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APPLICATION OF DIGITAL TECHNOLOGIES IN MODERN EDUCATIONAL INSTITUTIONS

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Abstract

The article is devoted to the problems of education digitalization, in particular, the possibilities of modern digital technologies, the description of their application reasonability and promising areas of development and use. Education, as well as a number of other industries (such as healthcare and telecommunications), has changed significantly due to the increasing spread of digital technologies. As usual, trends in the introduction of digital technologies in educational and research activities are determined by commercial organizations - private universities, business schools, and corporate universities. Public educational institutions are increasingly beginning to consider the digital transformation that is taking place worldwide in this case, due to the spread of the covid19 pandemic, forcing schools, colleges and higher education institutions to switch to distance learning. Within a few weeks, distance work has become a daily reality for many Russian companies. The digital University model is a software package that provides educational, managerial and communicative learning functions. The introduction of digital technologies allows you to: go from learning in the classroom to learning anywhere and at any time; design an individual educational way, thereby meeting the educational needs of the individual student; turn students not only into active consumers of electronic resources, but also creators of new resources

Keywords: Education digitalization, education, digital technologies, educational activities, pedagogical process, distance learning.

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1. Introduction

Universities around the world compete for students, faculty, and funding. Over time, educational institutions that use new digital opportunities will gain an advantage in our digital era. As Zinina et al. (2020) concluded: “Innovations in an educational institution based on distance learning technologies are a key mechanism that allows creating advantages in a competitive environment” (p. 55). Many universities are developing specific digital strategies to respond to large-scale changes in the use of new technologies, but they do not have the vision, capabilities, or constant loyalty needed to implement them effectively. The modern educational environment is being transformed into an electronic educational environment and promotes unlimited access to knowledge, its use and accumulation (Belyakova et al., 2019). Thus, many institutions have invested heavily in information systems that do not provide the expected benefits and results. Higher education institutions are not ready to admit that just having a digital strategy is not enough for a university. To support demand in the digital era, each institution must adopt a strategic approach that covers not only the IT field, but also all aspects of academic activity. The lack of digital literacy among students and teachers underscores the need for direct efforts to make fundamental changes at all levels of the institute. As Khudolei and Olentsova (2018) think: “Students can take part in online discussions and chat sessions with teachers or students, instead of having to attend courses in traditional lecture halls.” (p. 225).

2. Problem Statement

Choosing only certain areas of digitization is not enough, it is necessary to act immediately in all respects: digitalization management, digitalization of the educational process of organizations and the development of digital opportunities for students and teachers, the definition of economic and social digitalization is the main topic of research. Universities that are unable to adapt to the new digital era will remain unclaimed.

3. Research Questions

Have you ever thought about what a university will look like in 20-50 years? Will universities have campuses or laboratories? Or will education and research activities completely select virtual reality? May be. Let's try to figure it out.

4. Purpose of the Study

The purpose of the research is to analyze the possibilities of transforming the scientific and educational space of modern universities through digitalization.

5. Research Methods

Universities that seek to maintain their positions in the global education market face the challenge of entering the international scientific and educational space. As Kapsargina and Olentsova (2019b) think:

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"At the present stage, special attention is paid to the formation of electronic information and educational environment of the university, which includes electronic educational resources" (p. 232). In particular, part of the criteria in the World University Ranking assess the degree of globalization of the university in share of foreign students and teachers. The rating considers the share of foreign students, the share of foreign teachers, and the number of articles published in collaboration with foreign research groups. As Zinina et al. (2020) mentioned: "At the present stage, the leading countries of the world attach special importance to education in the formation and accumulation of human capital" (p. 102).

Trends in globalization are clearly confirmed by statistical data on the dynamics of the number of international students (Maksimova et al., 2015). In addition, according to ICEF monitor, funding for the Erasmus+ academic mobility program is planned to increase by 40% to 14.7 billion euro in 2020.

While countries that traditionally have a higher quality of education continue to attract foreign students, new national and regional educational centers are emerging in this area, competing for educational income and the intellectual capital of foreign students. Russia can become such a center in the future, because as Kapsargina and Olentsova (2019a) think: "It should be recognized that the creation of educational materials that meet modern requirements is a difficult task for their author" (p. 89).

Every university, regardless of the chosen strategy, must use a digital transformation. As Kapsargina and Olentsova (2020) think: "The introduction of information and communication technologies (ICT), including those implemented on the basis of electronic platforms, in the field of education has allowed teachers to change qualitatively the content, methods and organizational forms of education, to intensify and individualize the training of students" (p. 537).

The urgency of the transition is due to several factors.

First, almost all students now belong to the digital natives' generation, and they demonstrate a much greater propensity to apply new technologies in their daily lives. This will definitely increase the university's competitiveness in the education market, as Kapsargina et al. (2020) mentioned: "Interactive training with the help of training computer programs contributes to the implementation of a whole complex of methodological, pedagogical, didactic, psychological principles, makes the learning process more interesting" (p. 361). The second argument is that there is more competition among universities, especially among the top universities. As a result, the readiness for fundamental changes in the direction of the new generation of educational system. Thirdly, digitalization is necessary for all the innovative and cultural changes that are required from the university when moving to a new educational model. As Kapsargina and Olentsova (2019c) think: "Electronic testing has replaced traditional forms of control, which corresponds to the modern concept of modernization and informatization of the Russian educational system" (p. 237).

6. Findings

Over many years of cooperation with Russian and foreign universities and business schools, a conceptual model of a digital university has been formed, consisting of five levels.

The first level is the most important; it is represented by research and teaching staff (RTS), students, industry and academic partners of the university, graduates and applicants. The first level is essentially the internal and external stakeholders of the university. It is essentially a university of internal and external stakeholders.

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The second level is represented by the basic information service. Their task is to use flexible tools to create a single information space for digital interactions within the university. Examples of such services are video screens for conferences and seminars, wireless communication throughout the university (including dormitories), cloud storage for storing and sharing data, professional printing, and so on.

The third level includes services that significantly contribute to the lives of modern students and teachers, because as Zinina and Olentsova (2020) mentioned: “The main tasks of the university effectiveness are the using distance learning technologies. They allow organizing the most effective access of people to data in digital form” (p. 57).

The digital library provides students or teachers with access to scientific literature from any device, regardless of location and time of day. Many modern universities combine traditional and digital libraries from the point of view of end user experience. For example, in a traditional library, you can find and read a book or magazine from a library computer, while any user can find a book in the library's electronic catalogues and get it when they come home (Orlov et al., 2004).

Digitalization of scientometry involves the use of modern methods for storing and processing large amounts of data, monitoring the accumulation and analysis of scientific information. This direction is very important for the University, because it has two goals. The first goal is to identify promising areas of research that are currently most relevant to the University. The second goal is to determine the current indicators of academic publishing and citation.

The fourth level is the most resource-intensive in terms of implementation, but at the same time allows the university to get the maximum added value. It includes services such as digital marketing, research project management, purchasing management, and interaction with candidates and students.

Digital marketing is a new area of Russian universities, designed to solve the following tasks:

- Encouraging the creation of new digital communities and innovations at all stages of the academic cycle, as well as spreading the content of the educational program and characteristics of students' activities to applicants;
- Development of personalized marketing materials for target audiences.

Interaction with applicants and students includes the following tasks:

- use of digital technologies to interact with applicants and inform them about the stage of processing applications for admission;
- analysis to identify the most promising applicants and improve their registration;
- use of various communication channels - digital and traditional - to provide applicants with the most complete information about the university. This task is most relevant for international students who cannot attend the university and want to get an idea about it using information from the Internet;
- using data analysis to identify the most successful and unsuccessful students;
- automation of the so-called "student office".

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The fifth level consists of digital technologies of 2018-2019. It is quite logical that universities, especially technical ones, will want to participate in the development of this market. In this regard, first, the university will actively introduce drone technology into the internal space of education and research, buy equipment, build laboratories, and encourage students and researchers to test and use new technologies (Okolelov, 2001).

Since 2016, Krasnoyarsk state agrarian university has been making its educational process with the help of a digital environment. After the training, many teachers created their own e-learning courses in a number of different disciplines and implemented them in the educational process, which made it possible to effectively organize and implement both full-time and distance learning for students (Kapsargina et al., 2019).

Teachers of Krasnoyarsk SAU indicate to students where they can find tasks, how they will formalize them and in what form they will send them for verification. Some teachers have introduced online broadcasts or conferencing, that is, students connect to the broadcast using video messengers such as Skype, Viber, WhatsApp. and listen to a lecture or discuss a practical lesson. Specific details are specified by the teacher using SMS messages in the electronic course. The teacher also indicates where and how you can download recorded video lectures, where you can take tasks, and what day to complete them, how to arrange them, and how to send them. And the teacher must first evaluate the content and format of presentation of lectures on the LMS Moodle platform for compliance with the goals and formed competencies, as Rozhkova and Olentsova (2020) mentioned: “Case-study method provides an opportunity to expand this set and go beyond specific disciplines when analyzing the situation” (p. 115);

If some universities do not have such resources for students they will have to start the process with small things: for example, ask teachers to create a folder with the necessary educational materials on the Google disk service (Zudilina, 2017).

Probably, this practice will not be in all schools and universities, only in larger cities. Not everyone can afford high-quality communication, and not everyone has the wealth to have a suitable electronic device. In addition, not all students are able to master new material on electronic courses and manuals. First, students perceive the quarantine as a vacation in which they do not need to do anything. Secondly, the home environment is relaxing, and it is even more difficult to concentrate on ordinary tasks than in the classroom. Third, there are technical problems: poor communication and lack of a personal computer. Online platforms did not plan for mass migration, and the servers were not designed for such a large number of students at the same time.

7. Conclusion

The transition to a digital university is impossible without supporting measures aimed at implementing changes in the university. Such activities may include:

- Development of optional or mandatory modules in the curriculum aimed at improving the level of digital literacy of students;
- Support research and teaching staff who channel their digital skills to develop innovative teaching methods;

- Encourage teachers to expand the use of learning platforms to ensure better student outcomes and improve overall university performance;
- Helping teachers with poor development skills in the use of digital technologies.

In our view, to reach the current level, universities must adequately cover all levels of the above-mentioned digital university model and constantly provide feedback to the main stakeholders-students, professors, industrial and academic partners, graduates and applicants. To take advantage of digitalization and provide more opportunities for applicants, students, teachers and partners, educational institutions still need to undergo major transformations.

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