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DIGITALIZATION OF HIGHER EDUCATION INTO WEB 4.0 FORMATS: CURRENT CHALLENGES AND OPPORTUNITIES

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Digitization of higher education in the web 4.0 format can solve many problems. First, access to training will be flexible and convenient. Students will have the opportunity to study the material at their own pace and anywhere in the world. However, with these opportunities come challenges, such as the need to create effective assessment and support methods for students (Adama, Graf, Adusei-Asante, Afrifa-Yamoah, 2023, (Bazelyuk, 2021a).

Another important aspect is ensuring the quality of education in the online environment. Developing interactive and engaging materials, as well as ensuring effective interaction between teachers and students is a key challenge. Artificial intelligence technologies can play a role here, providing personalized support and adapting materials to the specific needs of the student (Bazelyuk, (2021b), (Bondarenko, and others, 2023). On the other hand, it is important to consider the amount of available resources and infrastructure, especially in countries with a less developed technological base. The key here is to use digitalization as a tool to reduce the gap in access to education (Butko, Murashko, Nazarko, 2022), (Cherniavska, Gryshchenko, Hanushchak-Yefimenko, Olshanska, Cherniavska, 2023).

Digitization of higher education in the Web 4.0 format opens up a wide range of challenges and opportunities for modern universities. Web 4.0 means the next stage of Internet development, which is characterized by the integration of artificial intelligence technologies, augmented reality, blockchain and other innovative approaches. Let's consider some of these challenges and opportunities (Table 1) (Enkhtur, Li, Zhang, 2023), (Gruber, Canto, Jauregi-Ondarra, 2023). To make the most of Web 4.0 opportunities in higher education, universities must be prepared for continuous improvement, as well as creating strategies that promote innovation and development.

Table 1

The main challenges and possibilities of digitalization of higher education in the Web 4.0 format

Challenges		
Indicators	Challenge	Decision
Complexity of technology implementation	The implementation of augmented reality, artificial intelligence and other technologies requires a comprehensive approach and ensuring integration with existing systems.	Development of clear strategies and implementation plans, as well as training of personnel to work with new technologies.
Cyber Security	The increased number of connected devices can create new attack vectors.	Development and implementation of effective cyber security strategies, use of blockchain technologies to protect data privacy.

Adaptation of programs	Rapid technological changes may require frequent updates of training programs.	Flexibility in training format, ability to quickly adapt to changes in labor market requirements, use of training platforms with automated updates.
Opportunities		
Indicators	Opportunity	Example
Personalized learning	Using analytics and artificial intelligence to create individualized programs for students.	Adapting the learning pace, providing additional resources for weaker students.
Global accessibility	Using online platforms to provide access to higher education from anywhere in the world.	Online lectures, open courses, joint projects between universities from different countries.
Effective administration	Using blockchain technologies to ensure transparency and efficiency of administrative processes.	Electronic document management systems, effective use of smart contracts to automate operations.
Collaboration with industry	Establishing partnerships with companies to ensure the relevance of curricula and provide opportunities for students to work on real projects.	Joint laboratories, internship programs and projects commissioned by enterprises.

Digitization of higher education in the Web 4.0 format means the use of advanced technologies and concepts to improve learning processes and the provision of educational services. The term "Web 4.0" is not yet widely used, but it can be seen as an evolution of the Internet that adds new features and improvements to previous versions (Ibarra-Cisneros, Reyna, Hernández-Perlines, 2023), (Kuzmenko, 2021).

Here are some key aspects that can be considered in the context of the digitalization of higher education in the Web 4.0 format:

1. Artificial intelligence and machine learning. The use of machine learning algorithms to adapt the educational process to the needs of each student, providing individualized training.

2. Augmented Reality (AR) and Virtual Reality (VR). Using AR and VR to create immersive educational environments, virtual lectures, labs, and to increase student engagement.

3. Blockchain technology. Application of blockchain to support information security, electronic records of student achievements, and support of digital diplomas and certificates.

4. Internet of Things (IoT). Using IoT to create "smart" learning spaces where hardware and devices can interact with each other to improve learning and research.

5. Data and analytics. Using data analytics to measure student performance, optimize curricula, and support data-driven decision-making.

6. Social networks and collective learning. Using social media to foster student community, experience sharing, and collective learning.

7. Mobile technologies. Development of mobile applications and platforms for access to educational resources anywhere and anytime.

These aspects enable the creation of an intelligent, flexible and interactive learning environment where students can receive personalized education and teachers can communicate and interact more effectively with students (Liu, Gryshchenko, Cherniavska, Morhulets, Cherniavska, Wang, 2022), (Marchuk, A. 2023).

Overall, the transition to web 4.0 in higher education can improve accessibility, quality and diversity of learning. Digitization of higher education in the web 4.0 format really opens the door to innovative approaches to learning:

1. Adaptive learning - systems with artificial intelligence can analyze teaching materials and student responses, and then adapt learning to the specific needs of each student. This will ensure effective learning at different levels of understanding.

2. Gamification - the use of game elements in education can stimulate students and increase their motivation. Virtual rewards, difficulty levels and competitions can make learning fun and effective.

3. Use of virtual and augmented reality - thanks to VR and AR, students can participate in immersive learning. For example, the study of anatomy can become more effective if the student can "examine" the organs in a virtual environment.

4. Collaborative learning - using technology to enable collaborative learning can improve student communication and collaboration. They can share ideas, work on projects and solve problems in real time, even if they are located in different parts of the world.

5. Personal development through technology - Higher education can provide students with access to online resources for self-development, such as courses in leadership, soft skills and subjects of interest.

6. Interactivity and collective work - use of interactive platforms where students can work together on tasks, exchange ideas and interact with teachers in real time.

7. Multimedia resources - the use of various multimedia tools, such as video, audio, interactive diagrams, etc., to make the educational material more accessible and understandable.

8. Data analytics in education - the use of data analysis to measure the success of students, predict their success and improve educational programs.

9. Decentralized systems and blockchain - application of blockchain technologies to ensure data security, recognition of qualifications and increase transparency.

Therefore, innovative approaches allow creating a dynamic and engaging learning environment, promoting the development of key skills for success in today's world. Digitization of higher education in web 4.0 formats is no longer just e-courses and remote lectures, it is a real revolution in the way of learning. Increased interaction, intelligent agents, personalization of learning - key aspects. On the one hand, there is a challenge in ensuring high-quality online education on the other hand; there is a need to train teachers for new technologies and methods (Wu, Goh, Mai, 2023).

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USE OF INNOVATIVE METHODS IN EDUCATION

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In linguo-didactics, the term Computer Assisted Language Instruction (CALI) and later Computer-Assisted Language Learning (CALL) ("computer teaching of foreign languages", "computer linguo-didactics") appeared in connection with the beginning of the active introduction of computers into the process of teaching foreign languages. However, this concept does not fully include the entire arsenal of modern technologies. With the advent of interactive websites and mobile applications, terms such as Electronic Learning (e-learning), Mobile Learning (m-learning) began to be used in the field of education. Therefore, at present, the term Technology-Assisted Foreign Language Learning (TAFLL) is considered the most acceptable, most accurately reflecting the use of a wide range of ICTs in the practice of foreign language education.

Innovative ICTs provide access to foreign language sources of information and various language options, as well as a variety of educational content, allow you to create a virtual authentic language environment, offer the opportunity for both interpersonal interactions between students and communication with a teacher via the Internet, and create favorable conditions for self-education and improvement level of foreign language proficiency. [2, pp.128-130]

Modern digital technologies greatly contribute to the intensification of the process of teaching a foreign language thanks to various multimedia and interactive authentic resources that intensify the pace of students' work in the process of training various types of speech activity. As a result,