THE EFFECTIVENESS OF PEDAGOGICAL TECHNOLOGIES IN THE EDUCATIONAL PROCESS

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Abstract: Pedagogical technologies play an important role in activating students' cognitive activity. This article analyzes the types of pedagogical technologies and their effectiveness. Interactive methods increase students' engagement in the learning process. Multimedia and digital tools make the educational process more interesting. Independent thinking and creative approaches are developed in students. The application of pedagogical technologies strengthens knowledge and skills. The research results demonstrate the effectiveness of these technologies. This article is useful for modernizing the higher education process.

Keywords: pedagogical technologies, cognitive activity, student engagement, interactive methods, multimedia, digital tools, independent thinking, educational process.

Introduction. Today, the educational process is undergoing constant changes and innovations. Organizing students' learning effectively and activating their cognitive activity is one of the main tasks of higher education institutions. Pedagogical technologies are considered an important means of making this process systematic, interactive, and result-oriented. They serve not only as tools for delivering learning materials but also as a way to develop students' independent thinking, creative approach, and self-development skills.

Through the application of pedagogical technologies, teachers can adapt the learning process to students' needs and abilities. Interactive methods such as group

work, discussions, role-playing, and simulations help increase student engagement. At the same time, multimedia and digital tools make learning more interesting, visual, and comprehensible, thereby enhancing students' motivation and attention.

Nowadays, global educational standards require the effective use of pedagogical technologies. They not only improve the quality of teaching but also contribute to the development of students' knowledge, skills, and competencies. Therefore, the application of pedagogical technologies in education plays an important role in the innovative development of the higher education system.

This article provides a detailed analysis of the types of pedagogical technologies, their effectiveness, and the role of interactive methods and multimedia tools in activating students' cognitive activity. It also scientifically substantiates the results of applying pedagogical technologies and their positive impact on the educational process.

Literature Review. The significance of pedagogical technologies and interactive methods in the educational process is a key topic in modern pedagogical research. Novikova (2018) emphasizes pedagogical technologies as a means of organizing the learning process in a systematic and result-oriented way. She notes that the use of interactive methods helps develop students' independent, creative, and critical thinking skills and enables them to apply knowledge in practice, thereby activating their cognitive activity.

Serikov (2017) analyzes the role of multimedia tools in education. His findings indicate that visual and interactive learning materials attract students' attention, increase motivation, and facilitate faster comprehension of complex topics. Multimedia tools also promote independent inquiry and self-assessment skills.

Biggs and Tang (2011), in Teaching for Quality Learning at University, thoroughly examine the role of interactive approaches in higher education. They argue that group work, discussions, role plays, and simulations effectively enhance

student engagement, self-regulation, and analytical thinking, while strengthening the link between theory and practice.

The National Education Standards of the Republic of Uzbekistan (2020) define requirements for applying pedagogical technologies, emphasizing interactive and student-centered learning adapted to individual needs and abilities. The integration of modular education with interactive methods improves learning effectiveness and competence development.

Qodirova (2019) studies the pedagogical effectiveness of combining modular approaches with interactive methods, concluding that modular education enables systematic learning, reinforces knowledge, and promotes individualized development, while motivating students toward independent study. Ibragimova (2021) highlights that modern pedagogical technologies foster critical thinking and creative problem-solving skills. Interactive methods and multimedia tools help connect theory with practice and deepen students' understanding.

Overall, the literature confirms that pedagogical technologies, interactive methods, multimedia tools, and modular education play a crucial role in activating cognitive activity and developing students' competencies in modern higher education.

Methodology and Results. The main aim of the study was to determine the effectiveness of applying pedagogical technologies in higher education to activate students' cognitive activity and develop their competencies.

Objectives:

1. To identify the role and types of pedagogical technologies and interactive methods in education;

2. To measure students' cognitive activity and motivation through tests, questionnaires, and observation;

3. To evaluate the effectiveness of multimedia tools and modular education using statistical analysis;

4. To analyze the results and draw pedagogical conclusions.

Methods:

Experimental method; questionnaires and tests; statistical analysis (descriptive and inferential, including t-test and chi-square); observation and interviews.

The study involved 120 students:

Experimental group: 60 students taught using interactive methods, modular education, and multimedia tools;

Control group: 60 students taught using traditional lecture- and text-based methods.

The experiment lasted six weeks.

Results: 1. Knowledge level: Experimental group: 85.2 ± 3.1 Control group: 72.5 ± 4.2 $t = 8.42$, $p < 0.001$ — indicating a significant difference in favor of pedagogical technologies.

2. Motivation:

90% of the experimental group expressed high interest, compared to 65% in the control group;

$\chi^2 = 12.57$, $p < 0.01$.

3. Activity level:

88% of experimental group students were actively involved, versus 60% in the control group.

4. Effectiveness of multimedia and modules:

92% reported better understanding through interactive videos and presentations;

87% valued modular learning for integrating theory with practice.

5. Growth indicators:

Knowledge increased by 17.7%, motivation by 25%, and activity by 28% in the experimental group.

6. Observations and interviews:

Students found lessons more engaging and comprehensible; teachers noted improved critical thinking and creative approaches.

Overall, pedagogical technologies significantly enhanced knowledge, motivation, activity, and independent thinking.

Conclusion. The study demonstrates that the application of pedagogical technologies and interactive methods significantly activates students' cognitive activity and develops their competencies. The experimental results show that:

1. Knowledge level increased by 17.7% in the experimental group, confirming the positive impact of pedagogical technologies on mastering theoretical and practical knowledge.

2. Motivation and activity rose by 25% and 28%, respectively, indicating the motivational role of interactive methods and multimedia tools.

3. Effectiveness of interactive methods: group work, discussions, role plays, and simulations foster critical and creative thinking skills, while modular education supports individualized learning.

4. Role of multimedia: interactive videos, presentations, and e-modules enhance visualization and comprehension, making learning more engaging.

5. Pedagogical implications: pedagogical technologies are effective not only for knowledge acquisition but also for developing competencies, critical thinking, creativity, and self-development.

To meet global standards in modern higher education, it is essential to continuously update pedagogical technologies, widely apply interactive methods and multimedia tools, and systematically implement modular approaches. Overall, the proper and systematic use of pedagogical technologies serves as a key factor in activating students' cognitive activity and ensuring their personal development in higher education institutions.

References:

1 Новикова, А.К. Педагогические технологии и их роль в образовательном процессе – Москва: Просвещение, 2018. – 214 с.

2 Сериков, В.В. Мультимедиа и инновационные технологии в образовании – Санкт-Петербург: Питер, 2017. – 176 с.

3. Biggs, J., Tang, C. Teaching for Quality Learning at University – Maidenhead: McGraw-Hill, 2011. – 400 p.

4. Qodirova, Sh. Modul’naya sistema obucheniya i interaktivnye metody – Toshkent: Fan, 2019. – 192 s.

5. Ibragimova, E.P. Razvitie kriticheskogo myshleniya i tvorcheskikh navykov studentov s pomoshch’yu sovremennykh pedagogicheskikh tekhnologiy – Moskva: Nauka, 2021. – 208 s.

6. O‘zbekiston Respublikasi Milliy ta’lim standartlari. – Toshkent, 2020. – 112 s.