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## **ADVANCED DIGITAL TECHNOLOGIES IN EDUCATION**

***Annotation.** The universal expansion of digital technologies had an impact on the educational system, too. Schools and higher education institutions have a vital need to reorganize themselves and apply new technologies efficiently. At the same time, this process entails a number of challenges. This paper is devoted to studying the influence of digital technologies on the educational process. Actual use of devices was low, while teachers did not fully master the new tools. Technological changes outlined in the paper led to generation gaps and a change of philosophical and pedagogical approaches, whereas connectivism is gaining popularity nowadays.*

***Keywords:** digital technologies, education, approaches to education, digital divide, connectivism.*

### **INTRODUCTION**

Introduction into educational institutions of certain types digital technology is a global trend. In the conditions of rapid development of the information sphere, increasing mobility of many spheres of public life, the task of digitalization educational system turns out to be very relevant. Education in the 21st century is called upon to combine traditional pedagogical techniques and methods with new ones, based on the use of modern technologies, in order to form in schoolchildren and students the necessary knowledge, skills and abilities. The current stage of development of society poses a number of problems for educational institutions, among which we can highlight the need to constantly improve the quality of educational services, their accessibility and updating educational programs.

It is assumed that one of the effective ways to solve them is the introduction of digital technologies, which make it possible to create a qualitatively new educational environment.

The high degree of relevance of the issue of digitalization of the educational environment is confirmed by a large number of studies, related to the coverage of one or another aspect of this topic both in Russian and in world science.

In domestic science they are rising how are the general problems of using digital technologies in educational institutions, as well as narrower, special issues. The discursive field of English-language sources consists of concepts such as “digital divide”, “digital evolution”, “digital natives” and “digital migrants” [1], electronic learning and education (e-Learning, e-education), “Education 3.0” [8].

Thus, this article is devoted to the study of digital technologies and their role in the educational process. It will cover two main question:

1. What are the features of changes in the educational process under the influence of digital technology and the main stages of its evolution?
2. What opportunities and challenges exist in connection with active introduction of digital technologies into education?

This study is based on a fairly large array works, mainly in English: a study of the importance of digital technologies for educational institutions [7]; role analysis computer technologies in education based on the rhetoric of the digital divide [14]; studying the consequences of introducing electronic courses in university programs [5]; study of the history of the introduction of information technologies in the educational sphere; analysis challenges and opportunities arising from the introduction of new technologies in schools and universities [5]; study of the requirements for the educational system.

## **MATERIALS METHODS**

A number of methods and approaches were used when writing the article. The methodological basis of the study was a systematic approach, which made it possible to focus on the search for holistic characteristics the subject being studied and build a

multi-level analysis structure digital technologies in education. Through the use of a discursive approach there was an opportunity to focus on the concept sphere digital educational space and identify existing there are trends. The analysis made it possible to identify individual stages, features and problems of introducing digital technologies into education, and synthesis the information obtained made it possible to generalize various approaches to the problem.

## **RESULTS**

The phrase “digital technologies” in this article refers to multifunctional devices with a network connection Internet, since the term “digital” itself refers to the numbers “0” and “1”, which is the basis of the World Wide Web. Today there is widespread recognition that with such equipment and programs can change the way they are organized, the dynamics and the structure educational process of schoolchildren and students.

An analysis of sources showed that the emergence of new technologies, including digital ones, and their introduction into the educational process was each time accompanied by the expectation of a revolution in teaching. Three periods of technological integration can be distinguished: pre-digital, the introduction of personal computers and the Internet era.

The pre-digital period (1890–1970) saw the beginning of the use of television, radio and film in education. However, there was no revolution: the degree of implementation of these three technologies turned out to be quite low. The instruments were expensive, technically complex, and teachers did not feel confident using them. Research has shown that the quality of teaching is also significantly less improved [1].

However, there were two positive consequences:

1) additional opportunities for knowledge visualization have appeared. For example, if previously students could only read about volcanic eruptions, the films provided them with the opportunity see this process;

2) distance learning began to develop.

If previously it consisted of passing correspondence tests, which was not accompanied by interaction between student and teacher, then with the advent of two-way radio communication, such an opportunity appeared.

In the 1980s, desktop computers in the West became quite accessible, and they began to equip classrooms in schools. Started period of personal computers (PCs). As in the previous stage, in public opinion there was confidence in their positive impact on students. There are two goals for which the introduction of PCs was aimed:

1) provision of technical literacy and preparing schoolchildren and students for future success work, which corresponded to a decrease in the share of unskilled manual labor and an increase in knowledge-intensive industries; 2) increasing the efficiency of the educational process through the use of a PC.

A positive consequence of this period was an increase in teachers' tools: With the introduction of computers, it became possible to use a wide range of training programs, electronic and reference materials, test tasks. At the same time, a "digital divide" began to emerge - a multi-level and multidimensional phenomenon associated with social inequality at the global, national and individual levels. Schools in disadvantaged or remote areas were unable to provide students with the same level of access to computers as in wealthier areas. Besides, teachers were often not fully familiar with the new devices themselves, and much of the software was not intended for educational use.

Since the 1990s The period of the spread of the Internet began. Initially, the resources were static (Web 1.0), but since the early 2000s. the content has become dynamic, the possibility of interaction has appeared users and content review (Web 2.0). Facilitated search turned out to be important achievements for the educational system. material using clue words, distribution of encyclopedic materials in (for example, Wikipedia), social interaction (online groups and chats, video conferencing), implementation interactive whiteboards. Since 2007, the power of smartphones and tablets devices have changed the way they access content. In some countries The practice of using personal mobile devices by schoolchildren and students began to be introduced - "Bring Your Own Digital Device" [6].

Over the past few years, online platforms have evolved into massive online courses with the possibility of simultaneous the work of several thousand students. At the same time, studies have revealed an improvement in the effectiveness of education as a result of the implementation digital technologies by only 12% [6].

Thus, with each new technology, social expectations were very high, but they were not always justified. Actual use of devices in classrooms and lecture halls was low, and teachers were not fully proficient in new tools.

The technological changes described above have led to the formation of generation gaps and changes in educational approaches.

In addition to the formation of student independence, the introduction

Digital technologies in education contribute to the following positive changes:

- the possibility of personalizing training courses];
- increasing the flexibility of the educational process, allowing students to combine studies at school, college and at home;
- increasing inclusiveness - the ability to cope with the problems of student disabilities, logistics (living away from the place of study) and some others.

At the same time, the introduction of digital technologies has exposed a number of difficulties and problems:

1) low confidence of teachers when using new types of technologies, aggravated by the growing diversity of the latter [3]; conservatism of teachers [7];

2) the discrepancy between the knowledge, skills and abilities of graduates and the requirements imposed by the market, which is associated with the slower introduction of digital technologies into educational institutions compared to commercial companies.

3) technological problems (access to Wi-Fi, increase in the number sockets, etc.);

4) the detrimental effects on health caused by the constant use of computer technologies, especially among younger schoolchildren [4];

5) the problem of inequality (for example, in the case of the “Bring Your Own Digital Device” policy, not all students have modern mobile devices) and the “digital divide”;

6) lack of convincing evidence of improving the quality of education as a result of its digitalization and the formation of new skills that modern young people possess in comparison with pre-digital generation;

7) problems of privacy and electronic security [7].

## **CONCLUSION**

Thus, despite the extremely high assessment by society of digital technologies, which has increased pressure on schools and universities with the goal of the speedy integration of these technologies into the educational process, the expected cardinal, revolutionary transformations did not occur.

The importance of using digital technologies in education has long been proven, and there is no doubt that they attract young people, so the most important questions today are: how well they are used, how consistent they are with the curriculum program, how well thought out and effective it is.

Conqueror of everything connectivism is very popular and has a number of positive qualities: focus on the student, providing him with high motivation, novelty, nurturing independence, ensuring flexibility and inclusion. However, despite the possibility of automation of education, the figure of the teacher continues to play a huge role in ensuring the effectiveness of the educational process.

Digital technology is no longer something out of the ordinary, and students expect to meet them at school, university and later at work, but in order for these technologies to be truly useful, a number of technical, social and psychological problems have to be solved.

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