

**TECHNOLOGIES USED IN IMPLEMENTING THE PEDAGOGICAL PROCESS IN AN
INNOVATIVE EDUCATIONAL ENVIRONMENT**

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Abstract. This article analyzes the technologies used in the implementation of the pedagogical process in an innovative educational environment. The article scientifically describes innovative methods and technologies that serve to effectively organize the pedagogical process, develop the cognitive and creative potential of students, and increase their motivation, including interactive lessons, project-based learning, gamification, digital and multimedia tools, STEAM and hybrid education methods. It also highlights mechanisms for strengthening cooperation between teachers and students, implementing an individual approach, and increasing the effectiveness of the educational process.

Keywords: innovative educational environment, pedagogical process, pedagogical technologies, interactive education, project-based learning, gamification, digital tools, STEAM, hybrid education, educational effectiveness.

Introduction. Nowadays, the education system is inextricably linked with global processes, digitalization and the introduction of innovative technologies. An innovative educational environment plays an important role in increasing the effectiveness of the pedagogical process, developing students' knowledge, skills and competencies, and forming their cognitive and creative potential. In this regard, the relevance of using modern technologies and methods in the effective implementation of the pedagogical process in practice is increasing.

An innovative educational environment allows not only to make the learning process interactive and interesting, but also to improve the professional activities of the teacher, implement an individual approach and increase the activity of students in the educational process. Therefore, the study of technologies used in the implementation of the pedagogical process in practice, the evaluation of their effectiveness and the development of strategies for their integration into the activities of teachers are of great scientific and practical importance. The article analyzes the technologies used in the implementation of the pedagogical process in an innovative educational environment, their methodological foundations and role in increasing the effectiveness of education, and shows practical ways of their implementation in modern pedagogical activity.

Relevance of the topic. Today, the education system requires training of competitive and high-quality personnel on a global scale. In this regard, the effective organization of the pedagogical process in schools and higher educational institutions and its integration with an innovative educational environment is an urgent issue. Innovative technologies allow adapting the pedagogical process to an interactive, interesting and individual approach, and also serve to develop the cognitive, creative and practical potential of students. The use of modern technologies in the effective implementation of the pedagogical process in practice helps to improve the quality of the educational process, form independent thinking and creative abilities in students, and develop the professional competence of teachers. Therefore, the study of pedagogical technologies used in innovative educational environments and their integration into practice is of great scientific and practical importance.

Literature review. The issue of technologies used in the implementation of the pedagogical process in innovative educational environments has been widely studied in the field of pedagogy

and educational technology. Studies show that increasing the effectiveness of education is achieved by enriching the pedagogical process with modern technologies.

The works of V.P. Bepalko and A.V. Khutorskoy show the possibilities of organizing the pedagogical process through a systematic approach and using interactive methods. At the same time, D.V. Davydov's developmental theory of education serves to increase the cognitive activity of students, develop independent thinking and a creative approach. Modern research has shown that innovative pedagogical technologies - interactive teaching methods, project-based learning, digital and multimedia tools, gamification and virtual laboratories - are being effectively used in the educational process (Sternberg R.J., Torrance E.P., UNESCO, 2018). These technologies increase student motivation, adapt the learning process to an individual approach, and enhance the teacher's influence on students. The works of L.S. Vygotsky and A.N. Leontiev emphasize the importance of taking into account psychological foundations in organizing the pedagogical process. Encouraging students to engage in activities, increasing their motivation and reflexive abilities increases the effectiveness of pedagogical technologies.

Research shows that the use of effective technologies in the implementation of the pedagogical process in an innovative educational environment serves as a basis for improving the quality of education, developing the cognitive and creative potential of students, and strengthening the professional competence of the teacher. At the same time, the integration of modern technologies into the pedagogical process creates an interactive and collaborative environment between the teacher and the student.

An innovative educational environment is an educational environment that enriches the educational process with modern pedagogical, psychological and technological capabilities, serving to maximize the development of students' knowledge, skills and competencies. Its main features (see Figure 1).

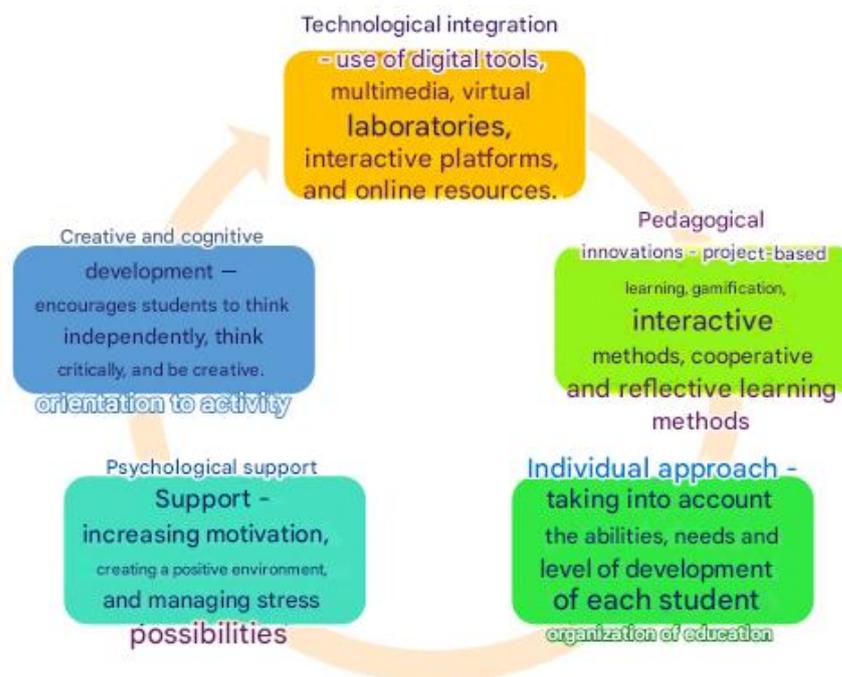


Figure 1. Distinctive features of an innovative learning environment

An innovative learning environment is a space that allows for the effective organization of the pedagogical process through modern technologies, interactive methods and an individual

approach, aimed at developing the cognitive, creative and practical potential of students. Scientific and innovative research identifies the following distinctive features of this environment:

Research shows that the use of digital tools and online platforms adapts the educational process to an interactive and individual approach.¹ Virtual labs and simulations allow students to learn in a hands-on way from real-life situations.²

Project-based Learning, Problem-based Learning, cooperative learning organize the pedagogical process in the center of the student and develop independent thinking. [Khutorskoy A.V. Key competencies as a component of the personality-oriented paradigm of education // Narodnoye obrazovaniye. – 2003. – No. 2.] Through role-playing games and simulation exercises, students develop practical skills and form creative abilities. [Torrance E.P. Guiding Creative Talent. – Englewood Cliffs: Prentice Hall, 1962.] In an innovative educational environment, a curriculum is created that is adapted to the abilities and level of development of each student. [Shulman L.S. Those Who Understand: Knowledge Growth in Teaching // Educational Researcher. – 1986. – Vol. 15(2).] Adaptive learning systems adapt to the individual needs of students, which increases their learning efficiency.

A positive pedagogical and psychological environment increases students' motivation, reduces stress, and stimulates reflective activity. [Vygotsky L.S. Psychology of human development. – Moscow: Pedagogika, 1984.] Gamification elements make the educational process interesting and stimulating, which increases students' activity. STEAM technologies (Science, Technology, Engineering, Arts, Mathematics) and hybrid education (Blended Learning) develop students' analytical and creative thinking skills. [Davydov V.V. Theory of developmental learning. – Moscow: Intor, 1996.] The Flipped Classroom approach enhances students' independent work and enhances the methodological role of the teacher. Scientific research shows that an innovative educational environment is a systematic space that allows organizing the pedagogical process in an interactive, individual, motivational, and result-oriented manner. It not only develops the knowledge and skills of students, but also serves to increase the professional and methodological potential of teachers, to adapt the educational process to modern global standards.

Thus, an innovative educational environment is a systematic and interactive space aimed not only at imparting knowledge, but also at developing the personal and professional potential of students.

The pedagogical process is a purposeful educational activity between a teacher and a student, in which the process of developing knowledge, skills, competences and personal qualities is carried out systematically. Main features (see Figure 2).

¹ UNESCO. *ICT Competency Framework for Teachers*. – Paris: UNESCO, 2018.

² Shulman L.S. *Those Who Understand: Knowledge Growth in Teaching* // Educational Researcher. – 1986. – Vol. 15(2).

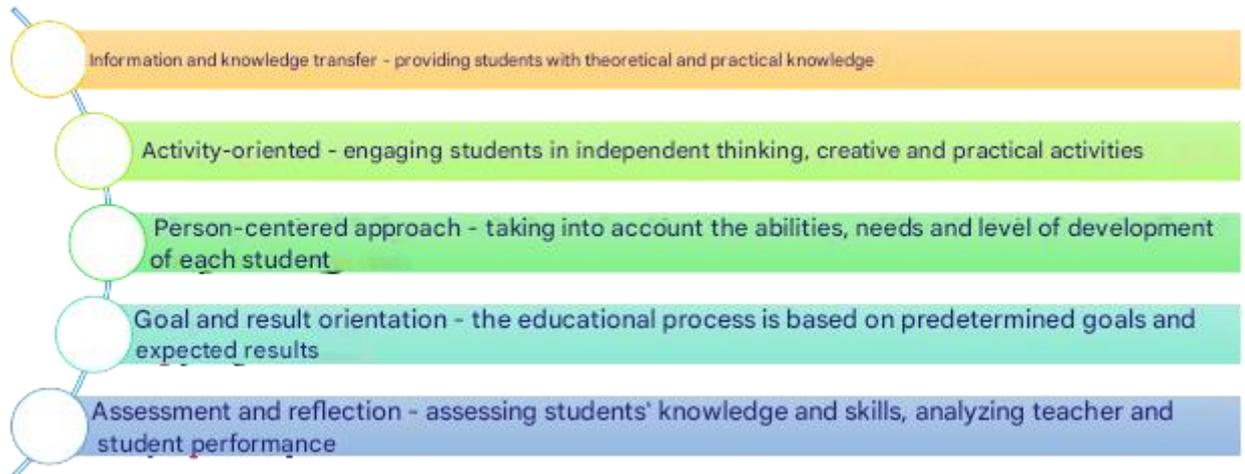


Figure 2. Main features of the pedagogical process

The pedagogical process is a scientifically based process of purposeful, systematic and effective organization of education, in which the teacher and the student actively participate and the personal and intellectual development of students is ensured.

The technologies used in the implementation of the pedagogical process in an innovative educational environment are as follows:

1. Interactive educational technologies
 - project-based learning
 - problem-based learning
 - discussion, seminar and group work
2. Digital and multimedia technologies
 - interactive lessons via computers and tablets
 - online educational platforms (learning management systems)
 - virtual laboratories and simulations
 - multimedia presentations and visual materials
3. Gamification and game-based learning
 - educational games and quizzes
 - increasing motivation through a points and reward system
4. Active and reflexive teaching methods
 - role-playing games, trainings and simulation exercises
 - reflexive journal and self-assessment methods
5. Collective and collaborative technologies
 - cooperative learning
 - online collaboration platforms (google workspace, microsoft teams and others)
6. Individual approach and personalized technologies
 - adaptive learning systems
 - individual curriculum and electronic portfolios
7. Innovative methodological tools
 - Flipped Classroom
 - Blended Learning
 - STEAM technologies (Science, Technology, Engineering, Arts, Mathematics)

Prepare a comparative analysis table for the article on technologies used in the implementation of the pedagogical process in an innovative educational environment

Below is a comparative analysis table of pedagogical and psychological opportunities based on technologies used in the implementation of the pedagogical process in an innovative educational environment (see Table 1)

1-Table.

Technologies used to implement the pedagogical process in an innovative educational environment

Analysis criterion	Pedagogical technologies	Psychological opportunities	Integrated outcome
Main goal	Effective teaching of educational content, formation of knowledge and skills	Increasing student motivation, stimulating attention and concentration	High efficiency and sustainable development of the educational process
Object of influence	Lesson forms, methods and tools	Psychological environment, individual characteristics of students	Personalized and interactive learning environment
Main mechanism	Innovative methods: project-based learning, interactive lessons, gamification, digital tools	Reflection, motivational stimulation, stress management	Increasing cognitive activity and strengthening teacher-student cooperation
Effect factor	Pedagogical creativity, methodological innovations, correct choice of technologies	Emotional stability, positive environment, self-management	Sustainable improvement in the quality of education
Assessment method	Control, testing, project evaluation, interactive monitoring	Psychodiagnostics, observation, motivational analysis	Objective and multifaceted assessment
Teacher Role	Process organizer, user of interactive methods	Psychological support, motivator	Effectively conducting the pedagogical process in collaboration
Student Role	Active learner, project participant	Reflective activity, development of internal motivation	Independent and creative thinker
Expected Outcome	Deep mastery of educational content, formation of skills and competencies	Increased motivation and psychological stability	High efficiency of the pedagogical process in an innovative educational environment

The table shows that pedagogical technologies and psychological capabilities complement each other. Pedagogical technologies enrich the educational process in content and methodology, while psychological capabilities turn students into active and motivated participants. Their integration serves to maximize the effectiveness of the pedagogical process in an innovative educational environment.

The results of the research on the topic "Technologies used in the implementation of the pedagogical process in a purposeful innovative educational environment" show that the effective

organization of the modern pedagogical process is associated with the integration of innovative technologies. Pedagogical technologies, interactive methods, project-based learning, gamification and digital tools activate the educational process, develop the cognitive and creative potential of students, and increase their motivation.

The study also identified the important role of innovative technologies in increasing the professional competence of teachers and adapting them to modern educational requirements. The integration of psychological support, reflection and an individual approach serves to sustainably increase the effectiveness of the pedagogical process.

As a scientific novelty, the article proposes an approach that systematically describes the technologies used in the implementation of the pedagogical process and is based on the integration of their pedagogical and psychological capabilities. This approach allows organizing the educational process in an interactive, individual and result-oriented manner in an innovative educational environment.

In conclusion, the results of the research show that the pedagogical process is integrated with innovative technologies. It confirms that it serves as an important scientific and practical basis for effective implementation in practice, developing students' knowledge and skills, and improving the professional and methodological potential of teachers.

References:

1. Выготский Л.С. *Психология развития человека*. – Москва: Педагогика, 1984.
2. Леонтев А.Н. *Деятельность. Сознание. Личность*. – Москва: Педагогика, 1975.
3. Беспалко В.П. *Слагаемые педагогической технологии*. – Москва: Педагогика, 1989.
4. Хуторской А.В. *Ключевые компетенции как компонент личностно-ориентированной парадигмы образования // Народное образование*. – 2003. – №2.
5. Давыдов В.В. *Теория развивающего обучения*. – Москва: Интор, 1996.
6. Sternberg R.J. *Successful Intelligence*. – New York: Plume, 1997.
7. Torrance E.P. *Guiding Creative Talent*. – Englewood Cliffs: Prentice Hall, 1962.
8. Shulman L.S. *Those Who Understand: Knowledge Growth in Teaching // Educational Researcher*. – 1986. – Vol. 15(2).
9. UNESCO. *ICT Competency Framework for Teachers*. – Paris: UNESCO, 2018.