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**TRANSFORMATION OF EDUCATION IN THE CONTEXT OF**  
**DIGITALIZATION**

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**Abstract**

Over the past five years, the newest and most discussed political trend has been the integration of digitalization into all spheres of human life, including science and education. Digital education creates new learning opportunities. The modern approach to studying the stages of formation of digitalization of education in the Russian Federation regulates relations related to the creation and development of conditions for the implementation of educational programs using e-learning, distance learning technologies, taking into account the functioning of the electronic information and educational environment. In the course of research and analysis of this topic, the authors clearly identified the advantages and disadvantages of this transformation. Digitalization of the educational process implies transformation and integration of educational technologies into all stages of the educational process: training, education, methodological integration, career guidance. There are opportunities for personalized learning, new models of cooperation are emerging, the form of organizing distance learning contributes to the development of independent work skills, and the range of innovative and attractive learning strategies for students is becoming wider. However, despite the fact that the digitalization of the educational process has become quite strong at this stage of development, it needs to be refined, changed, include new and additional elements and functions, and it is also worth paying attention to the revision of the regulatory framework of modern legislation.

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## 1. Introduction

A fundamental element in the study of digitalization of the educational process in the context of digitalization is a modern approach to the study of the stages of formation of digitalization of education in the Russian Federation. In the last decade, there has been a tendency for educational institutions to be equipped with modern technologies: computers, tablet panels, the Internet is used in educational institutions to access information content, educational materials, libraries are transferred to online platforms. Students can listen to educational material from the comfort of their homes via the Internet. Electronic resources are created through which the student can find detailed information for classes with the teacher (Andriushchenko et al., 2020). The teaching profession is beginning to change in favor of using new methods and technologies for conducting classes. After all, digitalization implies independent study of the material, and the teacher will act as an assistant, curator, to whom you can ask for help at any time.

At the same time, the following elements were formed to increase the efficiency, productivity and effectiveness of digitalization of education.

1. Creating a unified educational environment.
2. Connecting educational organizations to high-speed Internet and local WI-FI networks.
3. The provision of servers.
4. Install interactive panels in classrooms for seminars.
5. Provision of laptops/computers for teachers.
6. Functioning of the electronic journal and library.

These projects are the creation of a secure digital educational environment that ensures high quality and accessibility of education of all types and levels, that is, the development of digital education as the basis for the development of digitalization. "Digital learning environment" provides a safe digital learning environment by 2024, as the centre of the digital transformation of education, which will be carried out organizational, managerial, methodological, analytical and expert activity profiles of digital competencies for students faculty and administrative management personnel individual training plans with the right offset of the results of passing online courses. Optimization of the activities of educational institutions, transfer of reports on their activities to electronic format and its automatic generation. Formation of the federal information service platform "digital educational environment" and continuous filling it with educational content. The implementation of the federal project will have a significant impact on optimizing the activities of educational organizations, as well as ensure the creation of conditions for the global competitiveness of Russian education, high quality of education aimed at improving the quality of life not only in each region, and its cities and urban-type settlements, but also throughout the Russian Federation.

## 2. Problem Statement

Digitalization of education implies transformation, integration of educational technologies in all stages of the educational process: training, education, methodological integration, career guidance. As well as digital tools and services for creating educational content. The digital educational environment involves the use of a whole set of different digital tools for work. The tasks of informatization and digitalization are: mobile applications for creating virtual whiteboards, you can also find applications that will help teachers

create presentations, various videos with lecture material (Morgado et al., 2020). In Internet portals, you can create and search for tools for creating holograms and infographics, educational maps, in addition, the necessary tools for creating quizzes – intellectual games for students, crosswords, quizzes and web quests, intelligence maps, video conferences. In connection with the above conditions in the analysis of this article, the following main tasks are highlighted. First, the most effective use of modern IT infrastructure to improve the quality of the educational process. Secondly, the introduction of information technologies in the educational process, increasing the level of ICT competence of the teaching staff, creating new forms of educational content. Third, the identification of the most effective education of students in traditional and distance learning. Fourth, the gradual transition from paper books, magazines, notebooks to digital media. Fifth, improving the qualifications and skills of teachers and students, as well as the level of proper ability to handle information technologies.

### **3. Research Questions**

The digital educational environment is the most important direction in informatization and digitalization since 2016. Ideas can be found in several federal projects at the legislative level. For productivity of digitization development necessary scientifically-methodical support for the implementation and evaluation of the effectiveness of project-based management model training and management of educational process, scientific and commercial activities at the university (Anderson & Rivera-Vargas, 2020). Thanks to the platform of electronic educational materials, teachers can use the best practices of their colleagues to supplement the platform with lesson scenarios that make the learning process interesting, dynamic, most effective and modern. These methods can increase students' interest in education, stimulate the acquisition of new knowledge, and increase the level and quality of education.

The main distance education technologies are: case (portfolio technology); Internet technology; television and satellite technology. There is no restriction to use only one distance education technologies, they can be used in conjunction. Digitalization of the educational process should include the creation of new and more effective teaching and learning practices in the field of information technology that make research processes possible. The following research questions were raised in this article: how to create the most effective model and platform for a high-quality educational process? What information technologies should be implemented to improve the quality of the educational process? What impact will the implementation of various federal projects have on optimizing the activities of educational organizations? How effective will the distance learning model be in comparison with the traditional one, both for teachers of various universities and for students? How can I prevent technical problems or communication interruptions during distance learning?

### **4. Purpose of the Study**

The authors of the project set the main goal – to use the analysis to select the main methods and advantages of the effectiveness of distance learning and distance education. Digitalization of the educational process takes place in various forms: the creation of electronic educational materials, the formation of an interactive electronic platform, and the interaction of teachers and students. The main idea

of digitalization of education is continuous education, that is, lifelong education is one of the leading modern ideas of development. But at the same time, the transition to an information society leads to the adaptation of a new information environment. And adaptation to the new information environment involves a rather difficult and lengthy process.

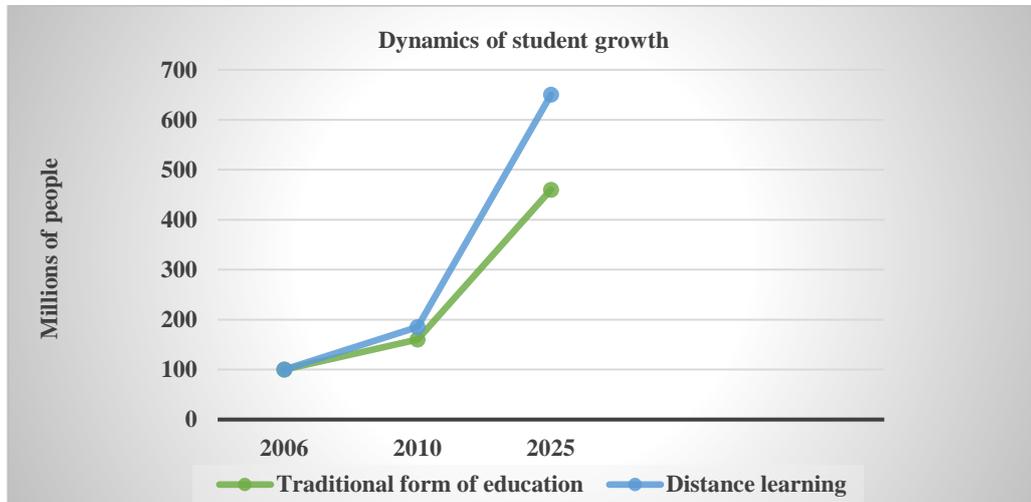
The purpose of distance learning is to provide students with the opportunity to master basic and additional educational programs, directly at the place of residence or temporary stay. The Federal Law "On education in the Russian Federation" (Federal Law No. 273-FZ of December 29, 2012 "On education in the Russian Federation") came to the aid of distance learning organizations, which fixed the possibility of implementing programs with the possibility of using remote technologies

Today, various trends in informatization and digitalization are used. First, it is the maximum wide development of virtual reality, machine learning system, and unified artificial intelligence, which in the educational environment as an example, can be a virtual assistant for effective learning. He will be able to independently reproduce the material for students that the teacher will offer him. Secondly, the equipment and infrastructure of the educational organization with modern materials and tools. For example: 3-D printers, 3-D information boards and pointers, as well as models for programming them. Third, rationalization (evaluation). In other words, rational use of various tools of digitalization and informatization. Fourth, the maximum implementation of mobile learning, various digital and analytical tools, programs and gadgets, as well as applications (Gafurov et al., 2020). They allow you to collect, analyze and view statistical data for the productivity of the informational educational process. Fifth, the creation of virtual training programs, applications for students, where they can learn some material, ask a specific question, which the assistant can choose from the information environment-the Internet, the answer to the question posed to students.

## **5. Research Methods**

The main research method was chosen as a model of the ratio of the effectiveness of traditional and distance education by the dynamics of student growth. Consider the expansion of educational opportunities for students by means of distance learning in modern conditions. Distance learning is a set of educational technologies in which purposeful indirect or not completely indirect interaction between a student and a teacher is carried out regardless of location and time distribution, based on pedagogical and organizational information technologies, primarily using telecommunications and television (Kazak et al., 2019). Distance education opens up wide opportunities for education and professional development of different categories of citizens. With distance learning, students are given the opportunity to obtain the required knowledge themselves, using various information resources provided by modern information technologies. Information resources, databases and knowledge, computer, including multimedia, training and monitoring systems for video and audio recordings, electronic libraries together with traditional textbooks and manuals create a unique learning environment accessible to a wide audience (Bezliudnyi et al., 2020). Conducting chats and forums, video and television conferences, and the ability to consult with teachers through computer communications make the interaction of students with teachers much more intense than in the traditional form of training. The data is taken from the analysis of the global distance education market.

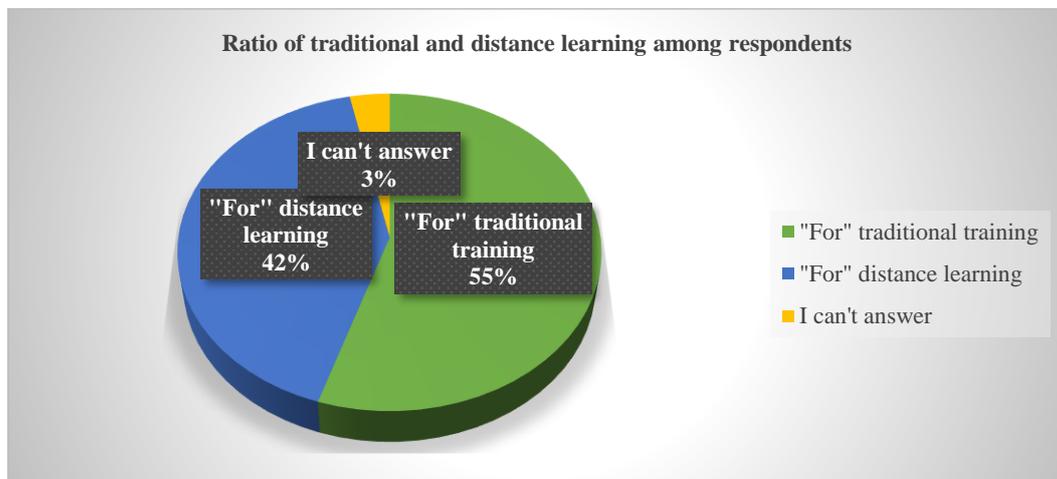
(Bataev, 2018) According to the forecast, by 2025, the number of people who complete their distance learning will reach 650 million people (Figure 1).



**Figure 1.** Dynamics of growth of students in traditional and distance learning

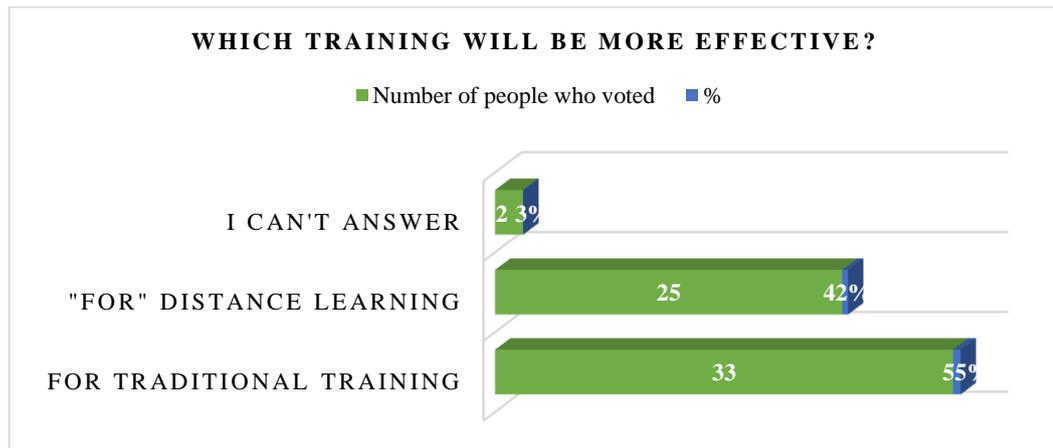
Source: authors

The main research method was chosen as a model of the ratio of the effectiveness of traditional and distance education by the dynamics of student growth. The study was based on a survey of students. Thus, a choice was presented between traditional education and distance learning, among which it was necessary to choose the most productive, effective approach that corresponds to the trends of modern society. The data is described and suggested in graph # 2 and graph # 3. All respondents were 60 persons, the data presented in graph no. 2. Of these, 33 people voted "for" traditional education, which is 55% in percentage terms, 25 people voted "for" distance learning, 42% in percentage terms, and finally, 2 people found it difficult to answer, which is 3% in percentage terms (Figure 2, 3).



**Figure 02.** The ratio of traditional and distance learning among respondents.

Source: authors.



**Figure 3.** Which training will be more effective?

Source: authors.

## 6. Findings

After analyzing and comparing all these conditions and characteristics, as well as survey data, we can conclude that digitalization increases the effectiveness of the pedagogical process, and direct connections to electronic databases, news, and forums are possible. Social networks can be used for practical training. Using skype, managers, social networks and other educational platforms, you can participate in classes of leading specialists and experts. So, it is worth specifically considering both the positive and negative sides.

The main advantages of digitalization of the educational process:

1. Technologies allow you to experiment with pedagogy and get instant feedback.
2. Technologies help to ensure the active involvement of students in the learning process.
3. There are many resources for the organization of productive educational activity of students.
4. Technology can help teachers automate or simplify a number of tasks.
5. Technologies provide instant access to the necessary information and develop important skills for working with sources.
6. Interactive forms of activity allow developing communicative competence.
7. The development of communicative skills by solving tasks and situations.
8. Development of strategic, creative analytical-cognitive and information and communication technologies and skills.

The main disadvantages of digitalization of the educational process:

1. Technology can distract from the educational process.
2. Technology can negatively affect the development of students' communication skills and social interaction.
3. Technologies can provoke deception and evasion of tasks and tasks assigned to them.
4. Students do not have equal access to technological resources.

At the Federal level, the organization of work on digitalization of education is presented in the national education project "and in the federal project "digital educational environment". In January 2019, by Decree of Russian President Vladimir Putin, the implementation of the "national education project"

began, which provides for the development of education systems until 2024 (Decree of the President of the Russian Federation No. 204 of May 07, 2018 "On national goals and strategic objectives of the development of the Russian Federation for the period up to 2024"). This project involves the implementation of the main directions of development of the education system, updating its content, creating the necessary modern infrastructure, training relevant professional personnel, their retraining and advanced training, as well as creating the most effective elements and mechanisms in this area. The national education project is an initiative aimed at achieving two key goals:

1. Ensuring the global competitiveness of Russian education and making the Russian Federation one of the top 10 countries in the world in terms of the quality of higher and General education.
2. Education of a harmoniously developed and socially responsible person based on the spiritual and moral values of the peoples of the Russian Federation, historical and national cultural traditions.

Digitalization as a system aspect of the educational process has never claimed to be able to translate all education into the format of numbers or information tools (Minina & Mabrouk, 2019). All these methods are considered as an exceptional addition to education. The block remains unchanged and the field where you want "live" communication and traditional communication. Also, the practical part in the educational environment is very important. And it, despite all modern methods of digitalization, cannot exist and develop in the traditional form of education.

Therefore, today, the most effective mixed (hybrid) model of education is in higher education institutions and universities. In this case, some functions are performed in the same traditional format, and some functions are given preference to the remote format. This format is convenient not only for teachers, but also for students who appreciate it as an effective and productive environment for obtaining new knowledge in the educational process. Thus, each educational organization will be able to conduct the educational process in a centralized and uniform way in the information space, where there will be a single structure and format of materials, where there will be equal opportunities for receiving lectures and assignments from students from teachers. Also, each university has its own educational environment for both teachers and students. This, in general, helps to solve problems most reproductively during the educational process.

## **7. Conclusion**

It is obvious that the advantages outweigh the disadvantages. For the productivity of digitalization development, it is necessary to provide scientific and methodological support for the implementation and evaluation of the effectiveness of the project-oriented learning management model. As well as managing the educational process, scientific and commercial activities at the university. During the survey, the authors found a pattern that technologies are not intended to replace the teacher, but rather the idea is to create a learning environment that will allow switching the organization of the educational process to cooperation and productive learning activities together with the student and teacher (Tay & Low, 2017). Today we are at the initial stage of implementing education technology. The implementation process is a very complex and multi-faceted process that requires a lot of patience and perseverance, but in the end, technologies can open the door to new experiences, discoveries, ways to learn and collaborate. Thus, these information

technologies, which will be one of the main aspects of the educational process, will be able to raise the overall level of education and literacy of the population and society as a whole.

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