PEDAGOGICAL PROBLEMS ARISING IN THE APPLICATION OF INNOVATIVE TECHNOLOGIES TO THE EDUCATIONAL PROCESS AND METHODS FOR THEIR ELIMINATION

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Abstract: *This article analyzes the pedagogical problems that emerge when innovative technologies are introduced into the educational process and substantiates methods for overcoming them. Innovation is interpreted not as the simple use of digital devices, platforms or multimedia resources, but as a complex transformation of lesson design, teacher-student interaction, assessment, motivation and educational management. The study shows that the main difficulties are connected with insufficient digital-pedagogical competence of teachers, unequal access to infrastructure, methodological fragmentation, weak alignment between technological tools and learning outcomes, information overload, superficial motivation and the risk of replacing deep cognition with external technological attractiveness. The article proposes a system of solutions based on continuous teacher training, didactic planning, blended learning, formative assessment, institutional support, digital ethics and the creation of an innovation-oriented educational culture. The results indicate that technologies become pedagogically effective only when they are integrated with learner-centered instruction, collaboration, critical thinking and reflective feedback.*

Keywords: *innovative technologies, educational process, pedagogical problems, digital competence, blended learning, teacher development, educational quality*

INTRODUCTION

In contemporary education, innovative technologies have become one of the most important indicators of pedagogical modernization and institutional development. Digital platforms, learning management systems, artificial intelligence tools, virtual laboratories, multimedia resources, interactive boards, mobile applications and cloud services have expanded the methodological possibilities of teaching and learning. However, the presence of technology itself does not automatically improve educational quality. If innovation is introduced without a clear pedagogical strategy, it may create new contradictions: lessons may become visually attractive but cognitively passive; assessment may become automated but not formative; students may receive large amounts of information without developing the ability to analyze, compare and apply it. Therefore, the central scientific problem is not whether technologies should be used, but how they should be pedagogically justified, methodologically organized and psychologically adapted to learners' needs[1].

The relevance of the topic is determined by the fact that modern education must prepare learners for creative, analytical and responsible activity in a rapidly changing information society. Innovative technologies can support this task by individualizing learning trajectories, increasing access to resources, visualizing complex concepts, organizing project-based and research-based tasks and providing rapid feedback. At the same time, these advantages become real only when the teacher uses technology as a means of

developing thinking, not as a substitute for pedagogical interaction. One of the key problems is the insufficient digital-pedagogical competence of teachers. Many educators have basic computer literacy, but they may not be ready to design digital learning scenarios, combine online and offline activities, moderate virtual collaboration, prevent cognitive overload and use learning analytics for pedagogical decisions. As a result, technology remains an auxiliary demonstration instrument rather than a mechanism of active cognition[2].

Another serious problem is inequality of access. Differences in internet quality, availability of devices, technical support and home learning conditions may deepen educational inequality if digital learning is planned without social sensitivity. A further contradiction concerns the mismatch between technological novelty and educational content. When teachers focus on external novelty rather than didactic value, digital tools become fragmented: one platform is used for presentation, another for testing, and another for communication, yet they are not connected within a unified learning scenario. To overcome this problem, each tool must be selected according to a precise pedagogical function: what competence it develops, what cognitive action it organizes, what difficulty it helps overcome and how it supports feedback[3].

The psychological aspect is also important. Digital technologies can increase motivation, but motivation based only on visual effects or game-like elements is unstable. Sustainable motivation is formed when students understand the purpose of tasks, experience intellectual challenge, receive constructive feedback and see the practical value of knowledge. Thus, innovative education must combine digital activity with reflection, discussion, writing, problem solving and independent reasoning. The teacher's role does not disappear; rather, it becomes more complex. The teacher becomes a designer of learning situations, a moderator of digital communication, a diagnostician of learning difficulties and a facilitator of critical thinking. Consequently, the application of innovative technologies should be understood as a systemic pedagogical transformation that unites technological resources with didactic principles, learner psychology, ethical standards and institutional support[4].

LITERATURE REVIEW

Scientific literature shows that Uzbek researchers increasingly interpret innovative technologies as an important factor in improving the quality and interactivity of education. Dilbar Tuxtabayeva's study on the use of modern pedagogical technologies in teaching the history of Uzbekistan in pedagogical universities is relevant because it presents innovation not as a technical supplement, but as a transformation of pedagogical activity. Her work connects innovative technologies with humanization, democratization, student-centered instruction, problem-based learning, didactic games, differentiation and the development of independent thinking. This position is important for the present article because it demonstrates that technological tools are effective only when they correspond to the logic of the subject, the learner's cognitive activity and the teacher's methodological design. Tuxtabayeva's analysis also reveals an essential problem: if a technology is introduced without changing the quality of educational interaction, it remains a formal novelty and does not produce deep learning outcomes[5].

Another relevant contribution is represented by Marina Abdurashidova and co-authors, who studied the impact of innovation and digitalization on the quality of higher education in Uzbekistan. Their research connects digital transformation with institutional quality,

student engagement, accessibility of educational resources and modernization of higher education management. This approach shows that innovation requires not only teacher creativity, but also organizational support, infrastructure and monitoring. At the same time, the study indicates that digitalization may become ineffective when universities focus only on equipment and ignore methodological training, feedback culture and the readiness of participants. Together, Tuxtabayeva and Abdurashidova make it possible to formulate a balanced conclusion: innovative technologies become effective when institutional conditions and pedagogical design function together. Therefore, the main issue is not the absence of technology, but the insufficiency of pedagogically grounded integration[6].

METHODOLOGICAL PART

This article used a qualitative, theoretical and comparative-pedagogical methodology, because the problem of introducing innovative technologies into the educational process requires not only the description of digital tools, but also the interpretation of their pedagogical consequences. The method of theoretical analysis was used to reveal the essence of innovative technologies, digital-pedagogical competence, blended learning, learner-centered instruction and formative assessment. Through this method, technology was interpreted as a pedagogical category connected with the aims, content, methods and results of education. The method of comparative analysis was applied to compare traditional and innovation-oriented models of teaching, especially in relation to teacher roles, student activity, feedback and assessment.

The problem-analysis method was used to classify the main difficulties that appear during technological integration. These difficulties were grouped into methodological, psychological, organizational, infrastructural, ethical and evaluative problems. The method of scientific generalization made it possible to synthesize the positions of Uzbek and foreign scholars into a coherent interpretive framework. In addition, the system-structural method was used to understand education as an integrated process in which curriculum, teacher competence, technological infrastructure, student motivation, assessment and institutional support are mutually connected. This methodology shows that problems cannot be eliminated through one isolated measure. For example, equipment alone will not improve learning if teachers are not trained and tasks are not redesigned. Therefore, the article proposes a pedagogical model based on readiness diagnosis, methodological design, continuous teacher development, blended learning and monitoring of results.

RESULTS

The results show that the effectiveness of innovative technologies depends primarily on their integration into the didactic structure of the educational process. The most widespread problems are not caused by technology itself, but by the absence of methodological coherence. When digital tools are used only for presentation, testing or entertainment, students remain passive recipients of information. Therefore, every technology must have a clearly defined pedagogical function. A platform should organize communication and feedback; multimedia should support visualization and understanding; interactive tasks should stimulate analysis and problem solving; artificial intelligence tools should assist differentiation and reflection without replacing independent thinking.

The second result concerns teacher competence. Successful innovation requires teachers who can design digital learning scenarios, moderate online interaction and use digital assessment meaningfully. Professional development programs should therefore include

not only technical instructions, but also didactic design, digital ethics, inclusive learning and the psychology of digital education. The third result concerns students' cognitive activity. Technologies produce positive outcomes when they are combined with project-based learning, problem-based learning, collaborative tasks, research assignments, case analysis and reflective writing. Without these methods, digitalization increases the amount of information but not the quality of thinking.

The fourth result is related to assessment. Digital technologies create opportunities for immediate feedback, learning analytics and individual progress monitoring, but they become useful only when assessment is formative, criterion-based and oriented toward improvement. Finally, the article identified practical ways of eliminating pedagogical problems: systematic teacher training, gradual implementation of technologies, alignment of tools with learning objectives, development of digital didactic materials, academic integrity, equal access, blended learning and reflective feedback. These results confirm that innovation must be pedagogically managed so that technology serves the development of intellectual independence, communication, creativity and responsible learning.

DISCUSSION

The discussion can be deepened through the polemical positions of Neil Selwyn and George Siemens. Selwyn is known for a critical approach to educational technology. His position may be interpreted as a warning against technological determinism, namely the belief that digital tools automatically improve education. From this perspective, many reforms fail because they exaggerate the power of devices and underestimate inequality, teacher workload, institutional culture and the commercial logic of digital platforms. Selwyn's argument is important because it shows that pedagogical problems cannot be solved merely by purchasing equipment or introducing new software[7]. If teaching remains reproductive, if learners do not have equal access and if platforms are used mainly for control, innovation may strengthen old problems instead of eliminating them.

George Siemens, by contrast, emphasizes the networked character of learning in the digital age. His connectivist approach views knowledge as distributed across networks, digital resources, communities and information flows[8]. This position highlights the positive potential of innovative technologies: they can expand learning beyond the classroom, support collaboration, connect students with multiple sources and develop the ability to navigate complex knowledge environments. However, this optimistic approach also requires critical information literacy, self-regulation and continuous learning skills.

The polemic between Selwyn and Siemens is productive because it prevents two extremes. Technological optimism may ignore pedagogical, ethical and social risks, while excessive skepticism may underestimate the real potential of innovation for access, personalization and collaboration[9]. A balanced scientific position is that innovative technologies are neither automatically progressive nor inherently harmful. Their educational value depends on pedagogical mediation. Technology becomes a developmental factor only when the teacher organizes it through meaningful tasks, reflective communication, critical analysis and formative feedback. Thus, the discussion supports the main thesis of this article: pedagogical problems should be solved through critical, methodological and human-centered integration of innovation[10].

CONCLUSION

In conclusion, the application of innovative technologies to the educational process is a necessary direction of modern pedagogical development, but it is also a complex process

that creates methodological, psychological, organizational and ethical challenges. The main problems include insufficient digital-pedagogical competence of teachers, weak connection between technological tools and learning objectives, unequal access to digital resources, cognitive overload, fragmented use of platforms, superficial motivation and the risk of reducing education to technical procedures. These difficulties arise when innovation is understood narrowly as the introduction of devices and software rather than broadly as the transformation of the entire pedagogical system.

The elimination of these problems requires a systematic approach. Teachers must receive continuous professional development that combines technical skills with didactic design. Every digital tool should be selected according to its pedagogical function and its contribution to students’ competencies. Educational institutions should provide infrastructure, methodological support and monitoring. Digital learning should be combined with dialogue, critical thinking, collaboration and formative assessment. Ethical and inclusive principles must guide technological integration so that innovation expands educational opportunities rather than deepens inequality. Therefore, innovative technologies should be regarded not as a substitute for the teacher, but as a means of strengthening the teacher’s ability to organize meaningful, flexible and student-centered learning.

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