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DIGITAL EDUCATIONAL ENVIRONMENT AS A TOOL FOR MODERNIZATION OF GENERAL SECONDARY EDUCATION INSTITUTIONS IN THE CONDITIONS OF A DIGITAL SOCIETY

Abstract. The article examines the essence of the digital educational environment as an important tool for the modernization of secondary education institutions in the conditions of a digital society. It is substantiated that the digitalization of the educational environment involves not only providing educational institutions with modern technical means, but also the comprehensive implementation of digital technologies in all components of the educational process and management activities.

The main components of the digital educational environment are identified, in particular, digital infrastructure, resources, platforms, services, and tools that ensure the organization of learning, communication, assessment of results, and management of the educational process. Modern approaches to the formation of a digital educational environment are analyzed, and the importance of a systematic and strategic approach to its development is emphasized, in particular through the development of a Strategy for the Digital Development of an Educational Institution.

Attention is focused on the need to create a safe digital environment, develop digital competencies of all participants in the educational process and implement electronic document management.

Based on the results of an empirical study conducted among representatives of the administration of secondary education institutions, the level of readiness for digital transformation is determined. A high level of awareness of the importance of developing the digital educational environment has been established, while insufficient implementation of strategic documents and digital management solutions in the practical activities of educational institutions has been revealed. It has been proven that the use of digital technologies increases the efficiency of the educational process, provides opportunities for monitoring and analyzing learning outcomes, individualizes learning, and improves the quality of education. The prospects for further development of the digital educational environment as a key factor in the formation of a competitive and innovative education system have been substantiated.

Keywords: digital educational environment, digitalization of education, general secondary education institutions, digital transformation, educational digital technologies, digital competencies, educational platforms.

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ЦИФРОВЕ ОСВІТНЄ СЕРЕДОВИЩЕ ЯК ІНСТРУМЕНТ МОДЕРНІЗАЦІЇ ЗАКЛАДІВ ЗАГАЛЬНОЇ СЕРЕДНЬОЇ ОСВІТИ В УМОВАХ ЦИФРОВОГО СУСПІЛЬСТВА

Анотація. У статті розглянуто сутність цифрового освітнього середовища як важливого інструменту модернізації закладів загальної середньої освіти в умовах цифрового суспільства. Обґрунтовано, що цифровізація освітнього середовища передбачає не лише забезпечення закладів освіти сучасними технічними засобами, а й комплексне впровадження цифрових технологій у всі складові освітнього процесу та управлінської діяльності. Визначено основні компоненти цифрового освітнього середовища, зокрема цифрову інфраструктуру, ресурси, платформи, сервіси та інструменти, що забезпечують організацію навчання, комунікацію, оцінювання результатів і управління освітнім процесом.

Проаналізовано сучасні підходи до формування цифрового освітнього середовища та підкреслено важливість системного і стратегічного підходу до його розвитку, зокрема через розроблення Стратегії цифрового розвитку закладу освіти. Акцентовано увагу на необхідності створення безпечного цифрового середовища, розвитку цифрових компетентностей усіх учасників освітнього процесу та впровадження електронного документообігу.

На основі результатів емпіричного дослідження, проведеного серед представників адміністрації закладів загальної середньої освіти, визначено рівень готовності до цифрової трансформації. Встановлено високий рівень усвідомлення важливості розвитку цифрового освітнього середовища, водночас виявлено недостатній рівень впровадження стратегічних документів і цифрових управлінських рішень у практичній діяльності закладів освіти. Доведено, що використання цифрових технологій сприяє підвищенню ефективності освітнього процесу, забезпечує можливості для моніторингу та аналізу навчальних результатів, індивідуалізації навчання та підвищення якості освіти.

Обґрунтовано перспективи подальшого розвитку цифрового освітнього середовища як ключового чинника формування конкурентоспроможної та інноваційної системи освіти.

Ключові слова: цифрове освітнє середовище, цифровізація освіти, заклади загальної середньої освіти, цифрова трансформація, освітні цифрові технології, цифрові компетентності, освітні платформи.

Problem statement. Digitalization of the educational environment in secondary education institutions is not only about providing schools with modern digital devices, such as computers, tablets, interactive panels, or network equipment.

First of all, it involves the comprehensive implementation of digital technologies across all components of the educational process and the school's organizational activities.

This involves the systematic use of digital tools, electronic educational resources, online platforms, and services that support teaching, learning, communication, assessment of learning outcomes, and the management of the educational institution.

An important aspect of digitalization is the creation of an effective electronic communication environment that ensures the constant exchange of information among all participants in the educational process – students, teachers, administrators, and parents. Thanks to this, an integrated cyber-physical educational space is formed that combines physical educational resources and digital technologies, ensuring flexibility, accessibility, and continuity of learning.

In addition, digitalization involves integrating various digital platforms and services to organize distance and blended learning, using electronic journals and diaries, learning management systems, cloud services for collaboration, and analytical tools for monitoring and evaluating educational outcomes.

An important component of this process is also the development of digital competencies of all participants in the educational process – the formation of skills in students for the effective, safe, and responsible use of digital technologies, and in teachers – the ability to integrate digital tools into pedagogical practice and use them to improve the quality of education.

Thus, the digitalization of the educational environment is a key factor in modernizing schools, increasing the efficiency of the educational process, expanding access to knowledge, and creating conditions for the formation of competencies necessary for life and professional activity in a digital society.

Analysis of recent research and publications. The educational environment is the natural or artificially created environment of a person that combines the content, means, methods, and forms of education to create favorable conditions for the productive activity of those who learn.

According to the terminology of Ukrainian legislation [5]: the term “digital educational environment” means “a set of conditions for the development, upbringing and education of pupils, support for parents in organizing the educational environment, provided with the help of modern educational, information and communication (digital) technologies”.

As mentioned in the survey [4], the digital educational environment is an artificially created environment in which the didactic goals of learning, cooperation, and communication among participants in the educational process are achieved through the balanced and appropriate use of digital technologies.

Digital education is the provision of educational services through digital platforms, new digital and educational technologies, digital devices, and digital educational resources.

The digital educational environment of general secondary education institutions comprises the digital infrastructure, processes, resources, and technologies used to support learning through digital means. These can be computer labs, laptops, tablets, interactive whiteboards, learning software, online resources, electronic textbooks, and other digital tools [6; 7].

Effective digitalization of the educational environment in secondary education institutions requires not the piecemeal implementation of individual technologies, but a systemic, strategic approach. That is why an important task is the development and implementation of comprehensive Digital Development Strategies that will define the main directions, priorities, and phased steps of the digital transformation of the educational environment.

Such strategies should cover all areas of an educational institution's functioning – educational, organizational and managerial, methodological, and communication activities – and be aimed at gradually modernizing the educational process.

At the same time, their implementation involves the active participation of all participants in the educational process: students, teachers, administration, parent community, as well as taking into account national educational priorities and international standards for the digital development of education.

The purpose of the article. The purpose of the article is to substantiate the theoretical foundations and analyze the current state of the digital educational environment in general secondary education institutions, as well as to determine the key directions and prospects for its development in the context of digital transformation based on the results of an empirical study.

Presentation of the main material. In the modern educational environment, digital solutions play an increasingly important role, as they enhance management efficiency, the accessibility of educational resources, and the quality of learning. Such solutions include implementing digital management systems for educational processes, using electronic platforms to organize learning, and creating a safe digital environment for all users of the educational space.

The use of digital tools in various forms of education – full-time, distance and blended – plays a significant role. Important elements of the digital educational environment are electronic textbooks, digital libraries, electronic journals and diaries, as well as various digital educational services, including online certification, electronic testing, platforms for improving the skills of teaching staff and other services that support continuous professional development [3; 8].

At the same time, the introduction of digital technologies into the education system is a complex, multi-level process that requires coordinated actions by all participants in the educational process and effective coordination across different levels of educational management [2].

Adapting the educational environment to digital conditions involves implementing several technological and organizational changes. Among them is the gradual transition from traditional paper-based document flow to electronic document flow, updating the content of educational resources to meet modern requirements and ensuring wide access through digital platforms [1].

An important aspect is also the creation of conditions for individualized learning, in particular, the ability to choose the optimal pace of mastering educational material and to use digital tools to support educational activities. In addition, digital technologies offer new opportunities for monitoring and analyzing educational outcomes.

The use of specialized digital services enables continuous tracking of the progress of education seekers, analyzing their success, timely identification of learning difficulties, and providing individual support. Thus, the systematic implementation of digital technologies contributes to increasing the transparency, efficiency, and quality of the educational process, and also forms a modern educational environment that meets the challenges of the digital society [3; 8].

To determine the state and prospects for the development of the digital educational environment in secondary education institutions, a survey was conducted among representatives of their administrations.

The survey aimed to identify the level of formation and the features of the functioning of the digital educational environment in secondary education institutions.

Its purpose was to clarify the attitude of representatives of educational institutions' administrations toward the digitalization of the educational process, as well as to determine the status of implementation of key components of the digital transformation.

The content of the survey covers the following main aspects:

- awareness of the need to develop a digital educational environment regardless of the form of organization of education;
- assessment of the significance of the Digital Development Strategy as a management tool;
- determination of the status of the development and implementation of strategic documents in educational institutions;
- analysis of the practices of using educational digital platforms (single or multiple systems);
- research into the level of implementation of electronic document management as a component of digital management.

According to the survey results, in which 46 respondents participated, we conclude that 95.7% believe that the digital educational environment should exist and develop regardless of the form of educational organization; the remaining 4.3% do not agree with this statement. 97.8% agree that the Digital Development Strategy of a General Secondary Education Institution is an important document for the successful development of the digital educational environment of general secondary education institutions. Although the Digital Development Strategy has been developed by only 6.5% of respondents, 52.2% are under development, and 41.3% do not have it.

In our opinion, one of the first steps towards the systematic and thoughtful development of the digital educational environment is the use of a single educational information system for all participants in the educational process:

- 47.8% of respondents already work with a single educational system;
- 19.6% use different platforms but are working on switching to a single one;
- 32.6% use different platforms for different processes.

The answers regarding the introduction of electronic document management in secondary education institutions were split 50% to 50% between those who said it was introduced and those who said it was not.

In our opinion, the electronic document management system is quite convenient, as all participants in the educational process do not depend on time or place. The introduction of electronic document management in secondary education institutions could be facilitated by the transition of education management bodies to digital document management.

Thus, the results of this survey indicate a high level of awareness of the importance of the digital educational environment among participants in the educational process. The vast majority of respondents consider its development necessary regardless of the forms of education and determine the strategic importance of the Strategy for the Digital Development of a Secondary Education Institution.

Respondents consider the implementation of a unified educational information system to be a key step in the digital transformation of the Secondary Education and Training Service's educational environment. The electronic document management system is recognized as manual and promising, but not all secondary education institutions have it in place.

Conclusions. The study has demonstrated that the digital educational environment is a key factor in the modernization of general secondary education institutions in the context of a digital society. Its development ensures increased efficiency of educational management, accessibility of educational resources, improvement of the quality of learning, and the formation of digital competencies among all participants in the educational process.

It has been established that the effective digitalization of the educational environment requires a systematic and strategic approach, including the development and implementation of Digital Development Strategies, the integration of digital platforms and services, and the creation of a unified educational information system. Particular importance is attached to the organization of a secure digital environment and the implementation of electronic document management, which contribute to improving the transparency and flexibility of educational processes.

The results of the empirical study confirm a high level of awareness among representatives of educational institutions regarding the importance of digital transformation. At the same time, the study revealed certain inconsistencies between the recognition of the importance of digitalization and the actual level of implementation of strategic documents and digital solutions in practice. It has been proven that digital technologies significantly expand the possibilities for monitoring and analyzing educational outcomes, enabling personalized learning and timely support for students. This contributes to increasing the effectiveness of the educational process and ensuring its compliance with the requirements of the digital society.

Prospects for further research are related to the development of effective models for managing the digital educational environment, improving the digital competence of teachers, and studying the impact of digital technologies on educational outcomes in general secondary education institutions.

References:

1. Bykov, V., Burov, O. (2020). Tsyfrove navchal'ne seredovyshe: novi tekhnolohiyi ta vymohy do zdobuvachiv znan' [Digital learning environment: new technologies and requirements for knowledge seekers]. *Suchasni informatsiyini tekhnolohiyi ta innovatsiyini metodyky navchannya v pidhotovtsi fakhivtsiv: metodolohiya, teoriya, dosvid, problemy – Modern information technologies and innovative teaching methods in training specialists: methodology, theory, experience, problems*, 55, 11–22 [in Ukrainian].
2. Danylyshyna, K. O. (2019). Struktura informatsiinoho osvitnoho seredovyscha ta vykorystannia yoho u pidhotovtsi maibutnikh pedahohiv profesiinoho navchannia [Structure of the information educational environment and its use in the training of future vocational teachers]. *Elektronne naukove fakhove vydannia "Vidkryte osvitnie e-seredovyshe suchasnoho universytetu" – Electronic scientific professional publication "Open educational e-environment of a modern university"*, 63–76 [in Ukrainian].

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3. Kontseptsiya rozvytku tsyfrovyykh kompetentnostey. [Concept of development of digital competencies]. (n.d.). zakon.rada.gov.ua. Retrieved from <https://zakon.rada.gov.ua/laws/show/167-2021-%D1%80#Text> [in Ukrainian].

4. Pavlova, N. (2024). Tsyfrove osvityne seredovyshe u konteksti tsyfrovizatsiyi osvity [Digital educational environment in the context of digitalization of education]. *Collection of Scientific Papers "SCIENTIA"* (July 26, 2024) (pp. 72–75). Zagreb, Croatia. [in Ukrainian].

5. Polozhennia vid 26.06.2025 № 926 MON Ukrainy "Pro zatverdzhennia Polozhennia pro dystantsiinu formu zdobuttia doshkilnoi osvity" [Regulation No. 926 of the Ministry of Education and Science of Ukraine dated 06/26/2025 "On approval of the Regulation on the distance form of obtaining preschool education"] n.d.). zakon.rada.gov.ua. Retrieved from https://zakon.rada.gov.ua/laws/term/66689?utm_source=chatgpt.com [in Ukrainian].

6. Trubacheva, S., Mushka, O., Zamaskina, P. (2023). Osoblyvosti proyektuvannya osvith'oho seredovyshecha v umovakh tsyfrovizatsiyi suspil'stva pid chas voyennoho stanu v Ukrayini [Peculiarities of designing the educational environment in the conditions of digitalization of society during martial law in Ukraine]. *Ukrayins'kyu pedahohichnyy zhurnal – Ukrainian Pedagogical Journal*, 4, 46–52. [in Ukrainian].

7. Trubacheva, S., Mushk, O., Lyulkova, Yu. (2022). Dydaktychni osoblyvosti formuvannya navchal'noyi kompetentnosti uchniv v umovakh tsyfrovizatsiyi osvith'oho seredovyshecha zakladu zahal'noyi seredn'oyi osvity pid chas voyennoho stanu [Didactic features of the formation of students' academic competence in the conditions of digitalization of the educational environment of a general secondary education institution during martial law]. *Problemy suchasnoho pidruchnyka – Problems of a modern textbook*, 29, 202–208. [in Ukrainian].

8. The Digital Europe Programme. <https://digital-strategy.ec.europa.eu> Retrieved from <https://digital-strategy.ec.europa.eu/en/activities/digital-programme>. [in English]

Література:

1. Биков В., Буров О. Цифрове навчальне середовище: нові технології та вимоги до здобувачів знань / В. Биков, О. Буров // Сучасні інформаційні технології та інноваційні методики навчання в підготовці фахівців: методологія, теорія, досвід, проблеми. – 2020. – Вип. 55. – С. 11–22.

2. Данилишина К. О. Структура інформаційного освітнього середовища та використання його у підготовці майбутніх педагогів професійного навчання. Електронне наукове фахове видання "Відкрите освітнє е-середовище сучасного університету". – 2019. – С. 63–76.

3. Концепція розвитку цифрових компетентностей. [Електронний ресурс]. – Режим доступу: <https://zakon.rada.gov.ua/laws/show/167-2021-%D1%80#Text>

4. Павлова Н. Цифрове освітнє середовище у контексті цифровізації освіти / Н. Павлова // Collection of Scientific Papers "SCIENTIA" (July 26, 2024). – Zagreb, Croatia. – С. 72–75.

5. Положення від 26.06.2025 № 926 МОН України "Про затвердження Положення про дистанційну форму здобуття дошкільної освіти" [Електронний ресурс]. – Режим доступу: https://zakon.rada.gov.ua/laws/term/66689?utm_source=chatgpt.com

6. Трубачева С., Мушка О., Замаскіна П. Особливості проектування освітнього середовища в умовах цифровізації суспільства під час воєнного стану в Україні / С. Трубачева, О. Мушка, П. Замаскіна // Український педагогічний журнал. – 2023. – №4. – С. 46–52.

7. Трубачева С., Мушка О., Люлькова Ю. Дидактичні особливості формування навчальної компетентності учнів в умовах цифровізації освітнього середовища закладу загальної середньої освіти під час воєнного стану / С. Трубачева, О. Мушка, Ю. Люлькова // Проблеми сучасного підручника. – 2022. – №29. – С. 202–208.

8. The Digital Europe Programme [Електронний ресурс]. – Режим доступу: <https://digital-strategy.ec.europa.eu/en/activities/digital-programme>.

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