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WAYS OF DEVELOPMENT AND ISSUES OF EDUCATION TRANSFORMATION PROCESSES

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ШЛЯХИ РОЗВИТКУ І ПРОБЛЕМАТИКА ТРАНСФОРМАЦІЙНИХ ПРОЦЕСІВ ОСВІТИ

The article explores the pathways of development and challenges of transformative processes in education. It is noted that digital transformation is becoming a key factor in the development of various fields, driven not only by the importance of technologies in everyday life but also by their positive impact. The article investigates the definition and aspects of digitization in both broad and narrow senses, as well as its impact on the educational process. It is pointed out that the digitization of education involves not only the transformation of materials into digital format but also the use of interactive methods and online platforms for

learning. Special attention is paid to the relevance of digitization and its impact on the labor market and societal development. An example of education digitization in Finland is provided, where programming is introduced into the educational program starting from the first grade, emphasizing the practical application of knowledge. The importance of technological literacy of teachers and students is emphasized, as well as the necessity of ensuring accessibility of digital technologies for the entire population. The problems and prospects of implementing digital technologies in the educational process are discussed. It is indicated that such problems arise when rapidly transitioning to digital technologies without considering the technological and economic capabilities of all citizens. The need for awareness of the advantages of information technologies and dissemination of positive experiences of their use in education is outlined. Furthermore, the article addresses the problem of insufficient preparation of teachers for the use of digital technologies and suggests ways to address it. In particular, emphasis is placed on the importance of an internal system for enhancing the qualifications of educational institutions and collaboration with experienced colleagues. Key aspects of using digital technologies in the educational process are identified, including the need for clear definition of goals and tasks for selecting appropriate technologies. The focus is on the use of mobile technologies and the development of digital culture in the educational environment. It is noted that the success of implementing digital technologies in education depends on the readiness of all participants in the educational process for continuous development and adaptation to new technologies.

У статті розглядаються шляхи розвитку і проблематика трансформаційних процесів освіти. Вказано, що цифрова трансформація стає ключовим фактором у розвитку різних галузей, що обумовлено не лише важливістю технологій у повсякденному житті, але й їхнім позитивним впливом. У статті досліджується визначення та аспекти цифровізації в широкому й у вузькому розуміннях, а також її вплив на освітній процес. Зазначається, що цифровізація освіти включає в себе не лише перетворення

матеріалів на цифровий формат, але й використання інтерактивних методів та онлайн-платформ для навчання. Особлива увага приділяється доцільності цифровізації та її впливу на ринок праці та розвиток суспільства. Наводиться приклад цифровізації освіти у Фінляндії, де програмування введено у освітню програму вже з першого класу та акцентується на практичному використанні знань. У статті висвітлюється важливість технологічної грамотності педагогів та учнів, а також необхідність забезпечення доступності цифрових технологій для всього населення. Розглянуті проблеми та перспективи упровадження цифрових технологій в освітній процес. Вказано, що такі проблеми виникають при швидкому переході до цифрових технологій без урахування технологічних та економічних можливостей всіх громадян. Окреслюється необхідність усвідомлення переваг інформаційних технологій та розповсюдження позитивного досвіду їх використання в освіті. Крім того, стаття розглядає проблему недостатньої підготовки педагогів до використання цифрових технологій та пропонує шляхи їх вирішення. Зокрема, наголошується на важливості внутрішньої системи підвищення кваліфікації навчального закладу та співробітництва з уже досвідченими колегами. Встановлені ключові аспекти використання цифрових технологій у навчальному процесі, зокрема, необхідність чіткого визначення цілей та завдань для вибору відповідних технологій. Робиться акцент на використанні мобільних технологій та розвитку цифрової культури в освітньому середовищі. Вказано, що успіх упровадження цифрових технологій в освіту залежить від готовності всіх учасників освітнього процесу до постійного розвитку та адаптації до нових технологій.

Keywords: digitization, education, transformations, informatization, computerization, digital technologies, electronic education.

Ключові слова: цифровізація, освіта, трансформації, інформатизація, комп'ютеризація, цифрові технології, електронна освіта.

Statement of the problem in general terms and its connection with important scientific or practical tasks. In today's world, the issue of transforming educational processes is one of the most relevant and discussed. This is due to significant changes in the scientific and technological sphere and the widespread use of digital technologies in various aspects of society. In recent years, global trends in digitalization have begun to define new requirements for the education system, which requires rapid adaptation and innovative solutions.

One of the main factors driving the revision of approaches to education is the rapid scientific and technological progress in the digital sphere. The development of artificial intelligence, the Internet of Things, blockchain technologies, and other innovations opens up new opportunities, but at the same time poses new challenges to society. The educational process must meet the needs of the modern labor market, where digital literacy, data analysis, programming, and other computer skills are becoming key.

The need to meet these challenges requires revising traditional teaching methods and introducing innovative approaches to education. The education system should actively incorporate digital technologies into the learning process, encouraging students to actively use modern tools and resources. In addition, it is necessary to provide ongoing professional training for teachers so that they can effectively implement new technologies and methods in the educational process. This approach will help to create competent citizens who are able to function successfully in the digital society and meet the challenges posed by modern technologies.

Analysis of recent research and publications. Research on the development and problems of transformation processes in education has been studied by such domestic and foreign scholars as: I. Krychkovskyi, O. Ivakh, V. Tabas, I. Ivaniuk, M. Houstova, J. Scheller, D. Engvin, E. Gomez, J. Child, V. Sukhonos, Y. Sichkarenko, B. Bogandi, J. Tamas, V. Bykov, N. Bobro, etc. Thus, in their research, scientists emphasize the importance of studying and analyzing the transformation processes in the field of education.

Formulation of the article's objectives (statement of the task). The purpose of this article is to study and analyze the transformation processes in the field of education, in particular, digital transformation, and to determine their impact on educational processes, the labor market and the development of society as a whole. In addition, the article aims at identifying the key aspects of the use of digital technologies in the educational process and emphasizing the importance of continuous development and adaptation to new technologies by all participants in the educational process.

Summary of the main research material. In today's world, technology is becoming not only an important part of our daily lives, but also a determining factor in the development of various industries. They are an objective reality that cannot be ignored, especially since their use has a positive impact [1, p.132].

Digital transformation is a complex and multifaceted phenomenon based on the use of digital technologies (the phenomenon of digitalization) [2, p.37]. In the scientific discourse, terms such as "digital ecosystem", "digital environment", "digital society", "digital economy", "digitalization of education" are often used. However, the main concept that defines this technological progress is the term "digitalization". This term has gained wide popularity and application, but its precise definition and scope remain the subject of discussion and research in the scientific community.

Thus, today, the term "digitalization" is considered by scholars in a narrow and broad sense. In the narrow sense, digitalization is characterized as the transformation of information into a digital form, which involves reducing costs, creating new opportunities, etc. In the broad sense, digitalization is considered to be a modern global trend in the development of the economy and society, which is based on the transformation of information into digital form, which should lead to increased economic efficiency and improved quality of life [3, p.12].

Learning has always been an information process, as it is accompanied by the transmission, processing, storage, assimilation and use of information. And in this sense, the emergence of new textbooks, other teaching materials, and technical learning tools that increased the information provision of the learning process

should be attributed to the informatization of education. However, this term appeared only at the end of the twentieth century and was associated not so much with the new quality of the educational process as with the technical side of creating, storing and distributing educational materials.

The following definitions of the term "informatization of education" can be found in the scientific literature:

- in the narrow sense is "the introduction of microprocessor-based information tools, as well as information products and pedagogical technologies based on these tools into educational institutions" [4, p.265];

- "a set of measures to transform pedagogical processes through the introduction of information products, tools, and technologies in education and training" [5, p.827].

Informatization of education takes place through the digitalization of educational processes and the use of digital technologies in education. It involves not only the conversion of educational material into a digital format, but also the introduction of interactive teaching methods, online platforms for distance learning, personalized curricula, etc.

It is important to note that digitalization has replaced computerization, which was mainly about using computers to solve individual tasks. The great possibilities of digital representation of information have led to the fact that digitalization has begun to form holistic technological environments (ecosystems, platforms) that solve entire classes of tasks.

The digitalization of education is leading to major changes in the labor market and is focused on reorganizing the educational process, rethinking the role of the teacher, which gives rise to the availability of information in its various forms (not only textual, but also audio and visual). However, the availability of information is beginning to encourage teachers and students to constantly search for and select relevant and interesting content, as well as to process the information they receive at a high speed. And if students quickly adapt to the digital environment, forming initial skills and abilities to use digital technologies, this cannot be said about older generations [6, p.245].

Since the digitalization of education directly depends on the level of digital skills of the teacher, he or she must learn to use the almost unlimited information resources provided by the network and new technological tools.

Much attention is paid to the digitalization of education in Ukraine, since in the context of blended learning associated with the war in Ukraine, computer equipment and mobile programs are a valuable asset that enables a continuous cycle of professional and educational activities [7, p.78].

The transformation of the system of training in the field of information is one of the important conditions for ensuring the successful implementation of the Strategy for the Development of the Innovation Sector for the period up to 2030 [8], as well as the development and widespread introduction of digital technologies into the everyday life of the population.

Measures to improve the efficiency of the system of training and retraining in the field of information technology create a solid basis for providing government agencies and industry organizations with qualified IT specialists. At the same time, the shortage of qualified personnel in the labor market requires improvement of IT curricula and methods, and strengthening of mutual cooperation between educational institutions and IT companies.

The main task of the state in introducing digital technologies in education is to ensure that teachers and students are technologically literate and that digital technologies are accessible to all. The forced and rapid transition to digital technologies, without taking into account any economic and technological capabilities of citizens, many of whom do not even have a computer, let alone a constant opportunity to use the Internet, greatly delays the benefits of digitalization and generates many costs [9, p.110].

Considering the current transformation processes in education, it is necessary to identify a number of problems arising from the spread of computers and other electronic gadgets. The main ones include: passivity in the use of information technology, lack of knowledge in the field of informatization of education, lack of provisions of a unified concept of digital technologies, etc. [10, p.11]

One of the major challenges to the widespread adoption of digital technologies in educational organizations is the situation where some employees of an educational institution are not fully prepared to use the opportunities of informatization of education. Teachers are used to organizing their classes using mostly traditional technologies. This unwillingness to adapt to the use of new technologies and to develop their own thinking is mainly due to fear of failure or unwillingness to acquire new skills in the use of digital technologies. In such a situation, it is necessary to explain the benefits of information technology, highlight the specifics of its use in the educational process, and disseminate positive experiences of using digital technologies. All of this will be the key to success and the formation of important priorities when working with teaching staff in the context of the transformation of the educational environment.

Another problem on the way to the effective implementation of digital technologies in the educational process is the insufficiently developed skills of applying these technologies on the scale of educational activities directly in the classroom. The impact of gaps in digital skills can be reduced by using the internal system of professional development of an educational institution when teachers are trained directly at the workplace with the help of colleagues who have already mastered and implemented various network resources, educational electronic resources, and mobile learning technologies.

One of the important components that demonstrate the effective implementation of digital technologies in the educational process is a clear understanding of the goals and objectives that an educational organization solves through the use of such technologies. In this case, it is necessary to select the appropriate digital technologies and methods of their use for specific goals, which will best influence the achievement of the goal.

It should be borne in mind that the modern generation is focused on a greater degree of use of mobile devices. This fact should be taken into account when organizing educational and cognitive activities with students. Teachers should use mobile technologies in their practical work, which are becoming part of modern tools that allow not only to engage students in various learning tasks but also to

intensify their activities in the subject outside of class time: to have unlimited access to educational materials, the ability to immerse themselves in project research.

Mobile learning and its corresponding modern digital technologies have a high educational potential. Along with mobile technologies that provide increased mobility, understanding, and high speed of information delivery, promising digital technologies that need to be addressed are voice technologies, artificial intelligence technologies, virtual and augmented reality, chatbots, machine learning, etc. All this significantly affects the effectiveness of interaction between participants in the educational system and makes an educational organization more functional and competitive in the modern digital society.

One of the key ways to involve teachers in the transformation of the education system is to offer initiatives that will not only teach teachers how to use information technology in their professional activities but also to master new digital technologies that can take the educational process to a new level.

Let's consider some areas in the activities of an educational organization through which digital learning and development technologies can influence the transformation of the education system as a whole and allow the development of the skills of participants in the educational process required in today's digital society. Thus, digital culture can influence the transformation of the educational process. For its development in an educational organization, it is necessary to form: transparency of communication and cooperation and effective use of information and telecommunication technologies based on the use of modern digital tools.

The current pace of change associated with the introduction of digital technologies into the education system clearly demonstrates the speed with which these technologies are penetrating all areas of human activity, including the education system. The desire for continuous development of all participants in the educational process in the use and application of digital technologies requires free access to resources and platforms that allow them to improve their skills and abilities in the effective use of digital technologies.

However, it is worth noting that the success of education transformation in the context of digital technologies largely depends on the readiness of the participants in this process. By encouraging the development and formation of an internal digital culture, providing continuous training in the use of digital technologies, exploring new learning platforms and technologies, encouraging collaboration, and investing in the talent and success of each participant in the educational process, the success of such a system becomes more likely and sustainable.

Conclusions and Prospects for Further Research in this Area. Thus, in order to remain a competitive educational organization in the modern digital society, any educational institution needs to work on developing the information culture of all participants in the educational process, ensuring the exchange of experience and knowledge in the use of digital technologies, and providing continuous training for teaching staff.

To achieve this goal, it is necessary to provide all employees of the educational organization and participants of the educational process with access to platforms, technologies, and training programs that will allow them to constantly improve their level in accordance with the main trends and technological changes taking place in society.

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