ACTUAL PROBLEMS OF SCHOOL EDUCATION IN THE CONTEXT OF DIGITALIZATION

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ABSTRACT
The article is devoted to the study of the transformation of school education in the context of digitalization. The authors of the article reveal the main definitions of the concepts of "digitalization of education", "digital education", "digital learning", "distance learning". The features of the implementation of the digital educational environment in the school system of Astrakhan Region are considered, in particular on the example of MBOU Astrakhan Gymnasium No. 4. The advantages and disadvantages of digitalization of school education are revealed. The results of the study of actual problems of school education in the context of digitalization are presented.

Keywords: *digitalization of education, school education, digital educational environment, distance learning.*

1. INTRODUCTION

The formation and development of the digital economy requires the closest attention to the education system capable of ensuring a sustainable transition to the digital era through the development and implementation of appropriate educational and research programs, the integration of digital technologies into the educational process, the development of individual learning trajectories and ways to monitor results, virtual and augmented reality.

Analysis of modern domestic literature on the digital transformation of school education shows that the phenomenon of digital education is distinguished as an independent object of pedagogical research (G.A. Bondareva, N.P. Petrova [1], T.V. Nikulina, E.B. Starichenko [2], A.Yu. Uvarov, etc.). A significant contribution to the study of the problem of digital education was also made by the works of Korean (D.-H. Jang, P. Yi, I.-S. Xing [3] etc.), Chinese (S. Wang, Ts. Kahn, H. Su, P. Cao [4] and others), American (E. Gable[5]) scientists. In their works, foreign researchers consider a number of concerns related to the transition of schools from traditional education to digital-based one, study more deeply the issues of distance education and the development of digital soft skills among students, as well as solve the issues of training teachers with the necessary knowledge, new professional competencies in the field of digitalization.

The digital educational environment is actively developing at all levels of the modern education system: new educational sources and platforms, e-books are offered, the number of mass training courses is growing, distance learning is becoming widespread, etc. As part of this modernization process, traditional learning models are being transformed into e-learning models.

The progressive development of cross-cutting and digital technologies has led to the reform and transformation of all educational processes.

However, digital technologies in the education system, along with enormous opportunities, create corresponding problems. Consequently, the study and arrangement of these problems is one of the most pressing issues of modern education.

1.1. Definitions of the concepts of "digitalization of education", "digital education" and "digital learning"

Modernization of the digital economy requires both the use of the most advanced technologies and close attention to issues related to the development of value-

based activities and all forms of social consciousness and, therefore, the education system as one of the most important social technologies that ensure the formation of human capital - the most valuable assets for the digital economy.

Education is a single process that unites education and training. Digital education should be considered as a single process of digital education and digital training. In the context of digitalization, the student, on the contrary, uses digital and mobile devices to obtain information in its various forms (texts, images, photographs, etc.). Insufficient personal interactions with teachers, other students, managers, etc. eliminate the educational function of education. As A. Verbitsky (2019) once observed, "computers cannot educate students" [6], so the concept of "digital education" is inappropriate.

Also, education is not only a single process aimed at education and learning, but also the result of this process; for example, a student's level of knowledge and qualification as an indicator of the student's readiness to work in a particular field. In this context, we define these areas as economic, medical, engineering, educational, mathematical, etc. With this idea in mind, we have come to the conclusion that digital education is a process of interaction between subjects of educational activity in the context of digital space and digital technology.

Thus, the definitions of "digitalization of education" and "digital education" are interrelated, but definitely have different meanings.

Considering the concept of "digitalization in the education system", we proceed from the definition of the education system as a complex of educational institutions implementing training and education programs in accordance with Federal State Educational Standards and government bodies. Consequently, digitalization in the education system is the use of digital technologies at all stages of the system [7]. The more we use digital technologies, the higher the digitalization rate within the system. In this case, the key function is still provided by the person (manager or teacher); it deals with the creation of new content in the face of changing conditions.

Digitalization in the education system includes all sources of information, such as educational internet resources, portals and sites, information educational environments, hosting, television, media, as well as the management system.

One of the articles of the Federal Law On Education in the Russian Federation defines the organization of the educational process and the implementation of programs using electronic and distance learning. E-learning is defined as "the organization of educational activities using databases, information technology, technical devices, information and telecommunication networks" [7].

The analysis of scientific literature has shown that there are three elements of e-learning: 1) databases as a source of information; 2) information processing and application of information technologies; 3) information equipment and networks that transmit information material from the source (lecturer, teacher) to the receiver (students).

Distance learning is a relevant and accessible form of education, especially recognized during the Covid-19 pandemic. Distance education offers a wide range of digital methods, technologies, tools, and forms of education. Also, this type of training involves more hours of independent work and a special form of communication between stakeholders of the educational process (teachers and students; students with each other; teachers and parents) [8].

Education using elements of the distance learning system is becoming an integral part of global education. Distance education, taking into account the peculiarities and problems of learning, can make continuous learning and information exchange possible without losing relevance and innovation.

2. DIGITAL EDUCATIONAL ENVIRONMENT IN ASTRAKHAN REGION

Astrakhan Region participates in an experiment on the introduction of a digital educational environment in schools. Secondary educational institutions of the region, under the terms of the federal program, are equipped with computer and presentation equipment, software, and high-speed internet access.

The experiment started in different regions of Russia on September 1, 2020, and will run until December 31, 2022. The introduction of a new digital educational environment (DEE) should guarantee equal rights for children in receiving educational services and provide access to all existing capabilities of the system. In the process of implementing the experiment, teachers are regularly held training courses, seminars, master classes, strategic sessions on programs for the development of information and communication technologies and the processes of digitalization of education. And of course, the experiment on the implementation of DEE does not reject full-time education but supplements it with new resources that provide students with access to popular and high-quality educational programs.

The introduction of DEE in Astrakhan schools gives students and pedagogical staff the following advantages:

- use of high-speed internet at school for educational purposes (100 MB/s for urban schools and 50 MB/s for rural ones);
- access to educational resources that contribute to the effective preparation of the student for classes;
- organization of distance learning for children who do not have the opportunity to master the program in person, for example, for reasons of illness, departure, family circumstances, etc.;
- use of e-document flow: information exchange using electronic diaries, journals, reports;

- the ability to receive information about the learning process on various government platforms, for example, on the e-Portal of Government Services of the Russian Federation;
- access to broadcast video lessons, both in recording and in real time;
- automation of processes that will save teachers from unnecessary paperwork with reports - it is assumed that special programs will independently analyse data about all students, which will greatly facilitate the work of collecting information about the success of the educational process.

MBOU Astrakhan Gymnasium No. 4 is taking part in an experiment, the purpose of which is to test DEE platform and its options. To achieve the goal and get the result, it is important to adhere to the following conditions:

- automate the educational process and make it more unified;
- to improve independent diagnostics of the quality of education;
- organize the educative process using distance technologies and e-learning;
- to work out the technology of processing a great deal of information.

As part of the experiment on the implementation of DEE at MBOU Astrakhan Gymnasium No. 4 there is an adaptable schedule of lessons. According to the schedule, two online lessons a week are held in each parallel with the use of distance learning technologies on the platforms ZOOM, SKYPE, Diary RU.

The Federal State Educational Standard of basic general education [9] suggests that a modern school should provide an opportunity for the implementation of various types of educational and extracurricular activity using digital technologies. As the main directions of educational activity of schoolchildren of MBOU Astrakhan Gymnasium No. 4 can be called:

- organization of student project activities in digital (electronic) and traditional form, including definition of location; the work of virtual laboratories, the creation of material and virtual-visual models;
- modeling and creation of digitally controlled objects;
- application of information and communication technologies in the design and implementation of their individual and group activities, as well as in artistic creation;
- providing the school library with an open access to the information resources of the Internet, educational and fiction literature, collections of media resources on electronic media.

However, students of the gymnasium in the process of distance learning also face a number of problems, such as:

- lack of face-to-face contact with age-mates and teachers;
- difficulties concentrating and delaying attention, may be distracted by outside influence;
- loss of motivation to continue learning;
- shortage of practical training;
- due to long sitting at the computer, problems with visual sense and posture;
- fear of failure. Children are afraid of getting bad grades, so they resort to help from their parents.

Like any type of training, distance learning has its advantages and disadvantages. The advantages of distance learning are:

- the adaptability of teaching with the use of modern programs and technical means makes online learning more effective. New technologies make visual information vivid and dynamic, build the learning process itself based on the active interaction of the student with the education system;
- accessibility and transparency of education is an opportunity to study at the same time almost anywhere in the world where there is a computer and the Internet, without leaving your home or office. This allows a modern person to study almost all his life;
- distance learning brings more individual learning, is more flexible, the student independently determines the pace of learning, can return to individual lessons several times, can take separate modules;
- distance learning is rational for students with disabilities and special educational needs who do not have the opportunity to attend lessons in real time and mode [10].

The shortcomings of distance learning include:

- there is no direct personal communication between teacher and student;
- the need for a personal computer and Internet access, its good technical equipment;
- self-discipline is required, and the educational outcome depends on the independence and consciousness of the student;
- high labour intensity of the development of distance learning courses;
- insufficient computer literacy of teachers and students, lack of distance learning experience.

It is also necessary to understand that with distance learning it is important for a teacher to create a positive

mental atmosphere in the classroom, as well as to take into account the psychophysical characteristics and capabilities of all students [10].

3. RESULTS OF THE IMPLEMENTATION OF THE DIGITAL EDUCATIONAL ENVIRONMENT IN ASTRAKHAN REGION

As practice and observation show, the active introduction of digital technologies in schools, along with the enormous opportunities (which have not yet been sufficiently explored) for teaching and learning, entails significant problems.

The challenges posed by digitalization can be identified and analysed using a variety of approaches.

Loss of knowledge value, lack of motivation. Information is a key source in the digital economy, and, accordingly, sustainable motivation for effective information activities is one of the necessary professional competencies that directly affect the quality indicators of work. Therefore, the formation and development of such a sustainable motivation to learn something new and continue self-study is a significant task of the pedagogical education system. Thus, in reality, students often misunderstand the idea of the value of knowledge and subsequently lose interest in acquiring knowledge.

As the survey of MBOU Astrakhan Gymnasium №4 students shows, only 40% of students admit that motivation is dominant. The remaining 60% of students are motivated by external factors, such as: passing the exam, avoiding conflicts with parents, etc.

In the process of digitalization, external motivation (to get a good grade, pass a test, undertake certain requirements) should be replaced by internal motivation, when students seek to gain new knowledge and experience to meet their internal need for self-development. It should be emphasized that motivation for learning throughout the life should become an integral part of the personality and motivate to effective and fruitful activity.

Z. Bauman [11] noted that modern reality is changeable, uncertain, therefore the key goal of education is to prepare students for this uncertain world. Accordingly, the new functions of education are: first of all, to teach students to adapt to uncertainty and the absence of objective criteria for assessing the reliability of information; also, for the development of a number of personal qualities that an individual must possess in order to quickly and easily adapt to this world.

Digitalization contributes to the simplification of forms and methods corresponding to market mechanisms of supply and demand, which increases the risk that students will lose their role in the educational process, as the educational process is replaced by the service provision, development is replaced by consumption, mental effort is replaced by satisfaction [12].

In addition, some experts in the field of education assume that in the new educational environment the didactic aspect of the learning process, as well as its methodological bases, remain insufficiently developed. Due to this, the traditional didactic bases are directly transferred to the digital environment, where new types of interaction of participants in the educational process arise both among themselves and in the man-machine system.

It should also be noted that online learning at school requires not only a high level of motivation, but also self-development and self-study. Meanwhile, research shows that not everyone is able to learn independently.

Online learning is not capable of educating students, because it involves personal communication and interaction, an emotional and value-oriented attitude to moral choice, the opportunity to experience it on the basis of knowledge and moral norms in every society. Education of morality cannot be reduced to the assimilation of information about what is considered good or bad in society. A person may know moral standards, but still be immoral, ill-mannered, become a bribe-taker and criminal [6].

In addition, online learning does not have the same sources of impact on the audience: students cannot see how we look, our gestures, postures, how we move, cannot catch intonation tongue twisters; the teacher does not have the opportunity to ask a direct question or express opinion. The knowledge that students get from their monitors is meaningless, it's dead, no matter how good the teacher is. We will not be able to understand the real world if we spread dead knowledge. Therefore, the lack of live interaction reduces the educational opportunities of the learning process [13].

With regard to the developmental function of education, a large number of studies prove that digital technologies in education can lead to weakening of mental abilities (digital dementia). This happens because modern technologies allow people to find information very quickly without the need to deeply understand the text, mentally effort is no longer required, people get used to getting answers quickly and lose the ability to perceive large chunks of text. Modern students have to re-read the texts several times to understand their meaning. Experts point to an increased risk of speech worsening and, subsequently, mental enfeeblement, since speech and mental activity are interdependent; modern students do not need to speak but press a key on their computer. If a student does not have the opportunity to develop his communication skills within the framework of live interaction, his mental abilities will also not be developed [6].

Thus, the digitalization of education leads to a decrease in the stimulating and developing function of the learning process.

4. CONCLUSIONS

Online courses and other online education tools provide a wide range of opportunities to enhance the role of the educational process as part of the formal education system. However, these new forms cannot replace "live" interaction between participants of the educational process. The "live" interaction is an important part of the basic education system (both general and professional).

Like any social change, the digital transformation of education, in addition to new opportunities and effective results, may contain risks and threats associated with its quality. In order to increase the effectiveness of the widespread use of digital educational technologies, timely monitoring and analysis of risks is required, as well as the development of recommendations to mitigate their negative consequences.

AUTHOR'S CONTRIBUTIONS

The article has been written by a team of authors, all authors have taken equal part in the theoretical analysis of the problem and in carrying out the research. A.S. Dzhangazieva analysed and generalized ideas of the Russian and foreign authors on the problem of the research. O.M. Korobkova considered the features of the implementation of the digital educational environment in the school system of Astrakhan Region, in particular on the example of MBOU Astrakhan Gymnasium No. 4. I.V. Tarasova revealed advantages and disadvantages of digitalization of school education. E.V. Ryabova presented the results of the study of actual problems of school education in the context of digitalization.

ACKNOWLEDGMENTS

The authors express their gratitude to the team of MBOU Astrakhan Gymnasium No. 4 for their help in carrying out this study.

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