

СЕКЦІЯ 5.

ДИДЖИТАЛІЗАЦІЯ ОСВІТИ І РОЗВИТОК УПРАВЛІНСЬКИХ КОМПЕТЕНТНОСТЕЙ / DIGITALIZATION OF EDUCATION AND DEVELOPMENT OF MANAGEMENT COMPETENCES

Natalia BOBRO,

Ph.D, Doctor of Philosophy,

Director of the digital department of the European University,
director of the “NooLab & AI” scientific laboratory of the European University

European University, Ukraine, Switzerland

ORCID 0009-0003-5316-0809

natalia@noolab.ch

DIGITALIZATION AND TRANSFORMATION OF EDUCATION: ANALYSIS OF PROBLEMATIC ISSUES

Abstract. The article analyzes the problematic issues of digitalization and transformation of education. It is established that today digital transformation is the use of digital technologies as a tool for reengineering business processes in higher education institutions. The main problematic aspects of the digitalization of education include the problem of adopting innovations, increasing the additional workload of teachers, shifting the vector of pedagogical work, and digital inequality.

Keywords: digitalization of education, transformation of education, educational environment.

Relevance. Over the past few decades, there has been a rapid development of information technology and its integration into the field of education. The issue of using the latest approaches to working with information is central to discussions about the future of education. This process not only brings numerous opportunities but also requires attention to the problems that arise in connection with the digitalization of education. All of this makes the study of digitalization and transformation processes in the educational environment relevant.

Objective. Digitalization of education opens up great opportunities for creating effective, accessible, and interactive learning environments. It allows us to rethink traditional teaching methods and open up new ways to create innovative programs. However, this process is accompanied by the identification of the main risks and problems that may arise in the course of introducing digital tools into the educational process, as well as their critical analysis.

Results of the study. Digitalization is a process that has become an integral part of the development of modern education. The digital transformation of teaching is driven by the active development of information technology, as well as the need to expand opportunities for teacher-student interaction and improve learning efficiency. As N. Bobro notes: "The benefits of using digital tools in the education system are undeniable, as evidenced by their increasing use in the educational process. New educational products and services are emerging that transform not only the field of education but also the culture of educational activities" [1, p.130].

With regard to educational institutions, digitalization is actively affecting two main areas:

- management processes of the educational institution (automation and optimization of business processes, risk management in decision-making, digital format of interaction with counterparties);
- introduction of digital technologies in the educational process (remote interaction and training, modeling, simulators and trainers, augmented and virtual reality).

The main drivers of education digitalization are as follows:

1. increasing the competitiveness of the educational institution by making education more attractive to students and other learners, as well as reducing the amount of "classical" classroom

workload and increasing the number of teaching staff (opportunities to individualize the time trajectory of the educational process, individualize the content of educational programs, improve, etc.)

2. Increasing the availability of educational services and expanding the number of students in educational institutions. This is due to an increase in the target audiences of educational institutions and is primarily aimed at foreign students. It also includes exceptional marketing opportunities that open up when using information and communication technologies (ICT).

3. Search for reserves to improve management efficiency. Here, the key points are finding trigger points for making management decisions, the ability to model the consequences of the development of situations, and monitoring a specific situation in real time.

The expected results of the digitalization of education are often highlighted:

— creating a single online and offline information and academic space, expanding opportunities for university communication and teamwork;

— creating a digital profile of a student as an alternative to the classical record book and a digital profile of a teacher that takes into account the results of pedagogical, scientific, and innovative activities;

— enabling students to form an individual educational trajectory through the expanded use of electronic resources and modern control and diagnostic tools;

— automation of planning of the educational process and material support for its implementation, and use of data on the progress of training in making management decisions [2;3].

To summarize, digital transformation is the use of digital technologies as a tool for reengineering business processes.

At the same time, unified models and approaches to digital transformation in higher education institutions have not yet been developed, and the current stage is characterized by the active use of digital solutions in practice and the accumulation of both primary data and optimal methods and best practices, as well as the discussion of methodological approaches to copying processes and results.

The analysis of the use of digital transformation mechanisms in educational institutions allows us to identify the following stages of their digital maturity:

Stage I – primary digitalization: creating databases, keeping digital records of processes and electronic document flow, and organizing access to data using information systems and websites.

Stage II – digital optimization: creation of an integrated information system of higher education institutions, automation of data collection, reengineering of business processes, implementation of electronic interaction based on EDS (electronic digital signature), creation of personal accounts of users of the integrated information system with mechanisms for notifying about events.

Stage III – transition from digital optimization to digital management: automation of business processes with an assessment of their implementation by key performance indicators.

Stage IV – comprehensive digital transformation of business processes using robotization elements and digital competency profiles. The implementation of this stage requires not only appropriate resources but also a very high level of human resources, which is primarily the responsibility of leading higher education institutions with a developed information infrastructure. The development of effective solutions in each of these areas is one of the important practical tasks that research teams in higher education institutions are currently working on.

Nevertheless, the digitalization process requires solving many problematic issues, which remain an important task for educational institutions. In this context, the problem of adopting innovations is particularly challenging: high-quality training of qualified specialists prepared for work (scientific or industrial and economic) activities in a changing environment, able to effectively cope with the stress of innovations and minimize its consequences.

Also, many scholars point to an increase in the additional workload of teachers and a shift in the vector of pedagogical work towards a decrease in the share of time allocated for close interaction with students [4]. The teacher is more focused on formal criteria of the quality of the educational process: timely preparation and posting of digital content, and work in the electronic environment.

Excessive intensification of pedagogical work and organizational pressure from the management of an educational organization interested in the rapid introduction of digital

innovations into the educational process initiate such negative trends as imitation of activities, increased anxiety, stress, and professional burnout.

Dramatic changes in education in the context of digitalization create new requirements for teachers' computer literacy and their ability to work in a digital environment. This issue is acute for teachers of the older age group. Limited access to continuing education may be an additional risk factor for the withdrawal of experienced teachers who do not have adequate computer literacy from the educational process.

Another problematic aspect is the gap in digital skills of young people based on their socioeconomic status. Gaps in the use of educational software and insufficient digital literacy have been identified in a number of countries, among low-income groups [5, p.847]. According to experts, the digitalization of society will contribute to the development of inequality in the social sphere. These destructive trends are associated with increased requirements for skills and human abilities in the new digital reality. After all, a condition for obtaining high-tech competencies is the availability of financial resources.

Achieving digital literacy is one of the key factors in the competitiveness of a modern labor market specialist. Negative learning outcomes in the process of using digital technologies are often associated with the risks of distracting students from their learning goals and with a decrease in their concentration. The specifics of modern students' lifestyles in the context of digitalization are multitasking, information overload, and the availability of many gadgets. This digital background is not conducive to the development of cognitive skills. A significant increase in the volume of information disseminated leads to information overload, which manifests itself in cognitive distortions, memory, and attention impairment.

The zero cost of storing information and the ability to quickly access it at any time do not help memorize even important material and also create dependence on numerous electronic devices. This dependence contributes to the loss of many personal qualities.

The main tasks of eliminating the negative consequences of the digitalization of education may include: improving the system of training and motivation of teachers, modernizing the practice of controlling educational content, cooperation, and digital trust. Digitalization can be an optimal direction for the development of education if it meets some principles: the formation of appropriate institutional conditions (normatively established requirements for pedagogical activity, legitimization, and dissemination of the values of the digital society), consideration of situational factors, resource support, priority of personal interests (subject-oriented approach), integration of the concepts of digital and traditional pedagogy.

Conclusions. The analysis allows us to state that several problems of digitalization and transformation of education remain insufficiently studied. The following areas can be considered relevant: further development of digital learning and digital trust, technologies for the formation of digital maturity, methods for assessing the quality of electronic content, mechanisms for increasing the productivity of digital learning, and preventing digital inequality.

References

1. Bobro N. S. (2024). Tsyfrova transformatsiia v osviti: vplyv na navchalni protsesy [Digital transformation in education: impact on learning processes]. *Investytsii: praktyka ta dosvid*, № 2. s. 130-134. DOI: <https://doi.org/10.32702/2306-6814.2024.2.130> (in Ukrainian)
2. Thorell, L. B., Klint Carlander, A. K., Demetry, Y., Marainen, L., Nilsson, S., Skoglund, C. (2024). Parental Experiences of Distance Learning in Families with and without an Adolescent with ADHD/ASD: A Large Qualitative Survey Study. *International Journal of Environmental Research and Public Health*, 21(4), p. 388-390.
3. Brown, C., Hicks, J., Rinaudo, C. H., Burch, R. (2023). The use of augmented reality and virtual reality in ergonomic applications for education, aviation, and maintenance. *Ergonomics in Design*, 31(4), p. 23-31.
4. Williamson, B., Eynon, R., Potter, J. (2020). Pandemic politics, pedagogies, and practices: digital technologies and distance education during the coronavirus emergency. *Learning, Media and Technology*, 45(2), s. 107–114. DOI: <https://doi.org/10.1080/17439884.2020.1761641>
5. Maddukelleng, M., Jihan, J., Gunawan, H., Murcahyanto, H., & Pasaribu, W. "Hybrid Learning Innovation: Challenges for Developing Teachers Skills in Indonesia,". *Al Qalam: Jurnal Ilmiah Keagamaan Dan Kemasyarakatan*, Vol. 17(2), 2023, pp. 842-854.