DIGITALIZATION AND HIGHER EDUCATION: POSITIVE AND NEGATIVE ASPECTS

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Abstract: This article analyzes the development trends of the higher education system under conditions of digitalization. It highlights the role of digital infrastructure, information technologies, and LMS platforms in organizing and managing the educational process. Based on international experience, it also examines the possibilities of improving educational efficiency through the effective use, cataloging, and individualization of educational resources. In addition, the article addresses challenges associated with digitalization, including digital literacy levels, language-related issues, and the impact on the quality of education.

Keywords: integration, information technologies, digitalization, HEMIS, LMS, virtual educational institutions

INTRODUCTION

The digital infrastructure of education [1] refers to a set of information technologies and software tools used for planning, organizing, implementing, and monitoring the educational process, as well as for managing these processes.

As international educational experience shows, the formation of information resource databases, their cataloging, and the adaptation of the pace of the learning process and course content to the individual needs of learners make the educational process and its management significantly more effective. Moreover, this approach enables the reuse of educational resources once they have been created. It helps save teachers' academic time and expand their research activities. Leading specialized schools in the West allow learners to access not only their own institutions' resources but also those of their partners within the global educational environment. This significantly increases educational potential, regardless of the learner's location.

METHOD AND METHODOLOGY

In this study, a comprehensive approach was used to examine the role and importance of higher education institutions in the context of digitalization. The research employed a systematic approach, along with comparative analysis and statistical data analysis methods. In particular, concepts of digital educational infrastructure, LMS platforms, and virtual learning environments were examined based on scientific sources, and their impact on the educational process was analyzed. In addition, international experiences, including the activities of online learning platforms and virtual universities, were comparatively analyzed. The study assessed the level of development of digitalization processes based on statistical data from the HEMIS platform and international reports. Furthermore, open sources related to digital literacy and students' participation in research activities were analyzed. The methodological approach aimed to determine the impact of digital transformation processes on the quality, flexibility, and effectiveness of education.

RESULTS AND DISCUSSION

Approximately 230 higher education institutions in our country actively use the HEMIS software platform, which indicates that digitalization processes within the system are progressing actively. At the same time, this platform, with over one million users, remains one of the most important tools in the field of higher education today.

A rapid increase in interest in the development of an information service environment has led to efforts to create digital education. This type of learning environment provides maximum convenience for learners by utilizing the full potential of digital and artificial intelligence technologies. In accordance with this educational strategy, it enables the design of highly individualized instruction with flexible duration, formats, and learning workload [2]. The highest form of digitalization is conventionally referred to as a "virtual learning environment". These are educational systems that exist only in electronic form. Accordingly, they do not have physical buildings, campuses, laboratories, or traditional teaching staff. Their educational services are primarily based on computer networks and LMS (Learning Management Systems). A number of such diverse organizations already exist. Some are traditional universities offering virtual learning services for individual courses or programs, while others are consortia of both traditional and virtual educational institutions, including virtual universities. For example, one of the most well-known, the Canadian Virtual University (CVU), represents a consortium of 11 partners. They jointly develop courses, provide online access to them, and have agreements on academic mobility and the transfer of credit units within the consortium [3].

The most important direction in the digitalization of education is the development of digital (automated) teaching models. For example, according to the "Concept for Adapting the Higher Education System to the Digital Generation", developed by participants of the HiEdTec project "Modernizing Higher Education in Central Asia through Innovative Technologies" and presented within the Erasmus+ program of the European Commission and the Ministry of Higher and Secondary Specialized Education of the Republic of Uzbekistan (2019), a "digital generation" has emerged in Uzbekistan, as in other countries around the world. This generation is immersed in a highly digital environment that surrounds it and with which it constantly interacts. As a result, the pace of thinking, methods of perceiving information, and processes of information processing in modern learners differ significantly from those of previous generations. Consequently, this generation cannot and should not learn in the same way as its predecessors did [4].

According to the cited forecast, investments in online education are expected to grow by 156% in the United States and by up to 370% in India over the next five years. Given the clear potential of information technologies for the development of educational services and the rapid advancement of digital technologies, the continued transformation of e-learning is inevitable. In turn, this process will not bypass general secondary education but will instead lead to its modification [5].

According to a joint report by Boston Consulting Group and the University of Arizona, the number of applicants to U.S. universities is decreasing by 2% each year. At the same time, the number of students enrolled in online courses is increasing by an average of 5% annually. The share of students enrolled in distance learning programs grew from 16% in 2008 to 46% in 2016 [6].

Taking the above into account, it is clear that the digitalization of education is closely related to the evolutionary development of society and social relations. These processes are currently leading to the emergence of various forms, methods, and approaches to teaching that are tailored to learners' needs. In principle, it is not only the acquisition of new knowledge that is important, but also the development of the ability to independently search for and assimilate information [7].

Despite its advantages, the digitalization of higher education also entails a number of risks that may disrupt the inherent functions of the classical higher education system. For example, the emergency transition to online learning during the coronavirus period revealed several organizational challenges in distance education for medical and engineering disciplines. Although there are many private educational platforms with different functionalities and access conditions, a lack of standardized educational platforms has been identified. Furthermore, the increasing "virtual mobility" of students studying at foreign universities without leaving their usual living environments may lead to a decline in the quality of education due to the lack of deep immersion in the language environment and the absence of opportunities to gain socio-cultural experience. These shortcomings are closely related to the issue of standardizing the language of educational programs. As of 2021, 62% of educational content is in English, 8% in Russian, and 4% in Spanish, while all other languages together account for less than 3% [8].

Despite the visible availability and widespread dissemination of digital educational content, the issue of digital literacy remains highly relevant. The creation and use of educational content require the development of digital competencies among both teachers and learners. Although there are now almost no individuals who do not use digital devices in their daily lives, using digital educational platforms requires skills that differ fundamentally from operating everyday household appliances. For instance, according to a 2021 study by Eurostat, the level of basic digital skills among the population aged 16-70 across Europe averages 53%. At the same time, this indicator reaches 79% in countries such as Finland and the Netherlands, while it stands at 43% in Poland, 31% in Bulgaria, and 28% in Romania [9]. In Russia, this figure is 69%, in Belarus 73%, and in Kazakhstan 85%. In Uzbekistan, as of 2020, the average level of digital literacy was 63% [10].

It can be concluded that the extensive digitalization of higher education institutions inevitably leads to a decline in the quality of teaching. Standardized sets of information cannot ensure the level of depth required for a thorough understanding of the curriculum and for research activities, especially in technical disciplines that require hands-on learning with specialized equipment in laboratory settings. Moreover, distance and online learning significantly reduce the fundamental nature of education. This, in turn, leads to a superficial understanding of the theoretical and methodological foundations of the subjects being studied and does not contribute to the development of a solid scientific worldview.

CONCLUSION

In conclusion, the digitalization of higher education serves as an important factor in the development of the education system, enabling the learning process to become more flexible, efficient, and oriented toward individual needs. Digital infrastructure, including LMS platforms and virtual learning environments, facilitates broader access to educational resources and their reuse, and allows instructors to focus more on research activities. At the same time, the

transformation of the educational process based on digital technologies requires taking into account the specific characteristics of the modern "digital generation". However, the process of digitalization also gives rise to certain challenges and risks. These include the lack of standardized platforms, language-related issues, insufficient levels of digital literacy, and the potential negative impact of distance learning on quality in certain fields. Therefore, in the development of digital education, it is essential to maintain a balance between quality and efficiency, as well as to integrate fundamental knowledge with practical skills.

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