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IMPLEMENTATION OF DIGITALIZATION FOR IMPROVING MANAGEMENT MECHANISMS IN PRESCHOOL EDUCATION INSTITUTIONS

ВПРОВАДЖЕННЯ ЦИФРОВІЗАЦІЇ ДЛЯ УДОСКОНАЛЕННЯ МЕХАНІЗМІВ УПРАВЛІННЯ ЗАКЛАДОМ ДОШКІЛЬНОЇ ОСВІТИ

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The article presents a study of digitalization as a tool for improving management mechanisms in preschool education institutions. The essence of the concept of "digitalization" in educational management is examined, and modern approaches to its interpretation are analyzed. The main management mechanisms of preschool education institutions and their transformation under the influence of digital technologies are outlined. The paper also characterizes the current state and trends of implementing digital tools in the management practice of preschool education institutions in Ukraine. Particular attention is paid to the challenges and barriers to digitalization. Based on practical analysis, the article highlights opportunities for using modern digital platforms and services to optimize document management, enhance communication with parents, and improve the efficiency of the educational process. The research results indicate that digitalization is a strategic resource for the development of preschool education.

Keywords: digitalization of education, educational management, preschool education administration, digital platforms, electronic document management, digital technologies.

У статті досліджено роль цифровізації в удосконаленні управління закладами дошкільної освіти та визначено ключові механізми її впровадження. Проаналізовано сучасні тенденції розвитку цифрових технологій в освіті та управлінні, зокрема використання електронного документообігу, онлайн-платформ для планування та комунікаційних сервісів. Встановлено, що цифровізація сприяє оптимізації адміністративних процесів, підвищенню прозорості та ефективності прийняття управлінських рішень, а також активному залученню батьків у освітній процес. Особливу увагу приділено бар'єрам цифровізації, серед яких фінансові обмеження, недостатня інтеграція цифрових рішень, низький рівень цифрових компетентностей персоналу, застаріла техніка та соціально-психологічна недовіра педагогів і батьків. Проаналізовано методи подолання опору працівників, що поєднують психологічні, адміністративні та комунікаційні заходи, спрямовані на підвищення цифрової компетентності персоналу, мотивації до змін та формування позитивного ставлення до інновацій. Представлено огляд основних цифрових платформ і сервісів, що використовуються в управлінні закладами дошкільної освіти, таких як Google Workspace, Microsoft Teams, Schoology, ClassDojo, iDoceo та Teachmint. Розглянуто їхні функції, додаткові можливості та переваги застосування у щоденній практиці. Наведено дані щодо рівня цифровізації в регіонах України та впливу цього показника на ефективність управлінських процесів у закладах дошкільної освіти. Результати вказують на те, що комплексне впровадження цифрових інструментів сприяє підвищенню цифрової компетентності персоналу, економії часу адміністрації та формуванню прозорого та ефективного управлінського середовища в закладах дошкільної освіти. Результати роботи мають практичне значення для керівників державних і приватних закладів дошкільної освіти, працівників адміністрацій та органів державного управління закладів освіти, оскільки окреслюють шляхи подолання основних бар'єрів цифровізації та оптимального використання цифрових платформ для модернізації механізмів управління.

Ключові слова: цифровізація освіти, освітній менеджмент, управління закладом дошкільної освіти, цифрові платформи, електронний документообіг, цифрові технології.



Problem statement. The preschool education system is undergoing significant changes under the influence of the digital transformation of society. Traditional approaches to managing preschool education institutions have proven to be insufficiently effective, as they do not ensure the promptness of decision-making, transparency of organizational processes, or an adequate level of interaction between parents and educators. At the same time, there is an increasing public demand for high-quality educational services, which necessitates the implementation of modern management tools. Digitalization opens new opportunities for automating document management, optimizing resources, improving communication, and fostering an innovative management culture. However, the integration of digital technologies into the activities of preschool institutions is accompanied by several challenges, including insufficient funding, uneven technical infrastructure, a low level of digital competence among staff, and resistance to change. These factors determine the need for scientific analysis and substantiation of ways to enhance the effectiveness of preschool education management based on digitalization.

Analysis of recent research and publications. Theoretical aspects of using digitalization to improve management in education have been investigated by a number of scholars [1–5]. Kolesnikova I. A. considers digitalization as a key factor in the innovative development of education and emphasizes its importance in shaping the modern educational environment [1]. In a collective study [2], the authors substantiate the organizational and pedagogical conditions for implementing digital technologies in the educational process of preschool education institutions. In her dissertation, Khrypun V. O. explores the development of theoretical and methodological foundations for the use of Google cloud services by preschool education managers in administrative activities [3]. Another group of authors [4] emphasizes that global technological trends – such as artificial intelligence, augmented and virtual reality (AR/VR), the Internet of Things (IoT), robotics, and gamification – are essential prerequisites for the full-scale digitalization of education. Levinets N. V., Lokhvytska L. V., and Yakuba V. V. describe how the digitalization of management processes affects the functioning of preschool education institutions [5]. In general, the scientific literature confirms that digitalization has become a strategic resource for the development of education; however, a comprehensive study of its impact specifically on

the management system of preschool institutions requires further investigation.

Identification of previously unresolved aspects of the general problem. Despite the growing scientific interest in the digitalization of education, most studies focus on individual aspects – organizing the educational process, developing teachers' digital competencies, or using electronic resources in children's learning. Significantly less attention is paid to a systematic analysis of the impact of digitalization specifically on management activities in preschool education institutions. Questions regarding the comprehensive integration of digital tools into daily administrative practice, the development of effective electronic document management models, the formation of a digital corporate culture among staff, and overcoming barriers related to resistance to change remain insufficiently explored. There is also a lack of practical recommendations on the optimal use of digital platforms for communication with parents and data-driven management decision-making. This underscores the need for further research on digitalization as a strategic resource for modernizing the management of preschool education institutions.

Formulation of the article's objectives (problem statement). The aim of the article is to determine the role of digitalization in improving the management of preschool education institutions. To achieve this aim, the following objectives are set: to reveal the essence of digitalization in educational management, to characterize current trends and challenges in implementing digital technologies in preschool institutions, and to outline practical opportunities for their application in management activities.

Presentation of the main research material. The relevance of research on digitalization in educational management is driven by global changes in the education sector occurring under the influence of information and communication technologies. Preschool institutions increasingly need to improve management efficiency, ensure openness in the educational process, and accelerate decision-making. Digital technologies serve not only as tools for automating routine tasks but also as strategic resources for enhancing management mechanisms.

Analysis of various scientific interpretations of the concept of "digitalization in education" indicates that the key components of this process are the implementation of information and communication technologies, the creation of a digital educational environment, and the

optimization of management processes in educational institutions. Particular attention is paid to the impact of digitalization on management activities, especially through the automation of document flow, data analytics, planning, and monitoring of the educational process. Studies emphasize that digitalization should not only simplify administrative procedures and educational practices but also help create a new environment combining technological efficiency with social equity.

The implementation of digital technologies in preschool education institutions ensures [1]:

- 1) optimization of management processes – automation of document flow, use of platforms for planning and monitoring activities;

- 2) improved decision-making efficiency – through access to real-time analytical data;

- 3) enhanced communication – via online tools for interaction with teachers, parents, and administration;

- 4) individualization of the educational process – application of digital resources that enable adaptation of learning to the needs of children and the institution's conditions;

- 5) increased accessibility of educational services – possibilities for organizing distance learning and interactive engagement.

Digitalization in the management of preschool institutions acts not only as a tool for technical modernization but also as a strategic resource for improving the efficiency, transparency, and quality of management activities. It lays the foundation for the implementation of innovative management mechanisms that meet the current demands of the educational environment.

It should be noted separately that digitalization in educational management is part of the broader concept of societal digital transformation, which has affected all areas of life. In education, this is manifested as follows [6]:

- 1) transition from traditional management methods to digital ecosystems, where educational and administrative processes are integrated;

- 2) use of cloud technologies for storing information, managing learning materials, and communication;

- 3) implementation of electronic management forms in education, including digital registries, reporting platforms, and tools for analyzing the quality of learning;

- 4) integration of digital technologies with inclusive education, ensuring access to learning for children with special needs.

Management in preschool institutions typically relies on standard managerial functions: planning, organization, motivation, control, and communication. Considering these functions, preschool leaders ensure staff selection, resource allocation, organization of the educational process, and interaction with parents and government agencies.

Thus, digitalization transforms the way management decisions are made – from a paper-based environment to data-driven and analytics-based management. This enables processes to become more transparent, faster, and more efficient, which is a key factor in the development of modern preschool institutions. In the long term, such transformations lay the foundation for creating an adaptive and innovative management system for preschools, oriented toward the individual needs of children, teachers, and parents. Relevant information is presented in Table 1.

Thus, modern methods of managing preschool education institutions in a digital environment are changing: instead of old paper-based and bureaucratic approaches, a unified digital space is being created, combining administrative, economic, social, and informational tools. This transformation enables more transparent management, provides rapid access to necessary data, improves interaction among participants in the educational process, and increases the overall efficiency of preschool institutions.

Analyzed studies indicate that teachers face certain challenges in developing digital skills, particularly due to limited access to digital devices and software, as well as insufficient provision of high-speed internet. The implementation of digital tools in preschool management includes the use of electronic journals, online platforms for communication with parents and administration, as well as systems that allow tracking the development of children. However, in practice, the extent of implementation and their effectiveness may depend on the specific institution and region [8].

According to the State Statistics Service of Ukraine, by the end of 2024, there were 12,833 preschool education institutions operating in Ukraine. Among them, 12,329 were public and municipal, and 504 were private or corporate. A total of 845,596 children were enrolled in these institutions. This number does not include children studying in institutions located in occupied territories or regions where hostilities are ongoing. Despite the availability of distance

Table 1

Transformation of management mechanisms in the context of digitalization

Management mechanism	Traditional form	Transformation under digitalization
Administrative	Orders, regulations, and instructions in paper form; printed reports	Electronic document management, digital orders and reports, use of specialized management software
Economic	Budget planning on paper; manual expense accounting; financial journals for reporting	Electronic budgeting, automated accounting, online expense monitoring, digital procurement platforms
Socio-psychological	Verbal communication, staff meetings; paper-based feedback surveys	Use of messengers and corporate platforms; online surveys and evaluations; digital staff motivation systems
Information and Communication	Paper-based document flow; record journals; traditional bulletin boards	Unified information space of the preschool institution: electronic journals, child databases, online communication channels with parents, and systems for monitoring the quality of the educational process

Source: constructed by the authors based on [7]

learning, a significant portion of preschools continues to operate in-person, indicating limited implementation of digital tools [9].

Fig. 1 illustrates the level of digitalization across the regions of Ukraine in 2024.

The values are presented as a digital transformation index, reflecting the degree of implementation of digital tools across various sectors, including education and preschool management. The map indicates a significant disparity in the level of digital technology between regions. Leaders in digital transformation (Lviv,

Dnipropetrovsk, Odesa, Vinnytsia, Volyn) exhibit a high level of digitalization, which facilitates the introduction of modern e-services in preschool institutions, whereas lagging regions (Donetsk, Mykolaiv, Zaporizhzhia, Khmelnytskyi, Chernivtsi) fall behind, slowing the digital equipping of kindergartens.

In regions with a low level of digital transformation, paper-based bureaucracy persists, decision-making is slow, and access to educational services is uneven. Thus, a low level of digital transformation not only hinders



Fig. 1. The level of digitalization across the regions of Ukraine in 2024

Source: constructed by the authors based on [10]

the development of children’s digital skills but also suppresses transparency, efficiency, and the modernization of preschool management.

Significant barriers are also observed within preschool management systems, where digital solutions could optimize document flow, communication with parents, and the organization of internal processes. The main systemic barriers are presented in Table 2.

Analysis of the barriers to digitalization in preschool management indicates that the main obstacles are financial constraints, insufficient organizational integration of digital solutions, low digital competence of staff, outdated equipment, and socio-psychological distrust among teachers and parents.

At the same time, taking into account psychological, administrative, and communication

aspects allows not only minimizing negative reactions of employees but also promoting their adaptation, increasing motivation, and fostering a proactive attitude toward innovations. Table 3 summarizes the main methods for overcoming employee resistance in this process.

Overcoming employee resistance in the process of digitalizing preschool management requires a comprehensive approach that combines psychological, administrative, and communicational measures. The application of such methods allows for increasing the digital competence of staff, strengthening motivation for change, and creating a favorable environment for implementing new management practices.

Effective management of a preschool institution requires the use of modern digital platforms and services that enable optimization

Table 2

Barriers to digitalization in preschool management systems

Barrier category	Problem description
Financial	Limited funding from the state and local authorities; lack of targeted programs to provide institutions with modern digital tools
Organizational	Insufficient integration of digital solutions into the institution’s management system; absence of unified standards for using electronic document management systems or online services for communication with parents
Personnel	Low level of training of managers and administrative staff to work with modern digital platforms; lack of motivation to improve qualifications
Technical	Use of outdated equipment; lack of technical support and systematic equipment updates
Socio-psychological	Distrust from teachers and parents; concerns about the negative impact of digital tools on children; and reluctance to change established management practices

Source: developed by the authors

Table 3

Methods for overcoming employee resistance in the digitalization of preschool management

Category of measures	Specific methods	Expected effect
Psychological	Conducting training sessions and workshops on using digital platforms; providing consultations and individual support for teachers; informational sessions on the benefits of digitalization	Increased confidence of employees in their digital skills, reduced fear of change, formation of a positive attitude toward new technologies
Administrative	Implementing a system of incentives for effective use of digital tools; planning phased implementation of changes; clear distribution of duties and responsibilities	Increased motivation to use digital technologies, provision of organizational support, reduced conflicts and resistance to changes
Communicational	Regular meetings and discussions of innovations; sharing positive experiences among employees; involving parents in familiarization with digital services	Improved information exchange, formation of a shared vision of changes, increased trust in the digitalization process

Source: developed by the authors based on [11]

of administrative processes, planning of the educational process, and communication with parents. Table 4 presents the main categories of such tools, their functions, additional capabilities, and the benefits of integrating them into the institution's daily practice.

Analysis of the presented digital platforms and services confirms their decisive role in improving the management mechanisms of educational institutions, including preschools. Their implementation significantly enhances the efficiency of management processes. The use of electronic document management, planning services, and communication platforms contributes to time savings for administration, improved control over the educational process, and active parental involvement in educational activities. Comprehensive application of these tools ensures centralized and transparent

management of the institution, enhancing staff digital competence and the quality of educational services.

Conclusions. The study established that the digitalization of preschool management is a key factor in increasing the efficiency of management processes. It was found that modern digital tools enable the automation of document flow, improve communication with parents and teachers, and optimize decision-making. Scholars interpret digitalization as a comprehensive transformation of management, and international experience confirms its role in creating flexible educational ecosystems. The practical outcome of the study lies in outlining ways to overcome barriers (financial, personnel, technical) and the possibilities for implementing digital platforms to ensure transparent and effective functioning of preschool institutions.

Table 4

Main digital platforms and services in preschool management systems

Platform category	Platform name	Main functions	Additional capabilities	Benefits of use
Electronic document management and accounting	Google Workspace (Docs, Sheets, Drive)	Documentation management, file storage, collaborative work	Data encryption, backup	Reduced paperwork, accessibility
	Classtime / ClassDojo	Attendance and children's performance tracking	Automatic report generation, mobile app integration	Convenient monitoring of children's progress, rapid report creation
Planning and educational process management	Microsoft Teams / Planner	Lesson planning, task distribution, program execution monitoring	Calendars, reminders, integration with other Microsoft services	Centralized schedule management, increased teacher productivity
	Schoology	Creation of curricula, monitoring children's progress	Test creation, sharing educational materials	Optimization of educational process, increased student engagement
Communication platforms	Viber / Telegram / WhatsApp	Messaging with parents and colleagues	Group chats, announcement broadcasting, media files	Fast information exchange, improved communication
	ClassDojo (for parents)	Informing parents about children's achievements	Photo and video reports, behavior tracking	Parental engagement, transparency of interaction
Integration platforms	iDoceo / Teachmint	Comprehensive management of documentation, planning, and communication	Data synchronization across modules, mobile access	Centralized management, time-saving for administration

Source: developed by the authors based on [3; 12; 13]

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