The Role of Digital Technologies in Modern Education

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Abstract. The article analyzes the advantages and disadvantages of electronic education, shows the forms of digitalization that require a comprehensive approach from the education system, which would set new goals, change the structure and content of the educational process. The author formulated a hypothesis about the need for their scientifically based implementation in the work of higher and vocational education organizations. The article is intended for employees of the higher and vocational education system.

Keywords: competitive educational model, digital technologies, electronic education system, forms of digitalization of the educational environment.

INTRODUCTION

Digital technologies are revolutionizing virtually every aspect of modern society, and education is no exception. With the rapid advancement of digital tools, traditional educational models are being transformed into more dynamic, flexible, and accessible systems. The growing availability of information and communication technologies (ICT) has opened new possibilities for both students and educators, enabling the democratization of education and broadening access to knowledge.

One of the key advantages of digital technologies in education is the ability to bridge geographical and temporal gaps, allowing learners to access educational resources anytime and anywhere. With the proliferation of the internet and mobile devices, students from diverse backgrounds can now engage in learning experiences that were previously out of reach. This has led to the emergence of online learning platforms, digital textbooks, and virtual classrooms that are transforming the way education is delivered.

In addition to improving accessibility, digital technologies are also reshaping the content and structure of the educational process. Traditional face-to-face lectures are being complemented by interactive online courses, webinars, and multimedia learning materials. The integration of artificial intelligence, machine learning, and big data analytics into the learning environment has further enhanced the personalization of education, enabling tailored learning experiences that cater to individual needs and preferences.

As the digitalization of education accelerates, it brings with it a host of opportunities and challenges. While the potential benefits of digital education are undeniable, the shift also raises important questions about the quality of online learning, the role of teachers in the digital age, and the ethical implications of data privacy and digital surveillance. This article aims to explore these issues in detail and provide a comprehensive overview of the role of digital technologies in modern education [1].

The transition to a more digital-centric educational system is not without its hurdles, however. It requires careful consideration of pedagogical methodologies, infrastructure readiness, and the training of both educators and students. Furthermore, the rapid pace of technological advancements poses a challenge for educational institutions to keep up with the evolving needs of learners.

Nonetheless, the promise of digital education lies in its ability to cater to a more diverse and global student population. Future sections will delve deeper into these aspects, examining both the advantages and limitations of digital education, and proposing recommendations for overcoming existing barriers.

MATERIALS AND METHODS

In the near future, the educational environment will undergo significant changes, primarily driven by the digitalization process. The transition to electronic education systems presents both opportunities and challenges. To investigate these transformations, this article employs a comprehensive approach combining qualitative and quantitative research methods. Specifically, the study utilizes the following methodologies:

Literature Review: An extensive analysis of existing academic works, research reports, and case studies was conducted to assess the current state of digital education systems, identify trends, and understand existing challenges in the implementation of digital technologies in higher education.

Surveys and Interviews: To gather insights from educators, administrators, and students, structured surveys and in-depth interviews were conducted at various universities. This approach was used to understand the real-world implications of digitalization, such as its impact on teaching methods, learning outcomes, and the overall educational experience.

Case Studies: The study includes case studies of universities that have successfully implemented digital education systems. These case studies help highlight best practices, challenges faced during implementation, and the benefits of digital tools in enhancing educational quality [5].

RESULTS AND DISCUSSION

The issues that universities are currently facing come down to choosing a strategy for further development and choosing a direction to focus on. It is obvious that a digital transformation program should be developed now to transition to a competitive educational and research model in the future.

The problems of the e-education system can be divided into two classes: current (transitional) and immanent. Currently, e-education faces such problems as the desire to imitate full-time education, weak quality control of educational products, low interactivity, and primitivization of competencies. The most significant immanent shortcomings of the e-education system are the problems of socialization and transfer of tacit knowledge. Digitalization will inevitably lead to the transformation of the educational services market. The main players will be leading universities (generation of new knowledge, development of fundamentally new educational products, training of scientific personnel); companies producing electronic educational products and global educational platforms (broadcasting finished educational products to the consumer). The speed with which the education system is immersed in digital technologies today provides grounds for serious analysis and pedagogical justification of much of what is offered in the information space today. The purpose of this article is to identify priority areas for the development of the educational process, their advantages and threats based on an analysis of the capabilities of digital technologies, based on the hypothesis of the need for their scientifically sound implementation in the work of higher and professional education organizations [6].

Digitalization of the educational environment can occur in various forms [4]:

➢ transfer of existing educational materials, including lectures, presentations, textbooks, assignments for independent work and knowledge control tools, to the electronic environment;

➢ formation of an interactive electronic environment for interaction between the teacher and students, including the creation of electronic teachers' offices, webinars, discussion forums, etc.;

➢ creation of new types of educational tools: electronic textbooks, electronic problem books, video lectures, quests, computer games;

➢ creation of fundamentally new forms of training through the use of the capabilities of the electronic environment - expanding the range of figurative transmission of information, modeling various situations during role-playing games, imitation of competitive games, etc.;

➢ inclusion of artificial intelligence capabilities in the learning process.

Today, the process of digitalization of education in the vast majority of educational organizations is carried out mainly in the first two forms [15]. This allows for easier access of students to educational materials, a reduction in the amount of teaching load that has no substantive meaning, and easier control over the content of the academic discipline and the educational process. In addition, this process allows for a significant expansion of the range of distance educational services. However, following in the wake of this trend, one can sooner or later lose one's place in the education system (in the educational services market) [7]. One cannot but agree with the thesis of Johan Wissem that e-education is a "disruptive innovation that will lead to the inevitable elimination of ineffective universities, after which a relatively small number of winning universities will receive the benefits of this new technology" [3]. E-education belongs to this type of innovation. Currently, it is significantly inferior to offline education in a number of characteristics that are important for consumers. However, only those educational organizations that will be able to take their place in the online education market in time and offer the market a constantly improving quality of relevant services will have a chance to remain in the educational space in the future.

The advantages of e-education include [2]:

1) Solving the problems of accessibility of education: overcoming territorial barriers to access to knowledge; removing time restrictions - access at a time convenient for the user; the possibility of fractional access due to the division of classes into blocks; access to obtaining knowledge from highly qualified teachers.

2) Expanding the possibilities of choice: the ability to choose a teacher and the method of presenting the material; an emphasis on logic, images (associations) or practice (cases, tasks); the ability to choose the method of assimilation of the material: auditory, visual, through motor skills or interactive participation; the ability to choose the depth of assimilation of the material - a wide range of courses; the ability to choose a comfortable way of knowledge control: tests, tasks, free essays, projects, interactive interviews with artificial intelligence, etc [8].

3) Expansion of forms and tools for knowledge transfer: use of project work, group debates, role-playing and competitive games, including with virtual participants, etc., along with traditional lectures-performances and seminars [14].

4) Socioeconomic advantages: the possibility of forming social intellectual networks based on interests; relative cheapness (large investment and low current costs).

The main problems of today that determine the low quality of the existing online education system are:

✓ the desire to imitate face-to-face education, leading to a deterioration in the quality of the copy compared to the original. Digital imitation of traditional courses leads to the impoverishment of communication tools, the exclusion from practice of such forms of obtaining knowledge as their personal processing in the process of note-taking, discussion of controversial issues among themselves and with the teacher, individual adjustment of the student's knowledge and skills by the teacher in the process of solving problems, role-playing games, etc.;

✓ weak quality control of educational products. Unfortunately, some modern online courses reflect the low qualifications of the teachers who prepare them. Many of the specialists involved in the implementation of digital technologies in education today are not familiar with pedagogy, but are well versed in information and technical systems. For this category of workers - programmers, engineers, elementary psychological and pedagogical training is important, knowledge of the results of scientific research in the field of psychology, pedagogy, medicine, primarily from the standpoint of the implementation of digital technologies [3];

- ✓ low interactivity. Today, it can be considered proven that the traditional education system, based on the triad of "understanding - repetition - memorization", is significantly inferior in effectiveness to active teaching methods based on the involvement of the student in the learning process [4];

- ✓ primitivization of competencies. Electronic assistants, including calculators, navigators, spellers, dictionaries, accounting and legal programs, etc., atrophy many competencies of their users, wean them off building their own holistic picture of the world. In addition, today's bachelor - a graduate who has certain standards of competencies, is ready and capable of much, but he needs to be taught what exactly to do in the workplace. At present, this is what is happening with university graduates. Reducing the load on lecture work and transferring it to independent study of the material by students in the mode of work with an electronic educational and methodological complex becomes an alternative to the traditionally established university practice;

- ✓ the problem of socialization. Even in the conditions of using interactive forms of training, there is still the problem of educating students, imparting to them the skills of social interaction [9].

The inadequate quality of existing products is due to the underestimation of the opportunities created by the combined use of ICT and artificial intelligence. If our country does not begin work on creating its own e-learning language in the near future, we risk finding ourselves in the rearguard of this trend.

Meanwhile, it is in the direction of creative expansion of tools for creating educational products that we may have obvious advantages. Thanks to its cultural identity, Uzbekistan has always been distinguished by innovation in the arts, including painting, theater, cinema and literature, as well as significant achievements in the field of abstract sciences, primarily mathematics [10].

The language barrier also has a significant impact. Even teachers who have a good knowledge of English, which is gradually becoming the common language of elite education, in most cases are inferior to native speakers both in terms of ease of use and in terms of perception by listeners (accent, intonation errors, quality of humor) [11].

CONCLUSION

The need to move to digitalization of the educational space is explained by several factors. Firstly, at present, almost all students belong to the digital natives generation; they demonstrate a greater inclination to use new technologies in their everyday lives [12]. This is especially true for IT and Internet technologies, as well as their application not only in the professional sphere, but also for socialization and communication. Thus, the digitalization of the university will make it more adapted to the target audience. This will definitely lead to an increase in the competitiveness of the university in the education market, the creation of additional value and the attraction of students. Secondly, competition among universities is growing. Due to the globalization of the market, the struggle for a student will no longer take place within one country or a cluster of countries, but at the international level. Thus, the creation and maintenance of a competitive advantage of the university will be determined by the timely introduction of new technologies and, as a result, the readiness for fundamental shifts towards a new generation educational system [13]. Thirdly, there is an increasing need for digitalization of the university's internal processes to increase the efficiency of interaction between departments at the level of the entire educational institution. This is necessary to carry out all the innovative and cultural transformations that are required of the university when moving to a new educational model.

REFERENCES

1. Wissema J. Third Generation University. University Management in the Transition Period. M.: Olimp-Business, 2016.

2. Meichner HE. Corporate Trainings. M.: UNITY, 2012.

3. Polanyi M. The Tacit Dimension. Garden City / M.Polanyi. - New York: Doubleday, 2016.

4. Sharonin Yu.V. Digital technologies in higher and professional education: from personality-oriented smart didactics to blockchain in the targeted training of specialists. Modern problems of science and education. - 2019. - № 1.

5. Ziyonet.uz. Accessed on January 2025.

6. Kearney M., Schuck S., Burden K., and Aubusson P. (2012). "Viewing mobile learning from a pedagogical perspective." Research in Learning Technology, 20.

7. Bates T. Teaching in a Digital Age: Guidelines for designing teaching and learning. Tony Bates Associates Ltd, 2015.

8. UNESCO. "Global Education Monitoring Report 2020: Inclusion and education – All means all." United Nations Educational, Scientific and Cultural Organization, 2020.

9. Anderson C. The Impact of Digital Technologies on Teaching and Learning. Educause Review, 2019.

10. McKnight K., O'Malley K., & Ruzic R. The Impact of Digital Tools on Teaching and Learning. Computers in the Schools, 2017.

11. Martin F., Sunley R., & Turner R. The Future of Education: The Role of Technology in Teaching. Journal of Educational Technology, 2021.

12. Salinas J., and Li K. "Blended Learning Models in Higher Education." In International Journal of Higher Education, 2020.

13. Jonassen D.H. Computers in the Classroom: Mindtools for Critical Thinking. Pearson Education, 2016.

14. Schindler, L., & Burkholder, L. "Digital Learning and Social Interaction in Higher Education." Journal of Educational Computing Research, 2020.

15. Trucano, M. "The Impact of Digital Learning on Educational Systems." Global Education Forum, 2018.