ORGANIZATION OF THE PEDAGOGICAL PROCESS IN A DIGITAL UNIVERSITY
ОРГАНІЗАЦІЯ ПЕДАГОГІЧНОГО ПРОЦЕСУ В ЦИФРОВОМУ УНІВЕРСИТЕТІ

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The article provides a comprehensive analysis of the process of organizing the pedagogical process in the conditions of a digital university, which is becoming a key factor in higher education transformation in the context of the digital economy. The essence and features of the implementation of modern digital technologies in the learning process, which ensures the integration of innovative tools and solutions to improve the quality of education, are determined. The digitalization models of higher education institutions are considered, covering such aspects as interactive and flexible educational environment, digital resources and platforms that allow achieving high efficiency of teaching and university management. An important element of the analysis is the development of digital competencies among students and teachers, as well as rethinking traditional pedagogical methods and organizational approaches to ensure innovation and adaptation to change. The article emphasizes the need for a comprehensive approach to digitalization, which involves not only the technical equipment of universities, but also the deep integration of digital technologies into all levels of the educational process. The issue of minimizing spatial, temporal and cultural barriers in the educational process with the help of digital technologies is considered. The practical implementation of a digital university includes such components as a digital learning format, simulators and trainers, chatbots for student support, and platforms for managing the learning process and tracking student progress. Particular attention is paid to the psychological and pedagogical conditions of the digital environment, including technological, informational and personal components. The article emphasizes that the development of new curricula taking into account promising areas of scientific and technological progress and labor market needs is a key task for higher education institutions. In conclusion, it is noted that the digital university is an important tool for the development of higher education and training of specialists capable of successfully operating in the digital economy.

Key words: *digital university, digitalization of education, educational environment, digital economy, digitalization.*

У статті здійснено комплексний аналіз процесу організації педагогічного процесу в умовах цифрового університету, що стає ключовим фактором трансформації вищої освіти в контексті цифрової економіки. Визначено сутність і особливості впровадження сучасних цифрових технологій у навчальний процес, що забезпечує інтеграцію інноваційних інструментів та рішень для підвищення якості освіти. Розглянуто моделі цифровізації закладів вищої освіти, які охоплюють такі аспекти, як інтерактивне та гнучке освітнє середовище, цифрові ресурси та платформи, що дозволяють досягати високої ефективності навчання та управління університетом. Важливим елементом аналізу є розвиток цифрових компетенцій у студентів і викладачів, а також переосмислення традиційних педагогічних методів та організаційних підходів для забезпечення інноваційної діяльності та адаптації до змін. У статті підкреслено необхідність комплексного підходу до цифровізації, що передбачає не лише технічне оснащення університетів, але й глибоку інтеграцію цифрових технологій у всі рівні освітнього процесу. Розглянуто питання мінімізації просторових, часових та культурних бар'єрів у навчальному процесі за допомогою цифрових технологій. Практична реалізація цифрового університету охоплює такі компоненти, як цифровий формат навчання, симулятори та тренажери, чат-боти для підтримки студентів, а також платформи для управління навчальним процесом і відстеження успішності студентів. Особлива увага приділена психолого-педагогічним умовам цифрового середовища, що включають технологічний, інформаційний та особистісний компоненти. У статті підкреслено, що розробка нових навчальних програм з урахуванням перспективних напрямів науково-технічного прогресу та потреб ринку праці є ключовим завданням для закладів вищої освіти. У підсумку зазначено, що цифровий університет є важливим інструментом розвитку вищої освіти та підготовки фахівців, здатних успішно діяти в умовах цифрової економіки.

Ключові слова: *цифровий університет, цифровізація освіти, освітнє середовище, цифрова економіка, діджиталізація.*

Problem statement in general terms. Digitalization of higher education institutions is an essential condition for their development and adaptation to the requirements of modern society. The integration of digital technologies into the pedagogical process contributes to the creation of an innovative educational environment that meets the modern needs of students and teachers. The relevance of this issue is due to the need to train highly qualified specialists who are able to function effectively in a digital society and have modern digital competencies.

However, the implementation of digital technologies in the educational process requires not only the technical modernization of universities, but also a revision of traditional approaches to the organization of learning, teaching and management of educational processes. The digital university involves the use of innovative pedagogical practices that ensure flexibility, inclusiveness and personalization of education. In solving this problem, a key role is played by creating an interactive educational environment that promotes the development of digital skills, critical thinking and the ability to continuously learn.

The relevance of the research is also due to the need to develop new models of pedagogical activity that meet the requirements of a digital university, contribute to improving the efficiency of the learning

process and form the basis for the further development of educational innovations.

Analysis of recent research and publications. The issue of organizing the pedagogical process in a digital university is actively considered by modern scholars. In particular, the practical aspects of the implementation of digital services in the educational process were studied by Y.O. Kolodinska, O.V. Skliarenko, O.Y. Nikolaievskyi [1], the impact of digital interactive technologies on learning by O.V. Skliarenko, S.M. Yahodzinskyi, P.V. Huk [2; 8]. The role of digital platforms as an innovative organizational tool was analyzed by N.S. Bobro [4]. The influence of interactive technologies on the development of higher education applicants is highlighted in the works of O.O. Khomenko, M.V. Paustovska and I.A. Onyshchuk [3].

Also, a significant contribution to the study of mobile applications and digital platforms has been made abroad: the features of mobile applications for students and modern campuses are discussed in the publications of Creatrix Campus [5], e2s App Blog [6] and Ellucian [7]. The development of innovation potential in Europe was studied by T. Wambsganss, A. Janson, M. Söllner, K. Koedinger, J. Leimeister, S. Kubiv, G. Lopushnyak and others [9; 10].

Despite a significant number of researches, the issue of developing a holistic model of organizing pedagogical activities in a digital university that would take into account the current challenges and specifics of the digital environment remains insufficiently covered. This indicates the need for further research in this area.

Identification of previously unresolved parts of the general problem. Despite significant progress in higher education digitalization, the issue of comprehensive integration of digital technologies into the pedagogical process, taking into account current challenges and the specifics of the digital environment, remains unresolved. There are insufficiently developed models for organizing the learning process that would ensure an effective combination of innovative teaching methods, digital platforms and tools, and take into account the needs of students and teachers for a flexible and personalized approach. Particularly relevant is the issue of developing mechanisms for adapting traditional pedagogical approaches to the conditions of a digital university, which remains open for further research.

The aim of the article is to study the peculiarities of organizing the pedagogical process in a digital university, to develop a conceptual model of pedagogical activity taking into account digital technologies, and to identify key areas for adapting educational approaches to the requirements of the modern digital environment.

Presentation of the main material. The digital transformation of higher education institutions, which is actively developing around the world, plays a significant role in forming a digital society and increasing its efficiency in the digital economy. Modern educational technologies, based on best practices and innovative models, are becoming the main tools for teaching and learning. They contribute to the improvement of higher education and the development of optimal solutions for effective digitalization, which allows achieving high results in the digital economy.

The concept of a digital university covers a comprehensive approach to the integration of technology into all aspects of the university's activities, from the learning process to administrative management. It involves creating an interactive, flexible, and inclusive educational environment that promotes the development of digital skills among students and teachers, provides access to global information resources, and supports innovation processes. However, the implementation of this concept requires not only technical equipment, but also a profound rethinking of teaching methods, organizational structures, and management approaches [1].

The modern digital transformation of higher education is characterized not only by the acceleration of the pace of technology implementation, but also by its increasing complexity. Mastering new methods of working with digital tools by participants in the educational process has become a prerequisite for successful adaptation to changing conditions. It is important to note that the technological modernization of higher education is only the first stage of transformation. To achieve true innovation, a comprehensive rethinking of pedagogical approaches, the content of educational programs and the organization of the educational process, taking into account the capabilities of digital technologies, is necessary [2, p. 57].

An analysis of current pedagogical practice in higher education institutions clearly indicates that digital transformation is causing significant systemic changes. The implementation of digital technologies in the educational process ensures the achievement of a number of strategic goals. In particular, digitalization promotes:

− minimizing the negative impact of spatial, temporal and cultural barriers on the effectiveness of communication in education;

− ensuring productive participation in the educational process not only of its main subjects, but also of experienced professionals, prominent figures of culture, science and art, who carry out their activities almost all over the world;

− searching, processing, critical evaluation and further presentation of data that are most relevant and useful at specific stages of students' mastering their future specialties;

– expanding the use of the latest research results, as well as the best pedagogical experience for educational purposes [3;4].

The practical implementation of such advantages of digital technologies in the organization of the educational process is likely to be promoted by the increased use of certain digital resources. Consider their advantages in more detail.

Today, the digitalization of higher education is also associated with the involvement of online educational resources in the educational process, in particular: Creatrix Campus [5], E2S [6], and Ellucian [7]. Their use indicates the benefits of such resources in organizing the learning process. Thus, their capabilities allow to rationalize the processes of preparing and conducting educational work in the following forms:

– educational modeling;
– conducting virtual experiments;
– student project activities [8, p. 15].

Often, higher education institutions integrate these educational resources with their own innovative solutions, which provides teachers, methodological staff and administration with the opportunity to optimize their use in the context of organizing and conducting training activities, both in classroom and extracurricular formats, taking into account the specifics of individual disciplines. The widespread use of various digital resources is promising for this purpose.

Digital resources that are actively used in the educational process not only help to optimize learning activities, but also create conditions for a more flexible and individualized approach to learning. Implementation of such solutions requires close cooperation between teachers, methodologists, and administration to optimize the learning process, in particular by creating new forms of interaction with students and implementing the latest teaching methods.

Due to the importance of integrating digital resources into the learning process and improving the digital competence of teachers, it is necessary to consider in more detail the mechanisms for implementing such a model of pedagogical activity in the context of higher education digitalization. Thus, the model of pedagogical activity in the context of higher education digitalization developed by us is a synthetic construction of the type model of pedagogical activity of university teachers and the concept of a digital university. Each type of pedagogical activity (organization of the learning process; teaching; education and extracurricular activities; methodological activities; research activities (including student support in this matter); self-education and advanced training) was correlated with the elements of the digital university (digital format; digital environment; digital resources; digital platform), and the teacher's activities that take into account the digital component were identified (Figure 1).
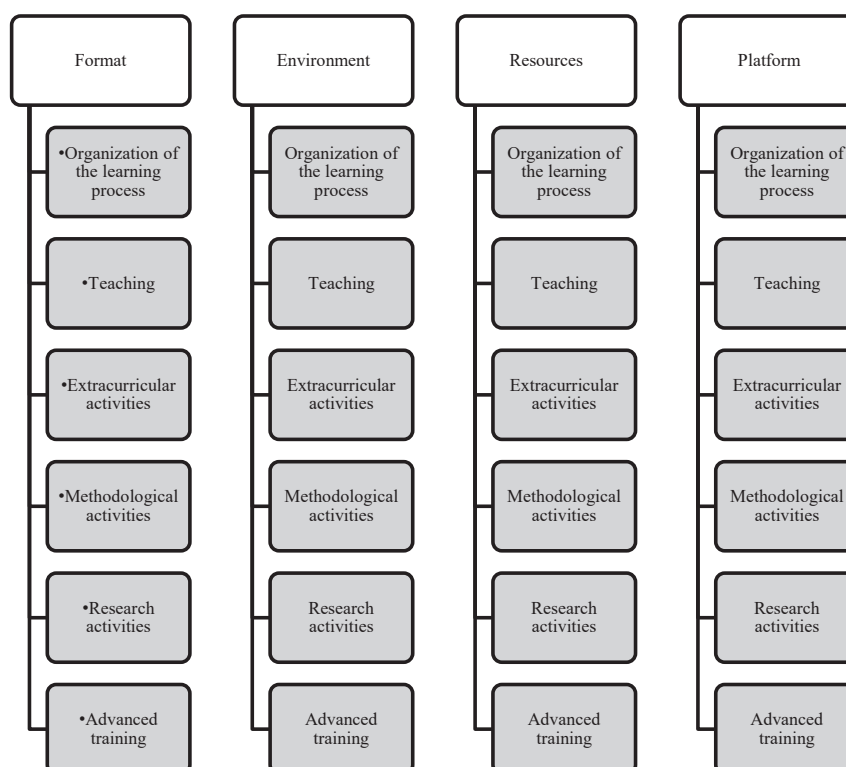

Figure 1. Model of pedagogical activity

According to the model shown in Figure 1, the organization of the learning process will include:

− increasing the share of independent work of a student;

− educational content that will correlate with the concept of Industry 4.0;

− the use of simulators and trainers in education (format);

− development and use of chatbots and other digital assistants that will use the cloud as a platform for learning activities, digital laboratories, simulators and digital trainers (environment);

− artificial intelligence as a tutor that will track student progress, library systems, a set of digital resources for educational purposes and skills testing (resources);

− schedule, organization of classes, feedback, academic progress, etc. on the university platform, development and support of training courses (platform).

In addition to teaching activities and active participation of students in the learning process, psychological and pedagogical conditions that determine the effectiveness of educational interaction are important. The digital learning format makes its own adjustments to these conditions, changing the nature of the interaction between the teacher and students. The research analyzed the specifics of psychological and pedagogical conditions, which include a technological component (tools and techniques), an information component (content and semantic modules), and a personal component (communication and individual characteristics of participants).

Teachers' adherence to such recommendations will increase students' adaptation to the digital format, namely, it will allow to:

− use social networks, various applications, websites, games, etc. as a learning tool;

− shift the emphasis to student motivation;

− alternate several types of activities within one lesson;

− work in small groups or pairs;

− provide feedback in various ways;

− form a regulator of behavior in the digital environment similar to computer games.

For effective training of students, university administrations and teachers should develop curricula that take into account promising areas of scientific and technological progress and relevant niches in the labor market. This includes the creation of specialized and related programs that are focused on future needs, as well as the use of applied tasks in graduation papers instead of traditional qualified research. Additionally, anthropological and psychological aspects should also be taken into account when implementing digital tools in the learning process, which will increase the adaptability and effectiveness of educational programs.

According to the functional theory of generations of universities [9], universities as social institutions have passed through three stages of development, which can be represented in the form of models: model 1.0 "corporate university" (function of education, external referent – culture); model 2. 0 "research university" (function of science, external referent – truth); model 3.0 "technocratic (innovative) university" (function of business, external referent – quality); model 4.0 "biodigital university" as a promising, developing model (function of ecosystem, external referent – creativity) (Figure 2).

Therefore, higher education will increasingly be subject to digital intervention, and people will increasingly rethink themselves, their identity, and their place in the world. This will be a key moment for higher education, as a new cultural and anthropological human code is already being formed. Digital technologies will promote filling in the contours of the digital university model, becoming its structure, content and means of achieving educational goals. The digital university, in turn, will be the impetus for a change in the educational paradigm, and the historical cycle will reach a new level with different qualitative characteristics.

If you imagine this trajectory on a certain chronological segment, its lower limit will be in the
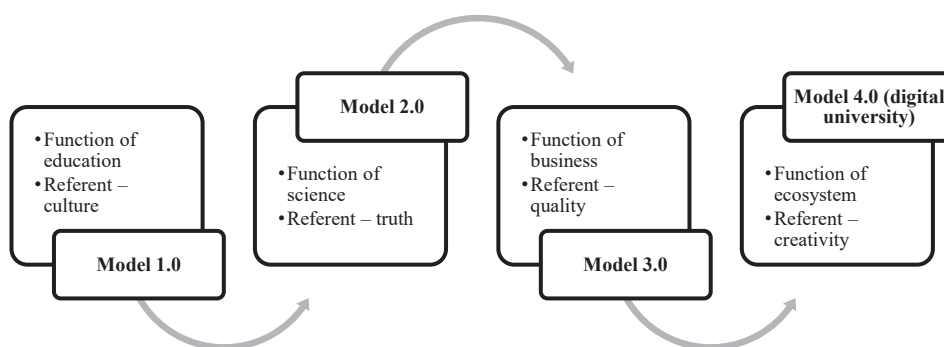

Figure 2. Models of universities

1950s, when digital solutions other than analog ones were just beginning to appear, although they were not yet widespread. The upper limit is likely to be around the 2050s, which is due to the predictions of futurists [7;9;10], who suggest that around this time artificial intelligence will learn to fully imitate human thinking, reaching the culmination of its development.

Conclusions. Digitalization of higher education is an important step in ensuring its compliance with modern socio-economic and technological realities. Integration of digital tools into the learning process helps to expand educational opportunities, increase access to knowledge and develop key competencies necessary for successful professional activity in a high-tech environment. The use of innovative digital solutions allows universities to optimize educational activities, in particular through the implementation of distance, blended and interactive learning.

The digital university is the basis of a modern educational paradigm based on the effective combination of pedagogical practices and the latest technologies. Its implementation ensures the transformation of traditional approaches to teaching, the creation of a flexible educational environment, and support for the innovative activity of students and teachers. This allows to achieve the strategic goals of training specialists capable of functioning effectively in the digital economy and information society.

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