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THEORIES OF DIGITAL PEDAGOGY AND A MODEL OF THE LEARNING PROCESS ENRICHED WITH INTELLIGENT TECHNOLOGIES

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Abstract
This article examines the scientific-theoretical and methodological foundations of digital pedagogy, as well as the enrichment of the learning process through intelligent technologies. The stages of development of digital pedagogy, its close relationship with modern educational paradigms, and the pedagogical potential of intelligent technologies are analyzed. The study substantiates the effectiveness of organizing the learning process based on artificial intelligence, learning analytics, and adaptive learning technologies. In addition, a model of the learning process enriched with intelligent technologies is developed, and its impact on the quality of education and students' cognitive activity is revealed. The obtained scientific conclusions serve as a basis for implementing digital pedagogy theories in educational practice and for developing recommendations aimed at the intellectualization of the learning process.

Keywords: Digital, pedagogy, intelligent, technologies, artificial, intelligence, adaptive, learning, analytics, environment, model, quality, of education, innovative, approach.

INTRODUCTION

The development of modern society is characterized by the widespread implementation of digital technologies and artificial intelligence, which imposes qualitatively new demands on the education system. The rapid growth of information volume, increasing complexity of educational processes, and the necessity to consider learners' individual needs require pedagogical activities to be organized on the basis of innovative approaches. In particular, the formation and development of digital pedagogy theories bring to the forefront the issue of enriching the educational process with intelligent technologies as a pressing scientific problem [10].

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Digital pedagogy integrates traditional pedagogical approaches with modern digital tools, aiming to fundamentally renew the content, forms, and methods of the educational process. This approach enables learner-centered education, enhances students' cognitive activity, and improves teaching effectiveness. At the same time, intelligent technologies—such as artificial intelligence, machine learning, learning analytics, and adaptive learning systems—serve as key instruments linking the theoretical foundations of digital pedagogy with educational practice [3].

Currently, numerous scientific studies are being conducted in higher education institutions on organizing the educational process based on intelligent technologies. In particular, opportunities for analyzing educational processes using digital data, predicting student performance, and developing individualized learning trajectories are expanding. However, in most existing studies, the issue of considering digital pedagogy theories and intelligent technologies as a unified system has not been sufficiently explored.

From this perspective, developing a model of an educational process enriched with intelligent technologies based on digital pedagogy theories and scientifically substantiating its pedagogical effectiveness is one of the most relevant tasks. Such a model contributes to increasing the flexibility of the educational process, developing students' independent learning competencies, and organizing effective monitoring of educational quality [5].

This article is aimed at addressing this problem by presenting the scientific-theoretical and practical aspects of improving the educational process through the integration of digital pedagogy theories and intelligent technologies. The research findings contribute to accelerating digital transformation in higher education and enhancing the effectiveness of pedagogical activities [7].

LITERATURE REVIEW

Scientific research in the field of digital pedagogy and intelligent technologies has primarily focused on increasing the interactivity, learner-centeredness, and effectiveness of the educational process. In particular, the "Learning Analytics" concept developed by G. Siemens and P. Long introduced a new data-driven approach to managing education. Their works reveal the potential for systematic analysis of educational processes using digital tools and technologies [9]. Siemens' learning analytics framework emphasizes data-based prediction of learners' academic performance and learning behavior [8].

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R. Luckin highlights the significant role of artificial intelligence and machine learning technologies in enhancing pedagogical processes. Her research focuses on developing learner-centered instructional approaches by integrating digital pedagogy methodologies with advanced technologies [4]. C. Redecker, in her "DigCompEdu (European Framework for the Digital Competence of Educators)" model, emphasizes the development of teachers' digital competencies, identifying essential skills for effective engagement in digital education environments [6].

Furthermore, studies by S. R. Baker and P. S. Inventado analyze the integration of educational data mining and learning analytics into education systems. According to their findings, data-driven educational management enables detailed analysis of learners' activities and supports the development of personalized learning models [1].

In CIS countries, research on digital pedagogy and intelligent technologies has intensified in recent years. A. A. Andreev, in his work "Digital Educational Environment," comprehensively examines the role of digital learning environments in improving teaching effectiveness and outlines methodological foundations for integrating digital technologies into pedagogical processes [12]. B. I. Robert, in "Information Technologies in Education," emphasizes the significance of information technologies in designing modern pedagogical systems [13].

The development of digital education in CIS countries is closely linked to programs aimed at enhancing teachers' digital competencies. B. Khodjayev studied the pedagogical and methodological foundations of creating digital educational environments and their impact on learning processes [15]. S. To'xtasinov analyzed innovative approaches to implementing digital transformation in higher education institutions [14].

In Uzbekistan, increasing attention is being paid to research on digital pedagogy and intelligent technologies. A. G'afforov, in "Digital Educational Environment," explored methodological and organizational approaches to digital pedagogy development, identifying existing challenges and proposing solutions for integrating digital technologies into pedagogical systems [2]. B. Khodjayev conducted extensive research on integrating pedagogical technologies into education, enhancing the effectiveness of distance learning, and developing teachers' digital competencies [15]. S. To'xtasinov examined the implementation of digital transformation in higher education and practical methods for integrating digital technologies into teachers' pedagogical activities [14].

Foreign, CIS, and national studies collectively emphasize the importance of integrating digital pedagogy and intelligent technologies into the educational process. Digitalization of education and AI-based organization of learning enhance pedagogical effectiveness and support the development of students' independent learning skills. These studies provide a solid scientific foundation for developing effective methods of applying digital pedagogy theories and intelligent technologies in education.

RESEARCH METHODOLOGY

The research methodology of this study is aimed at examining digital pedagogy theories and the process of enriching educational activities with intelligent technologies through a systematic and comprehensive approach. The pedagogical potential of digital learning environments, the impact of intelligent technologies on educational processes, and their integration were scientifically analyzed. The methodological framework was selected in accordance with the research objectives and ensured the integration of theoretical and empirical investigations [4].

The methodological basis of the study includes competency-based, systemic, and learner-centered approaches. The competency-based approach focuses on developing future specialists' digital and intelligent competencies, while the systemic approach considers the educational process as a holistic pedagogical system. The learner-centered approach emphasizes addressing students' needs, interests, and individual learning trajectories [6].

The research employed theoretical analysis and generalization, pedagogical modeling, comparison and systematization, pedagogical observation, questionnaires and interviews, as well as qualitative and quantitative analysis methods. Theoretical analysis enabled the examination of foreign, CIS, and national scientific sources on digital pedagogy and intelligent technologies and clarification of key concepts.

Pedagogical modeling was applied to develop a theoretical model of an educational process enriched with intelligent technologies. This model reflects the interrelationships between objectives, content, methods, and outcomes, contributing to improved educational effectiveness. Comparative and systematization methods facilitated the comparison of existing pedagogical approaches and methods for integrating digital technologies into education.

Empirical methods included pedagogical observation, surveys, and interviews. Observations analyzed the implementation of intelligent technologies, student engagement, and teachers' methodological practices. Surveys and interviews

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explored students' and teachers' attitudes toward digital pedagogy and intelligent technologies and their perceived impact on education [11].

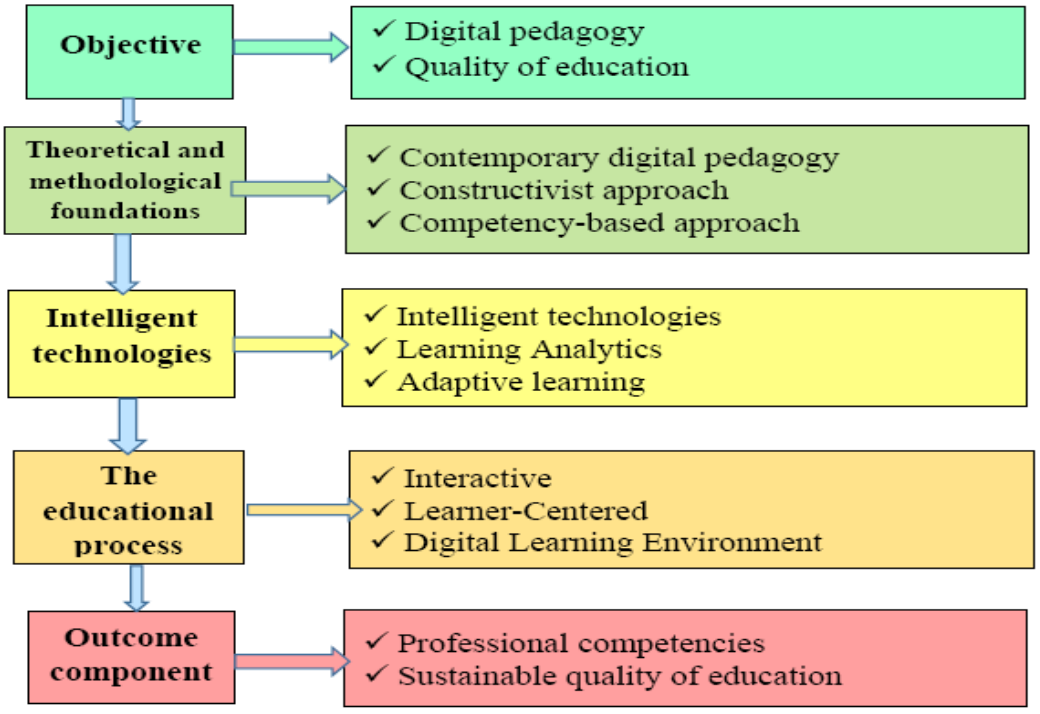
Quantitative analysis identified changes in educational effectiveness, while qualitative analysis provided deeper insights into the pedagogical significance of technology-enriched learning environments [1]. Overall, the chosen methodology ensured scientific validity and reliability of the research outcomes.

ANALYSIS AND RESULTS

The study analyzed the pedagogical effectiveness of organizing the educational process based on digital pedagogy theories enriched with intelligent technologies. The results indicate that systematic and goal-oriented integration of intelligent technologies significantly enhances educational quality and learning efficiency.

Based on the analysis, a comprehensive model for organizing an intelligent technology-enhanced educational process was developed. The model consists of interrelated components. The goal-oriented component focuses on learner-centered education, competency development, and quality enhancement based on digital pedagogy theories.

The theoretical and methodological foundation of the model is based on modern digital pedagogy concepts, constructivist and competency-based approaches, enabling the integration of intelligent technologies into educational content and methods. Findings show that well-developed theoretical-methodological foundations contribute to systematizing teachers' instructional activities.



Fgure 1. A model for organizing the educational process based on intelligent technologies

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The core of the model comprises intelligent technologies—artificial intelligence, learning analytics, and adaptive learning systems—which facilitate data collection, analysis, and the development of individualized learning trajectories. The results demonstrate that learning environments organized on this basis enhance students' engagement and independent learning skills.

Within the model, the educational process is interactive and learner-centered, positioning students as active participants rather than passive recipients of knowledge. Analysis shows that this approach positively influences the development of students' critical and creative thinking competencies.

The final component of the model is the outcomes block, which evaluates educational quality, development of digital and professional competencies, and overall learning effectiveness. Empirical results confirm that educational outcomes in intelligent technology-enriched environments are more stable and significantly higher than those achieved through traditional approaches.

Overall, the conducted analysis and the obtained results confirm that the model of an educational process enriched with intelligent technologies based on digital pedagogy theories is pedagogically effective. This model serves as a solid scientific and practical foundation for implementing digital transformation and intellectualizing the educational process in higher education institutions.

CONCLUSION

In conclusion, digital pedagogy theories and the enrichment of the educational process with intelligent technologies represent one of the most important and priority directions in the development of modern education systems. Within the framework of this study, the theoretical foundations of digital pedagogy, the pedagogical potential of intelligent technologies, and the mechanisms for their integration into the educational process were scientifically analyzed.

The findings indicate that educational processes organized on the basis of artificial intelligence, learning analytics, and adaptive learning systems significantly enhance students' cognitive engagement, foster independent learning skills, and ensure the sustainability of educational quality. Organizing the learning process in a learner-centered manner through intelligent technologies enables consideration of students' individual needs, learning abilities, and developmental characteristics.

Based on the research results, a model of an educational process enriched with intelligent technologies was developed and proven to be pedagogically effective. The coherence and interaction of the model's goal-oriented, theoretical-

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methodological, technological, and outcome-based components ensure a systematic organization of the educational process. Moreover, the proposed model provides a scientific and practical framework for improving teachers' methodological practices and managing education through digital technologies.

The conclusions presented in this scientific article may be used to develop methodological recommendations for implementing digital pedagogy theories in higher education institutions, intellectualizing the educational process, and advancing digital learning environments. The obtained results also serve as a theoretical foundation for future research in the field of digital education and intelligent learning technologies.

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