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**DIGITALIZATION OF RUSSIAN HIGHER EDUCATION:
EXPECTATIONS, REALITY, PROBLEMS**

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Abstract

The article clarifies the content of the concept of “digitalization of education” from the perspective of an interdisciplinary approach, its main interpretations, and the possibility of applying it in a wide and narrow sense are shown. In a broad sense “digitalization of education” is a process and tool for the transition to a new stage in the development of higher education and professional training of specialists, which should differ from previous stages with new technological capabilities that make it possible to make education personalized, flexible, practical and effective. In a narrow sense, it is a new educational format associated with the introduction of new digital technologies in the educational activities of higher education. The reasons for changing the educational paradigm and the transition to creating a new educational environment are formulated. Based on existing expert assessments, the ambiguity of the consequences of digitalization and its possible risks are shown. The problems that impede the introduction of digitalization in the educational processes of Russian higher education (little experience in the remote work of participants in the educational process; the need to modify educational content and new forms of its submission; the impossibility of a complete transition to online learning of disciplines that have a large amount of practical work, etc.), are identified. On the example of “digital volunteering” and “digital pedagogy” as a promising direction in pedagogical science, possible measures are presented that contribute to their solution.

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1. Introduction

The concept of “digitalization” is a trend in modern global economic and social development. It is associated with the transition from analog to digital devices and technologies based on new methods of processing, storage and transmission of data that increase the speed of interchange and accessibility of information. Digital technologies are being introduced in all spheres of society, even in such traditionally conservative in their social role as education, raising the issue of creating a new format of education - a digital educational environment. For the Russian education system, the obligatory nature of its formation was reinforced by the Russian government adopted in 2016-2017 targeted state programs and national priority projects: “Modern digital educational environment in the Russian Federation” (approved on October 25, 2016)¹; the state program "Strategy for the Development of the Information Society in the Russian Federation for 2017-2030" (approved by the Decree of the President of the Russian Federation on May 09, 2017)²; the program “Digital Economy of the Russian Federation” (approved by order of the government on July 28, 2017)³.

The new priorities of the state educational policy set a new research task for the scientific community - the study of the process of digitalization of education and the identification of problems associated with it. Now, various aspects of this topic are addressed by researchers of many scientific fields (psychologists, educators, sociologists, philosophers, etc.). However, the ambiguity of approaches to the interpretation of this term, the selection of only certain aspects of the impact of digitalization, the lack of a unified vision on the consequences of the massive introduction of digital technologies in the education system, its impact on maintaining the quality of education, exaggerated "digital optimism" that does not take into account objective and subjective difficulties of their application, draw special attention. This poses the task of analyzing and summarizing the existing points of view, comparing their identities and differences, identifying further areas of scientific research with reasonable conclusions and recommendations, which allow preserving the quality of education and timely eliminating emerging problems.

2. Problem Statement

Currently, there are many definitions of the concept of “digitalization of education”. To what extent do they differ from each other, what is the essence of digitalization and its consequences seen by researchers representing various scientific fields? Analysis of the most common interpretations shows that, depending on the scientific specialization, they are interpreted in different ways.

Representatives of the humanitarian fields associate this term with the process of transition to a new stage in the development of higher education and professional training of specialists, which will differ from the previous stages in new technological capabilities and the nature of education (Blinov et al., 2019; Nikulina & Starichenko, 2018). It is predicted that in the framework of the new stage, education will

¹ Priority project “Modern digital educational environment in the Russian Federation” [electronic resource]. Access mode: <http://static.government.ru/media/files/8SiLmMBgjAN89vZbUUtmuF5IZYfTvOAG.pdf>

² Strategy for the Development of the Information Society in the Russian Federation for 2017-2030 [electronic resource]. Access mode: http://www.consultant.ru/document/cons_doc_LAW_216363/.

³ The program “Digital Economy of the Russian Federation” [electronic resource]. Access mode: <http://static.government.ru/media/files/9gFM4FHj4PsB79I5v7yLVuPgu4bvR7M0.pdf>

become more accessible, flexible, practical and effective in connection with the transition to individualization of education. This refers to the provision of opportunities for students to build individual educational routes, the ability to manage their own learning outcomes, to overcome the barriers of traditional learning (the rate of development of the program, the choice of forms and methods of training), personalized continuous monitoring of educational activities and personal professional development of students. It is believed that this will facilitate the transition to the training of specialists of a new type: self-motivated, creative and competent, guaranteed in demand in the labor market, able to flexibly respond to new challenges of the time, through e-learning to engage in continuing education and advanced training, create innovative products and quickly implement their production.

Another vision of digitalization and its implications is demonstrated by researchers and experts related to information technology and information communications. They define digitalization as a change in the format of student learning as a result of introducing various media tools as modern teaching and evaluating ones such as open educational resources (OER), mass open online courses (MOOC), and learning platforms (Learning Management System/LMS), electronic textbooks (smart book/e-book), electronic libraries (e-library), cloud educational systems and Internet services, digital video communications, global media, automated control systems educational organizations and others (Safuanov et al., 2019; Starodubtsev, 2017). It is assumed that they can help increase the effectiveness of educational processes by freeing up labor-intensive routine processes, make education open and accessible outside classrooms, and contribute to the transition from the decades-old paradigm of “lifelong learning” to “learning continues throughout life”. The emergence of the new term “SMART-education” in the domestic educational environment is associated with these innovations. Its main interpretations are presented in the studies of Tikhomirov (2011), Tikhomirov and Dneprovskaya (2015), Dneprovskaya et al. (2015), etc.

Different points of view on the same object of study make it necessary to understand how compatible are different approaches to the digitalization process, what determines its beginning, what achievements it can characterize to date, and what problems it faces.

3. Research Questions

The study is based on an interdisciplinary approach to the concept of "education", combining social and cultural, pedagogical and philosophical approaches. This allows presenting it as a multifaceted socially significant and pedagogical phenomenon. On the one hand, education is a multi-level part of the social system that affects the development of society and changes with it. On the other hand, it is a process of spiritual formation and development of a person. In pedagogy, it is a learning process that involves the assimilation of systematized knowledge, abilities and skills.

3.1. Digitalization of education in the context of an interdisciplinary approach

Interdisciplinarity makes it possible to take both approaches to the concept of “digitalization of education”, to consider it in the broad sense as a stage of modernization of education, in the narrow sense as a new format of education. The author shares the point of view of the developers of the “Project of the didactic concept of digital vocational education and training” (Blinov et al., 2019, pp. 4-5) that the digitalization of education includes two interrelated and simultaneously ongoing processes. One process is

“a deep transformation of the educational process and its elements with the aim of maximizing the use of the potential didactic capabilities of digital technologies. Another process is “the transformation of digital technologies with the aim of their maximum adaptation to the effective solution of assigned pedagogical problems”.

3.2. Interdisciplinary approach and research issues.

An interdisciplinary approach has identified the main research issues. Considering the ambiguity of the concept, the task to consider two main groups of issues on the basis of generalization and theoretical analysis of available expert estimates, empirical materials and personal experience are set. Firstly, it is important to show when the digitalization of higher education began, what prerequisites it was caused by, what technological advances can be discussed today, whether Russia has a “digital gap” in higher education with other countries. Secondly, it is of great interest to highlight and attract the attention of the pedagogical community to not only new opportunities of e-learning, but also to problems and risks that may accompany this process and affect the quality of training of specialists, leading to a decrease in the social and educational role of education.

4. Purpose of the Study

The overall goal of the work is to justify that the digitalization process that has been going on in Russian universities over the past few years is an objectively existing necessity, due to the conditions and requirements of the modern post-industrial (informational) society, to reveal its premises and factors. At the same time, the author agrees with researchers who warn against excessive “digital optimism” (Blinov et al., 2019; Ustyuzhanina & Evsyukov, 2018). Digitalization is presented as a challenge, faced with a complex of problems, conditionally divided into current (transitional) and immanent. To solve them, it will take a long time, the adoption of additional organizational, financial and managerial measures, and the creation of a new direction in pedagogical science - digital pedagogy. The conclusions made can be applicable for further improvement of the process under consideration, since the forced transition to mass distance learning of students (in connection with the COVID-19 pandemic), on the one hand, accelerated the course of digitalization, and on the other hand, revealed a number of new problems requiring consideration by the professional community and taking measures to smooth over them.

5. Research Methods

A comparative analysis of the available assessments and a generalization of the presented conclusions show that today, researchers involved in various aspects of this subject do not have previous disagreements about the reality of finding Russian education in the digitalization stage. If previously it was believed that its contours were only visible and entering it would take a long time period, now it is recognized that digital education has already arrived in Russian education. The approximate chronological framework of its beginning is established, the factors that influenced the change in the educational paradigm, attention is drawn to problems and risks.

5.1. The beginning of the digitalization of education in Russia

According to Rozina (2012) and Strekalova (2019), the adoption of the new Federal Law “On Education in the Russian Federation” in 2012 and the transition (since 2014) of Russian universities to the new federal educational standards of higher education (NFES HE 3+) have accelerated the digitalization of education in Russia. They obliged educational institutions to create and use electronic information and educational environments and resources in their activities, have an organization’s website and reflect information on educational programs and the educational process on its pages, and store the work and achievements of students and teachers in electronic form (portfolio). Digitalization as a new stage has replaced the stage of informatization and computerization of educational organizations, the main content of which was to provide schools and universities with modern computer technology used to solve individual educational problems.

The later entry of Russia into the digitalization stage of education, explained by the “crisis of 1998 and the decentralization of education” (Strekalova, 2019, p. 85), made it possible to speak earlier about the existence of a “digital divide” in relation to a number of other countries where the transition to digitalization was started much earlier. The reason for the digital divide was associated with the country's technological backwardness in the field of ICT industry, which was manifested in the insufficient number of equipment in educational institutions, their poor Internet coverage, low data transfer speed, insufficient user skills, etc. At the moment, Russia has actually overcome this gap. Researchers (Nikulina & Starichenko, 2018; Safuanov et al., 2019) note the completion of processes such as saturation of educational institutions with computer equipment, training of all employees in the skills of using information technologies in professional activities, the introduction of modern technologies in all processes. Russian universities have developed many methodological and didactic materials based on information technology, distant technologies and virtual models of various phenomena in the educational process are actively practiced, their own information and educational environments have been created that contribute, on the one hand, to the development of internal university potential, and on the other hand, they are offered to third-party users educational content market. According to the data of the Ministry of Science and Higher Education of the Russian Federation, on March 16, 2020, leading Russian universities offer 710 free online courses that can be used for educational programs. An alternative to popular foreign educational platforms is the Russian educational resources such as National Open Education Platform (Open education, 2020) and Universarium (2020). All this allows us to say that the stage of informatization of education in Russian higher education has taken place; the time has come for the effective application of information technologies and the transition to a new stage. However, now, as experts warn, Russia must prevent the manifestation of the “second digital divide”, which consists in varying degrees of activity and effectiveness in the application of new technologies and capabilities (Tikhomirov & Dneprovskaya, 2015). Digitalization of all spheres of life has led to the fact that a large number of human functions were transferred to the machine, while the man himself focused on creativity, on self-development. Accordingly, the question arose of how effectively people use the new technological diversity, what it gives to man and society in moving forward.

5.2. The historical conditionality of digitalization and the factors of a change in the educational paradigm

Considering digitalization as a historically determined phenomenon, researchers identify three significant factors that justify the need for a transition to a new educational paradigm.

- The digitalization of education is seen as a consequence of the digital (Fourth Industrial) revolution, which has led to the digitalization of the global economy - the main customer for vocational education and training. It is believed that the education system, corresponding to the industrial era, has fulfilled the social order for specialization and human functionality. A fundamental change in the labor market, the increasing role of the intellectual and creative component in all areas of professional activity, the emergence and spread of new (team) forms of labor organization (co-working, remote offices, freelance, etc.) has created a need for specialists with new professional and universal competencies able to make independent decisions and be responsible for their implementation.

- A change in the format of training is associated with the formation of a new (digital) generation of students. As the studies of psychologists and educators (Blinov et al., 2019; Tsimbalenko, 2017) show that young people are characterized by new social and psychological qualities that have both positive and negative aspects that influence their learning process. The positive qualities of the new generation are the following: free orientation in modern digital technologies, openness to intercultural and cross-country communication, preference for the “horizontal” (partner) type of communication over “vertical” (hierarchical) type, the emergence of a new type of students aimed at self-education and self-development. According to the researchers, the negative characteristics include the mosaic (“clip-like”) thinking, distracted attention, a simplified picture of reality, and infantilism. In connection with this, the expression “Digital Natives” introduced by the famous American writer, popularizer of new technologies Mark Prensky became popular. For the first time the expression “Digital Natives” was used in his article “Digital Natives, Digital Immigrants” (Prensky, 2001) and began to be used to refer to generations born at the end of the 20th century (Generations Y (1982-2004) and Generations Z (since 2005)). According to Prensky (2001) and his supporters, these are full-fledged “digital people”, “indigenous people of the new digital society”, different from previous generations, called them “digital immigrants” (people who are not adapted to new technologies), other ways of thinking and processing information. Although the theory of M. Prensky has many critics (Bennett et al., 2008), it is not ignored in the pedagogical environment, but forces teachers to seek new forms of work with the “digital generation” that take into account their social and psychological characteristics.

- The third factor is the emergence of new information and communication technologies for training, called “smart”, “advanced” (Smart technologies). Their range is quite wide, including smart boards, smart tutorials, smart projectors, software for creating and distributing educational content that is interactive and communicative in nature, various types of Social Media and Data Mining technologies. According to experts, their feature is the ability to create a single open information space that does not have barriers to the creation, exchange and dissemination of knowledge, with free circulation of knowledge available outside the classroom.

5.3. Problems and risks of digitalization for society and education

Recording the achievements and innovations of the digitalization process, researchers also pay attention to the possibility of the occurrence of problematic situations associated with it. The ambiguity of the effects of digitalization is noted in the conclusions made in a speech at the 32nd session of the Human Rights Council of the United Nations General Assembly (April 6, 2016) of the UN Special Rapporteur on the right to education, Singh (2016). According to the expert, the digitalization of education not only changes its landscape, but also creates a threat to compliance with the principles and norms that underlie the right to education. It can lead to a “digital divide”, an inequality in education due to different possibilities of access to the Internet and digital technologies, a decrease in the significance of universal values, and a number of other problems. Therefore, the tasks of states embarking on the path of digital development in order to fulfill their obligations in the field of education, it is necessary to develop state programs to manage the corresponding risks of reducing possible losses from digitalization.

The short experience of creating a digital educational environment in Russia until recently allowed us to see only a small part of them. Their common contours were identified by the researchers Ustyuzhanina and Evsyukov (2018), Strelkova (2019). Initially, they were attributed to the poor technical equipment of some Russian universities, the unresolved issue of protecting teachers' copyrights for created educational resources that are transferred to the public, insufficient scientific, methodological and technical support for teachers in the process of creating electronic courses and the transition to distance learning. Since the main emphasis in the Smart education system is on technology, the problem of the use of information technology in humanitarian education has become a separate problem in the pedagogical community. It is necessary to agree with the opinion of researchers that “the translation of psychological and pedagogical techniques into digital technologies is a separate research task and cannot be carried out by formal translation into program code” (Aksenova & Kuptsov, 2016, p. 17). The predicted ability to award qualifications through mass open online courses (MOOCs) raised questions about the quality of education received through them, as various studies have led to different conclusions. The inclusion of expert philosophers (Koroleva & Sukhorukikh, 2019; Zwick, 2017; etc.) in the topic under discussion raised the question of the risks of dehumanizing education, losing educational and personal development goals, focusing on narrowly functional training, deformation of thinking and worldview of the modern generation, the spread of irrationalism and technocratic thinking, a change in the system of value orientations.

With the expansion of digitalization and the accumulation of empirical research results obtained as a result of observations, questionnaires, testing and interviews with students, new problem fields of the digitalization process began to be identified. Thus, an analysis of digital trends in education, conducted by a group of researchers from the Federal Institute for the Development of Education of the Russian Presidential Academy of National Economy and Public Administration (Blinov et al., 2019), showed the presence of such an inhibitory factor of digitalization as social inertia - unreadiness of societies to move from a traditional educational model to a new digital one. In the same place, attention was drawn to the impossibility of the complete exclusion of the living interpersonal factor from the educational process and its complete automation or translation into a network form, since in classical pedagogy, on which the Russian school is based, the human factor and live communication of the participants in the educational process plays a fundamental role. It is assumed that training with a "restriction on the human factor" is

possible mainly for short vocational training programs or for further professional education. For long programs of higher professional education, designed for 4-5 years, this is difficult to apply, due to the fact that in addition to educational tasks, they include educational and personality-developing components that can be implemented mainly in a real social communication environment. A limiting factor for the mass transition of higher education from traditional forms of education to electronic (on-line) education and distance learning is the practical orientation of the educational programs of Russian higher education. On the one hand, professional competencies, as well as some universal ones, can be formed in the conditions of personal contacts of professional mentors with students. On the other hand, there is a list of professions, specialties and directions, approved by the Ministry of Education of the Russian Federation (2014), according to which the implementation of educational programs does not allow exceptional e-learning and distance learning technologies.

6. Findings

An analysis of the main areas of activity of Russian universities within recent years (at least five years), presented in modern studies, shows that the transition of the Russian higher school to the digital educational process should be considered a fait accompli. The forced transfer of educational activities to the electronic environment in all Russian universities, introduced to prevent coronavirus infection, carried out in March 2020, became its confirmation. At the same time, previously predicted fears about the ambiguity of the consequences of the mass transition to new forms of training, which were previously described theoretically based on general logical methods, were confirmed.

6.1. Pros and cons of digital forms of education in Russian universities: conclusions of 2020

The massive transition to distance learning in all educational organizations has generated an active wave of discussion in society about the new format of education. It is discussed in social networks, mass media. In particular, according to the Russian analytical magazine "Profile" (2020, April 11), the higher education system, due to its previously accumulated digitalization experience, was better prepared to work in a new format compared to schools. The presence in most universities of their own training sites and repositories of training resources developed by teachers (lectures, tests, practical developments, etc.) made it possible for students to avoid the difficulties of choosing an effective service for distance learning ("running on platforms"), typical of schools. At the same time, the problems of organizing mass distance learning remain overloaded with the university's information infrastructure, the lack of experience and methodological tools for many teachers to work remotely, the limited technical capabilities of user devices (computers, tablets, smartphones) to work in video broadcasting mode. In a number of settlements where students were forced to return, a lack of high-quality high-speed Internet access was revealed. Not all students have developed the skills to effectively use new teaching technologies and self-motivation. There was a need to modify the educational content used for full-time classes to work in remote form. Researchers warned about this (Ustyuzhanina & Evsyukov, 2018), stating that the desire to "simulate full-time education" in electronic format can lead to poor quality, since even the best online courses are significantly inferior to the best full-time educational products due to the lack of the effect of familiarizing with creativity. There were problems of transferring to online training disciplines that have a large amount of

practical work. The need for a new retraining of the teaching staff for the formation of the ability to digitize teaching material was identified; develop electronic textbooks with elements of interactive technologies and programmable training, create massive open educational courses and carry out the educational process online and/or in a mixed mode, including effective communication skills.

The disadvantages of the daily remote format and the transfer of the usual schedule to the digital environment, as the polls started at universities show, are the increased intensity of work of both teachers and students, the negative impact of prolonged stay at a computer or smartphones on the physical health, functional and emotional-psychological state of all participants of educational process, restrictions in live communication. Among the advantages, there is a growing interest of students in new forms of training: webinars, videoconferences, which awakens their cognitive activity and contributes to the acquisition and development of digital competencies, enhancing the effectiveness of students' independent work organization and monitoring.

6.2. Foreign researchers on the problems of online and distance learning

Part of the problems that arise in the process of introducing online and distance learning are noted, as the analysis of foreign experience shows, in those countries that before Russia embarked on this development path. So, a comparison of completion rates and academic performance of students of online courses and traditional courses for the 2000s, which were conducted by American researchers (Atchley et al., 2013) at three US universities (Tarleton State University, Texas A&M University, Texas Tech University) led them to conclude that there are conflicting, but statistically significant differences in these indicators. In particular, students of online courses recorded a higher percentage of refusal to complete the course (23%) compared with the coefficient of students refusing traditional courses (18.4%). It was noted that some disciplines (medicine, mathematics, psychology, and criminal justice) are not suitable for the online environment, in contrast to courses such as accounting, economics, computer information systems, marketing and management. Studies by scholars in England (Peacock et al., 2020) have confirmed the importance of maintaining and developing students' online learning forms of a sense of group ownership, which can improve their educational experience and commitment academic environment. This is consistent with the findings of Russian researchers (Ustyuzhanin & Evsyukov, 2018) that the problems of socialization and the impossibility of transmitting implicit knowledge that can be transferred to a person as a result of joint activities are important shortcomings of the electronic training format. The similarity of the problems fixed in different countries allows recognizing them not only as problems of the transition period, but also to evaluate them as immanent problems of the new educational system that require close discussion and solution not only by national pedagogical communities, but also on a wider scale. Most experts believe that it is impossible to fully solve the exposed problems in a short period of time, despite the measures taken, the most effective of which is the appearance of “digital volunteers” in Russian universities - a group of students who provide advisory and operational assistance to teachers in setting up video conferencing facilities and solving other technical problems. However, delaying their decision may jeopardize the reputation of higher education institutions, a threat to the quality of education and student's academic performance.

7. Conclusion

In general, it should be noted that, despite all the problems and difficulties, the digitalization of Russian higher education has taken place. The forced transition to mass distance learning of students due to the unfavorable sanitary and epidemiological situation has shown that all Russian universities have the capabilities and technological potential for digital work. The accelerated breakthrough made it possible to reduce the time for entering a new stage in the development of higher education. At the same time, having raised a number of new problems to the surface, the current situation has made it possible to reduce the exaggerated "digital optimism" by showing that building a digital educational process is a complex task, which requires not only a longer time, but also the adoption of new measures, including - the emergence of a new direction of pedagogical science - digital didactics. There is no doubt that after the completion of the pan-epidemic situation, Russian education will no longer be the same. It is unlikely to become completely electronic and remote, replacing traditional training, as predicted earlier, acquiring, most likely and a mixed character. Perhaps it is precisely the current situation and the experience gained that will affect the improvement of the new educational format, supplement it with new methodological and pedagogical developments. This will allow a qualitative change in higher education in Russia, making it competitive, innovative, meeting the challenges of modern social development.

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