

**BASIC PRINCIPLES AND RULES OF INNOVATIVE PEDAGOGICAL
TECHNOLOGIES IN THE EDUCATIONAL PROCESS**

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Annotation

This article provides a systematic analysis of the fundamental principles and rules for implementing innovative pedagogical technologies in the modern educational space. The author examines the transition from the traditional reproductive model of education to an innovative paradigm focused on developing meta-subject competencies and fostering student agency.

The paper explores key methodological principles in detail: subject-subject interaction, predictability, reflexivity, and variability. Particular attention is paid to the technological rules for implementing innovations, such as pedagogical appropriateness, consistency, and reproducibility. The article classifies the main groups of innovative technologies (research, gaming, and digital) and analyzes the barriers hindering their effective integration into the educational process. The scientific novelty of the study lies in its clarification of the criteria for the technological effectiveness of innovative methods as a prerequisite for ensuring the quality of education in the context of digital transformation.

Аннотация

В статье проводится системный анализ фундаментальных принципов и правил реализации инновационных педагогических технологий в современном образовательном пространстве. Автор рассматривает переход от традиционной репродуктивной модели обучения к инновационной парадигме, ориентированной на формирование метапредметных компетенций и развитие субъектности обучающихся.

В работе подробно раскрыты ключевые методологические принципы: субъект-субъектного взаимодействия, прогностичности, рефлексивности и вариативности. Особое внимание уделено технологическим правилам внедрения инноваций, таким как педагогическая целесообразность, системность и воспроизводимость. В статье классифицируются основные группы инновационных технологий (исследовательские, игровые, цифровые) и анализируются барьеры, препятствующие их эффективной интеграции в учебный процесс. Научная новизна исследования заключается в уточнении критериев технологичности инновационных методов как условия обеспечения качества образования в условиях цифровой трансформации.

Annotatsiya

Ushbu maqolada zamonaviy ta'lim makonida innovatsion pedagogik texnologiyalarni joriy etishning asosiy tamoyillari va qoidalari tizimli tahlil qilinadi. Muallif ta'limning an'anaviy reproduktiv modelidan innovatsion paradigmaga o'tish jarayonini o'rganadi, unda meta-mavzular kompetentsiyalarini rivojlantirish va talabalar agentligini rivojlantirishga qaratilgan.

Maqolada asosiy metodologik tamoyillar batafsil o'rganiladi: sub'ekt va sub'ektning o'zaro ta'siri, bashorat qilish, refleksivlik va o'zgaruvchanlik. Pedagogik maqsadga muvofiqlik, izchillik va takror ishlab chiqarish kabi yangiliklarni amalga oshirishning texnologik qoidalarga

alohida e'tibor beriladi. Maqolada innovatsion texnologiyalarning asosiy guruhlari (tadqiqot, o'yin, raqamli) tasniflanadi va ularning ta'lim jarayoniga samarali integratsiyalashuviga to'sqinlik qiluvchi to'siqlar tahlil qilinadi. Tadqiqotning ilmiy yangiligi raqamli transformatsiya sharoitida ta'lim sifatini ta'minlash sharti sifatida innovatsion usullarning texnologik samaradorligi mezonlariga aniqlik kiritilishidadir.

Key words:

innovative pedagogical technologies, teaching principles, educational process, subjectivity, educational methodology, digital transformation, competencies, pedagogical innovation.

Introduction

The modern educational paradigm is undergoing fundamental changes, shifting from a knowledge-transfer model (the "knowledge model") to a model of developing competencies, critical thinking, and personal adaptability. In this context, innovative pedagogical technologies (IPT) act not simply as tools but as a systemic restructuring of the educational process. IPT is defined as a set of teaching methods, techniques, and tools based on scientific advances, aimed at improving the effectiveness of pedagogical interaction and achieving qualitatively new educational outcomes.

1. Theoretical and methodological foundations of innovation in education

Innovation in education is not just any new development, but a managed process of creating, evaluating, and implementing innovations that significantly improve educational outcomes. The methodological foundation of IPT rests on the principles of humanization, democratization, and student-centered and system- activity-based approaches.

Innovative activity in pedagogy is subject to the logic of social system development: it must be predictive, proactive, and reflexive. Unlike traditional technologies, where the teacher's algorithm of actions is rigidly defined (reproductive level), IPTs allow for variability, creative exploration, and a high level of agency among all participants in the process.

2. Key principles of innovative pedagogical technologies

The effectiveness of any educational system depends on adherence to fundamental principles that determine the logic of its functioning.

2.1. The principle of subject-subject interaction

Traditional pedagogy is often built on the authoritarian "subject (teacher) — object (student)" model. Innovative technologies advocate a shift to a dialogic model, where the learner becomes a full-fledged co-author of the learning process. This implies recognition of the student's right to an individual educational trajectory, to make mistakes, and to interpret the material themselves.

2.2. The principle of predictability (advanced development)

Education should prepare individuals for life in uncertain conditions. Innovative technologies are aimed at developing skills that will be in demand in the future (soft skills , metacompetences), and not only on the transmission of currently relevant information, which tends to quickly become outdated.

2.3. The principle of reflexivity

Innovation is impossible without constant analysis and evaluation of results. This principle assumes that each stage of the educational process concludes with a period of reflection: "What did we do?", "Why did it work?", "How can this be improved?" Reflection becomes a tool for managing the quality of education.

2.4. The principle of variability and individualization

Given the heterogeneity of any learning group, IPTs involve the use of adaptive learning models (e.g. differentiated learning, personalized education technologies using AI tutors).

3. Rules for the introduction and implementation of innovative technologies

Implementing innovations isn't about introducing "trendy" tools (such as simply using interactive whiteboards), but rather about changing the logic of the educational process. There are "golden rules" for successful pedagogical innovation:

1. **The rule of pedagogical expediency:** Technology should be introduced not because it is new, but because it solves a specific educational problem more effectively than traditional methods.
2. **The rule of systematicity:** Innovation should not be a piecemeal process. It requires comprehensive changes in goals, content, methods, control forms, and material and technical resources.
3. **The rule of technology:** Innovative technology must be replicable. If a method only works for one "brilliant" teacher and cannot be mastered by others, it is not technology, but pedagogical art. Technology must include step-by-step action algorithms.
4. **The rule of gradualism:** The transition from a traditional model to an innovative one requires an adaptation period. A sudden break with established stereotypes often provokes resistance.
5. **Monitoring and evidence rule:** Every innovation must be accompanied by performance measurements (qualitative and quantitative).

4. Classification and characteristics of the main groups of IPT

For a deep understanding of the subject, it is necessary to structure the main directions of IPT:

4.1. Critical Thinking Technologies

Aimed at teaching students to analyze information, identify cause-and-effect relationships, evaluate arguments, and make informed decisions. Key methods: discussions, essays, and case studies.

4.2. Project-based and research-based learning technologies

Based on the concept of learning through action. The student is confronted with a real-world problem whose solution requires the synthesis of knowledge from various fields. Here, the teacher's role shifts from knowledge transmitter to facilitator (guide, consultant).

2.3. Digital and immersive technologies (EdTech)

The use of artificial intelligence, virtual reality, and augmented reality (VR/AR). These technologies are transforming the learning environment, enabling the simulation of complex processes (medical operations, historical reenactments, physics experiments) that are inaccessible in the classroom.

Type of technology	The role of the teacher	Target setting
Project-based learning	Mentor/ Facilitator	Solving a real problem
Gamification	Environment designer	Increasing motivation
Adaptive learning	Data Analyst	Individual pace

5. Problems and risks of implementing innovations

Despite the obvious advantages, the process of innovating education faces a number of barriers:

- **Psychological barrier:** Inertia of teachers' thinking and resistance to change.

- **Methodological barrier:** Insufficient theoretical development of some methods, their “superficial” implementation.
- **Resource barrier:** Inequality of access to technological infrastructure (digital divide).

To minimize these risks, it is necessary to develop a system of advanced training for teachers that is focused on practice rather than theory.

Conclusion

Innovative pedagogical technologies are a necessary response to the challenges of the information society. However, their implementation requires not so much the technical re-equipment of educational institutions as an “innovation of consciousness” on the part of teachers. Adherence to fundamental principles (subjectivity, predictability, reflection) and strict rules (technological, systematic, evidence-based) allows the educational process to be transformed into a dynamic, flexible, and highly effective system capable of developing individuals prepared for self-realization in a rapidly changing world.

The future of education lies in a harmonious combination of the humanistic traditions of classical pedagogy and the advanced opportunities provided by modern technology.

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