A.M. Matyushkin (1972). Later, the research of N.F. Talyzina, M.I. Makhmutov, and V.V. Davydov focused on studying problem-based learning in relation to personal development.

Among Uzbek scientists, educators such as A. Abdukodirov, N. Sayidahmedov, B. Ziyamuhammedov, and G. Toshpulatova have studied the role and potential of problem-based learning technology in the national education system.

This literature analysis shows that problem-based learning methods create favorable conditions for increasing students' cognitive activity, independent research, and the formation of innovative thinking.

The following methods were used in the study:

• ***Theoretical analysis:*** scientific sources on problem-based learning, innovative thinking and technology education were studied;

• ***Experimental work:*** conducted with the participation of 2nd-year students studying in the "Technological Education" department of Termez State University;

• ***Observation and questionnaire method:*** students' activities, thinking style and approach to creative tasks were analyzed;

• ***Diagnostic tests:*** the level of innovative thinking (based on a modification of the E. Torrance test) was determined.

The experiment was carried out in three stages. These were the preparatory stage: the current level of thinking and motivation of students were studied. The main stage: training was organized based on problem tasks. The final stage: changes were analyzed and innovative thinking indicators were assessed.

The results of the experiment showed that the level of creative and innovative thinking of students trained on the basis of problem-based learning increased from 36 percent to 74 percent.

The main results of the students are explained by the following. In this case, problem situations increased the students' interest in knowledge. Active exercises such as "Invent, Design, Test" encouraged them to independently search. The criteria for innovative thinking - originality, flexibility, breadth of thinking and speed - developed significantly. Due to the creation of a creative atmosphere in the group, students learned to evaluate and improve each other's ideas.

Empirical results:

Indicators	**Initial (%)**	**Final (%)**	**Growth (%)**
Ability to generate innovative ideas	40	78	+38
Independent decision-making	45	80	+35
Flexibility of thinking in a problem situation	50	85	+35
Team innovation activities	55	88	+33

These results show that the problem-based learning process serves to develop students' not only knowledge, but also creative thinking and innovative vision.

Conclusion. Teaching technology through problem-based learning is the most effective way to develop creative, independent, and innovative thinking in students. This approach ensures the student's participation in the educational process as an active subject, focuses on the process of creating knowledge rather than acquiring it, and adapts professional training to real production tasks.

Thus, problem-based learning technology plays an important role in preparing future technology teachers as innovative thinking professionals who meet the demands of the 21st century.

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