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Modern Methods of Developing the Pedagogical Competence of Preschool Education Institution Leaders

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A B S T R A C T

This article examines the importance of innovative mechanisms in enhancing the pedagogical potential of preschool education institution leaders. The study analyzes how modern approaches such as digital technologies, reflective leadership, collaborative management, and continuous professional development contribute to improving leadership effectiveness in preschool education. Based on a review of international literature and research findings, the article highlights that innovative mechanisms play a key role in strengthening pedagogical competence, improving management quality, and ensuring the development of a modern educational environment. The results show that the integration of innovation in leadership practices significantly increases the efficiency and quality of preschool education systems.

A R T I C L E I N F O

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INTRODUCTION

In modern society, digital technologies are becoming an integral part of the education system. In particular, the use of innovative technologies in preschool education, which represents the initial stage of learning, has a significant impact on children's intellectual, social, and emotional development. In the context of digital transformation, the effective organization of the educational process, improvement of its quality, and development of 21st-century skills among children have become important scientific and practical priorities [1].

The educational process for preschool-aged children is closely connected with play activities, as children tend to learn more effectively through visual, interactive, and emotionally engaging materials. From this perspective, digital technologies—including multimedia tools, interactive whiteboards, electronic educational resources, mobile applications, and digital platforms—provide opportunities to make learning more interesting and effective [2]. Consequently, they enhance the didactic effectiveness of the educational process.

The concept of didactic effectiveness refers to the degree to which educational objectives are achieved, as well as the formation and practical application of knowledge, skills, and competencies. Digital technologies contribute to this process by strengthening individualized approaches, promoting independent thinking, and optimizing educational activities [3]. Therefore, the use of digital tools in preschool education is becoming not only a modern requirement but also a pedagogical necessity.

Furthermore, international experience demonstrates that the application of digital technologies in preschool education increases children's cognitive activity, develops their attention, memory, and logical thinking abilities, and supports the individualization of learning processes [4]. Such an approach also promotes teachers' innovative activities and elevates the quality of education to a new level [5].

In Uzbekistan, extensive reforms are being implemented to integrate digital technologies into the education system. These reforms create the need for the application of modern pedagogical technologies in preschool educational institutions, effective utilization of digital resources, and enhancement of educators' information and communication technology (ICT) competencies [6].

LITERATURE REVIEW

The issue of using digital technologies in preschool education is one of the most widely studied areas in contemporary pedagogy and didactics. Research conducted in this field has examined the impact of digital tools on children's development, educational quality, and learning effectiveness from various perspectives.

International studies emphasize the relationship between preschool education quality and innovative approaches. Reports developed by the European Commission identify digital technologies as a means of individualizing and enhancing interactivity in early childhood education [7]. This approach contributes to increasing children's learning pace and interest in knowledge acquisition.

Studies conducted by the OECD highlight that the pedagogical effectiveness of digital learning environments largely depends on interactive communication between teachers and children. According to these studies, when used appropriately, digital tools foster children's cognitive activity, independent thinking, and problem-solving skills [8].

According to Vygotsky's Social Development Theory, children actively construct knowledge through social environments and mediating tools. Digital technologies perform this mediating function by expanding the child's "Zone of Proximal Development" and making the learning process more effective [9].

Research by Siraj-Blatchford demonstrates that the quality of preschool education is closely linked to

play-based learning and pedagogical interaction. According to these studies, digital technologies enrich play-based education and contribute to the development of children's creative thinking skills [10].

Similarly, Fullan's theory of educational change argues that the integration of innovative technologies is not merely a technical process but also a process of renewing pedagogical culture and competencies. This requires teachers to possess digital literacy and methodological flexibility [11].

Analyses of the national education system also indicate a growing need for the application of digital technologies in preschool education. Within the framework of educational reforms in Uzbekistan, the introduction of digital educational resources and interactive teaching methods has been identified as one of the key priorities for the development of preschool education [12].

Overall, the review of existing scientific literature demonstrates that the use of digital technologies in preschool education:

- Accelerates children's cognitive development;
- Individualizes the educational process;
- Strengthens play-based learning;
- Enhances pedagogical effectiveness;
- Establishes the foundations of digital literacy.

However, some studies also indicate that inappropriate use of digital technologies may lead to negative consequences, such as reduced attention span and excessive screen time among children. Therefore, methodological guidelines and pedagogical supervision play a crucial role in the effective implementation of these technologies [13].

METHODOLOGY

This study was aimed at determining the didactic effectiveness of using digital technologies in the preschool education process. The research employed pedagogical observation, experimental methods, questionnaires, and comparative analysis. The study was conducted in preschool educational institutions (PEIs) and involved children from senior and preparatory groups.

The participants were divided into two groups: an experimental group (children educated using digital technologies) and a control group (children taught through traditional educational methods). This approach made it possible to comparatively assess the impact of digital technologies on educational effectiveness [14].

The main stages of the study were organized as follows:

In the first stage, scientific literature related to the research problem was analyzed, focusing on digital technologies, didactic effectiveness, and the psycho-pedagogical characteristics of preschool education. During this stage, the theoretical framework of the study was established [15].

In the second stage, experimental activities were carried out. In the experimental group, educational sessions were organized using multimedia tools, interactive presentations, electronic games, and mobile applications. In contrast, the control group was taught using traditional visual and verbal teaching methods. The same educational topics were presented to both groups, ensuring objective comparison of the results [16].

In the third stage, children's knowledge levels, attention-concentration abilities, logical thinking skills, and task-completion speed were assessed according to specific evaluation criteria. Pedagogical monitoring and observation sheets were used during the assessment process. In addition, questionnaires were conducted with teachers and parents to collect subjective evaluations regarding the impact of digital technologies on children's development [17].

Statistical and comparative analysis methods were applied to process and interpret the collected data. The results were analyzed using percentages and mean values, enabling the identification of differences between the experimental and control groups. This provided a scientific basis for evaluating the didactic effectiveness of digital technologies [18].

The methodological foundation of the study was based on the systemic approach, activity-based approach, and competency-based approach. These approaches allow preschool education to be viewed as an integrated system and facilitate the effective integration of digital technologies into the pedagogical process [19].

RESULTS AND DISCUSSION

During the study, the didactic effectiveness of digital technologies in preschool education was comparatively analyzed based on the experimental and control groups. The obtained results demonstrated that children who learned through digital tools showed significantly higher cognitive and performance indicators.

Indicators	Experimental Group (%)	Control Group (%)
Attention Concentration	88	70
Logical Thinking	85	68
Task Completion Speed	90	72
Educational Activity and Participation	92	75

As shown in the table above, the experimental group achieved higher results across all indicators compared to the control group. These findings confirm that digital technologies contribute to activating and enhancing the effectiveness of the educational process.

The analysis of the results indicates that digital technologies improve preschool children's ability to concentrate and facilitate faster and more effective learning of educational materials. The higher outcomes observed in the experimental group suggest that the visual and auditory effects of multimedia tools strengthen sensory-based learning among children.

Furthermore, the improvement in logical thinking skills can be explained by children's active involvement in problem-solving activities through interactive digital tasks and games. This process promotes the development of analytical thinking and independent decision-making skills.

The high levels of task-completion speed and educational engagement are associated with the motivational impact of digital environments, which increase children's interest in learning activities. However, the discussion of the findings also revealed the importance of using digital technologies in moderation, as excessive screen time may lead to fatigue and reduced attention spans among children.

CONCLUSION

Based on the findings of this study, it can be concluded that the use of digital technologies in preschool education significantly enhances didactic effectiveness. Digital tools, including multimedia resources, interactive programs, electronic games, and educational platforms, improve children's attention concentration, logical thinking, rapid decision-making abilities, and active participation in the learning process.

The comparative results between the experimental and control groups demonstrated that educational activities organized through digital technologies positively influence children's cognitive development and increase the effectiveness of learning outcomes. These findings confirm the important role of

innovative approaches in contemporary education.

At the same time, it is essential to adhere to pedagogical guidelines and apply digital technologies purposefully and systematically. Excessive or uncontrolled use may negatively affect children's attention stability and overall well-being.

Overall, the proper integration of digital technologies into the preschool education system contributes to improving educational quality, developing the foundations of digital literacy, and fostering modern competencies among children. Therefore, further scientific research in this field and the enhancement of teachers' digital competencies remain important priorities.

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