Digitalization of Education: Perspective Achievements and Socio-Anthropological Risks

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Abstract

The aim of the study is to analyze the consequences of large-scale digitalization of education, to identify new constructive trends that appear under its influence and accompanying socio-anthropological risks.

The main research methods are dialectical, comparative and systems approach.

As a result of the study, the advantages of wide digitalization of education were shown, facilitating access to information, allowing for detailed and individualized learning process. At the same time, the side processes associated with the formation of such socio-anthropological risks as: the risks of atomization of society and the extreme individualization of its members, oriented in the process of obtaining education only on their own success, deepening inequality, including at the level of education, were identified and characterized, associated with the use of different educational models for developed and developing countries, the risks of losing connection with the natural world and replacing it with an artificial one.

The conclusion reached by the authors is that when implementing the global digitalization of the educational environment, which is objectively the need of modern society, it is important to take into account potential risks and develop strategies to reduce them.

The novelty of the work lies in the study of the side effects of digitalization of education, identifying the specifics of the accompanying risks.

The methodological basis of the study was made up of modern specialized studies on this topic both in the field of fundamental and applied sciences, targeted programs, rating studies of the digitalization of society in various countries. On the basis of the dialectical method, the contradictions associated with the digitalization of education were identified. The comparative method made it possible to identify the advantages and disadvantages of traditional approaches to education in comparison with modern ones. Based on the system analysis, the interdependencies of the digitalization of education processes and their side effects were revealed.

Keywords [1]

Digitalization, gamification, risks, digital technologies, exocortex, artificial intelligence, virtual, big date.

1. Introduction

The formation and development of a network society [12], which is defined as a new type of social organization, involving the unification of networks and the implementation of interaction between them in digital form, leads to fundamental changes in all areas of activity. In the global economy, digitalization is being carried out most intensively. A new type of digital economy is emerging, which is significantly ahead of other areas of economic activity in its development, with an increase of 10%

SLET-2020: International Scientific Conference on Innovative Approaches to the Application of Digital Technologies in Education, November 12-13, 2020, Stavropol, Russia

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per year [16]. The need for digitalization of education is closely related to the digitalization of the economy. Some researchers [16] compare digitalization with the GOELRO plan in the USSR in terms of significance and potential social consequences, the implementation of which allowed the Soviet Union to become a superpower in the future and compete on equal terms with the United States. In modern Russia, digitalization is also receiving close attention. In 2017, the Digital Economy program was adopted, the goal of which is the digital modernization of Russia. The implementation of this project requires complex efforts not only of an economic, but also of a social cultural plan, since without the training of high-level specialists capable of creative innovative solutions, the implementation of this task is impossible. The country's competitiveness, the ability to maintain its own independence directly depends on the degree of digitalization. The Chinese company Hauwei analyzed the degree of development of digitalization in various countries. According to 2016 data, Russia took the 26th place in this rating. Such indicators are due to the fact that, despite the fairly high level of Russian specialists in the field of information technology, over the years of perestroika, the communications industry in Russia was destroyed. The use of foreign technologies, most of them American, in the context of cyber wars, the purpose of which is global networks, leads to dependence on the largest corporations closely related to the US military structures. In this situation, there is a need for a breakthrough, a kind of leap towards creating the latest infrastructure based on our own developments. The solution to this problem is impossible without modernization of the system of higher professional education and training of personnel of a new formation.

A big problem in the training of highly qualified specialists in Russia is the practice of leaving specialists trained on public funds to work in foreign companies or emigration to European countries and the USA. The development of targeted training of students at the expense of interested firms, although taking place, is still insignificant. Insufficient work is being done to attract the most talented schoolchildren for education and work for the needs of the state.

The widespread use of telecommuting, which makes it possible to carry out activities anywhere in the world with the availability of high-quality communication means, leads to increased competition for attracting talented specialists, which in turn requires painstaking work with potential employees, identifying and maintaining relationships with talented children, starting from school and student audience before starting an independent professional activity. A good example in this regard is the practice of Japanese firms and corporations that maintain long-term contacts with schoolchildren and students, creating the basis for subsequent professional activities within the firm.

The needs of the economic sphere stimulate the digitalization of the education system. In modern research literature, there are heated discussions about new opportunities and their attendant risks [21, 11].

Two extreme positions are standing out: firstly, the absolutization of positive effects from the introduction of information and technological innovations into the education system [11, 21, 20]. Secondly, an extremely cautious attitude towards digitalization due to fears of destruction of the cultural and moral foundations of the educational process and the transformation of knowledge into one of the types of services that function according to the laws of purely market relations [9]. Representatives of the third position, while not denying the positive effects of the introduction of the latest opportunities generated by the development of information technology, at that time consider it important to preserve the traditional foundations of university education associated with corporate values, real, not virtual communication, a special atmosphere of unity and trust, which is characteristic for many universities [2]. This approach seems to be the most balanced. This particular one that allows you to analyze both the innovative possibilities of digitalization in education and predict the risks associated with them.

2. Achievements of Digitalization of Education

In modern scientific studies analyzing the shortcomings of the existing education system, special attention is paid to the fact that its basic approaches were formed and correspond to the era of an industrial society with its orientation towards a mass person, standardization, average indicators and insufficient attention to a non-standard talented person. It is assumed that modern digital technologies will be able to create a platform for the development of individual programs and educational

algorithms for each student. Biometric recognition technologies are actively developing. Already, many banks, in particular Sberbank, carry out identification by voice and facial features. Work is actively underway to determine the psycho-emotional reactions of a person using artificial intelligence systems when perceiving this or that information. Integration into a single system of "smart watches" [measurement of pulse, pressure, etc.] allows you to receive data on physiological reactions directly related to human brain activity. Based on artificial intelligence systems, it becomes possible to record not only the degree of attention of the student, his interest, reactions to various forms of information presentation, but also the assessment of its content. The collected statistical data processed by big date technologies allow you to create adapted educational courses that take into account both the individual characteristics of the student and his state at the moment [9]. The absolutization of this approach generates risks of atomization of society. As a result, extreme individualism and variability of learning can lead to an even greater increase in inequality, consolidation of the status of an outsider, and extreme polarization of hierarchical statuses. The idea of mutual support, assistance, joint solution of educational problems is completely leveled. Given the nonlinearity of the educational process, the influence on it of many external factors that cannot be taken into account and analyzed by artificial intelligence systems, such an individualization of learning creates insurmountable obstacles to the intellectual leap that arose under the influence of a sudden interest, a factor random for the system. In addition, the very logic of the development of new network technologies requires collective creativity, which implies mutual enrichment and support.

The intensive development of network technologies, project-oriented activities in the modern networked society give rise to the need to develop the ability to collectively interact. Teamwork comes to the fore. The focus on competition, individualism, the desire to dramatically increase their status in the hierarchical structure are becoming less relevant than solving a common problem. The most demanded qualities of a professional are the ability to work in a team, interact fruitfully with colleagues, and be ready to neglect personal interests in order to achieve a common goal.

The intensive growth of information in modern network structures leads to the fact that specialists are unable to analyze the sources published on their subject. This leads to the demand for expert systems of specialists based on technologies of "collective intelligence" [19]. New network technologies provide an opportunity to create specialized professional associations within the network structures of the global level, using synergistic principles of self-organization. Such networks combine and process, on the basis of artificial intelligence technologies, the currently available stock of knowledge and heuristic ideas produced by specialists included in such a network.

Automated search engines are able to find structure and correlate the necessary information necessary to solve a specific problem. Professional activity becomes impossible without the use of such networks. The system monitors the contribution to the solution of a common problem of each participant, performs ranking depending on the ability to fit into the team and contribute to the solution of a particular problem. It is based on activity in the network and contribution to solving common problems that the status growth of a member of the network community depends. There is an objective need to merge this kind of smart grids into larger structures in order to enhance their intellectual capabilities. Potentially available knowledge and its carriers can create a single system, which is called collective intelligence [5, 10]. Thus, a contradiction arises between the possibilities of orienting certain structures of modern society towards the ultimate individualization in education and the need for collective forms of creativity.

2.1. Socio-Anthropological Risks of Digitalization of Education

Digitalization processes allow converting any parameters of a person's and organization's activity into digital. On the one hand, this makes it possible to trace dynamics, identify growth trends, and conduct comparative analysis based on various ratings. At the same time, standardized ranking systems do not allow capturing the versatility of the educational process, the flexibility of human activity, which leads to distorted and often unjustified conclusions about educational processes. The famous American mathematician K. O'Neill in his book “Murderous Big Data. How mathematics turned into a weapon of mass destruction ”[13] shows with vivid examples how the use of formalized ratings in the United States led to the layoffs of many talented teachers, and personnel machinations

of a university in Saudi Arabia allowed him to enter the top ten universities the world. A serious danger is the tendency to minimize or even eliminate the human factor in assessing the knowledge of schoolchildren and students [3, p. 156-157]. The pedagogical community is actively discussing the initiative on the need to cancel all exams with the student's electronic biography, in which, throughout his life, starting from school, all aspects of his educational activity, answers, grades, absenteeism, participation in circles and olympiads, etc. are recorded in the system. Based on the processing of these data, a final assessment is derived, which has an average value, about the degree of its preparation. In the future, already at the university, this biography continues to expand. This does not take into account side factors, emerging force majeure, social and cultural context, etc. It is no coincidence that this approach is assessed as an attempt to organize totalitarian control and leveling the human factor [3].

The risks of totalitarian control over a person are also associated with the active development of a new communication environment - Neuronet, based on new neurocomputer interfaces, virtual reality headsets, and the use of elements of hybrid intelligence. For such a complex system, it becomes possible to analyze the user's emotional state [6], his unconscious reactions to certain stimuli and, ultimately, the creation of “exocortex” technologies, representing an external map of the human psyche, which is actively involved in learning [1].

Connection to an integrated communication system of virtual voice assistants, such as Siri, Alice, Cortrana, etc. based on self-learning computer neural networks makes it possible to control and direct the process of socialization. Starting from childhood, the choice of fairy tales, cartoons, and topics for conversations can be carried out purposefully. In the future, this may lead to a deepening of the already existing risk of inequality, now not only in access to material goods and digital technologies, but also in an orientation towards acquiring knowledge. A significant part of the new generation will receive information in a ready-made, already packaged form and will not seek to find a new one. However, according to the authors of the ambitious project "The Future of Education: a Global Agenda", this is a natural process. From their point of view, “new human material” arises: “the proportion of students who do not see any special value in education and have no particular interest in the content of the educational process is increasing” [19,p. 7]. To attract them to the educational process, it is necessary to compete with the media, which ultimately leads to the gamification of the educational process. In this regard, a non-creative, zombified majority is formed, capable of assimilating only "package solutions". The second category is "the conscious part of students who are looking for their own path and understand the meaning of self-development." For this potential elite, all conditions must be created that can be created only in the most developed countries [19]. Total digitalization, which provides quick access via smartphones to prepared "package solutions", potentially leads to the establishment of a kind of "educational imperialism", which sets the demand for new types of competencies and new forms of training. Since new digital technologies, according to the authors of the report, are transnational and transcultural, i.e. are able to penetrate everywhere, it is necessary to create and implement new educational forms, provided that the old ones are destroyed, the standard versions of which are the forms developed by the countries of the so-called North. Standardized "packaged" solutions are being prepared for developing countries.

Digitalization processes within the framework of the fourth industrial revolution [15] also create specific risks of losing connection with the natural world and replacing it with an artificial one [7]. In education, augmented reality pitchforks are gaining increasing importance [1], which leads to a loss of understanding of the borderline between the real and virtual worlds. Already now there is a big problem of selecting information, separating it from pseudoscientific and fake information [14].

Modern digital technologies make it possible to simulate any type of reality, create virtual personalities [17], imitate science and substantiate the most extravagant ideas. The widespread use of MOOCs in the modern educational environment as open online courses, on the one hand, provides access to high-quality resources. However, on the other hand, it creates a danger in the pursuit of attracting customers, and since obtaining a certificate is usually payable, falsifying the submitted material by presenting it in a fun way, sometimes having nothing to do with science. The orientation towards education as a commercial service, which must be imposed on the consumer in any way, using such new approaches as neuromarketing [1], leads to the threat of devaluation of the information content of many such courses. The policy of gradual abandonment of the teacher as a mentor, which is openly stated in the report on the project "The Future of Education: a Global

Agenda" blurring the line between reality and virtuality. We can agree with V. Kutyrev that technological progress should not lead to human regression.

2.2. Social and cultural problems of digitalization of education

The implementation of digitalization of education allows us to remain at the forefront, providing science, technology and production with qualified personnel. At the same time, it is necessary to resist attempts at extreme globalization of this process, based on the policy of neoliberalism and the ideology of transhumanism. It is extremely important, on the basis of cultural and national specifics, to create barriers for manipulating the socialization of the individual, leading to extreme individualization, the destruction of any ties in the educational process to the national and cultural identity of the country. Passion for the pace of digitalization often does not allow realizing the significance of this factor. Although there are positive examples. Virtual assistant Alisa trained on the texts of Russian classical literary works. Unfortunately, the significance of this approach is not fully understood. The importance of the teacher's personality is also often ignored. Projects of replacing him with a virtual tutor carry tremendous destructive power. At the same time, in our opinion, harsh criticism of technocratic transhumanist projects will make it possible to find balanced decisions that will provide Russia with an independent and worthy place in the digital world.

The study showed that the digitalization of the education system is due to an objective need associated with the development trends of a networked society and the fourth technological revolution. At the same time, socio-anthropological risks were identified associated with the absolutization of the possibilities of new information technologies. Extreme individualization of the educational process, ranking of students based on big date and emotional artificial intelligence can lead to the disintegration of social ties and the atomization of society. Further strengthening of inequality is unacceptable: the division of students into a creative elite and a zombie mass capable only of consuming clichéd packaged information. There are real threats of manipulating learners in the process of socialization by virtual voice assistants based on self-learning neural computer networks. The filling of their content should be controlled by both the public and government agencies. It is inadmissible to replace a real teacher with a pronounced worldview and value position with virtual mentors. These measures can reduce the risks of total control over an individual by corporations developing intellectual programs of a new generation. The approach to the educational process as the sale of educational services, its assessment mainly from the standpoint of economic efficiency, calls for special discussions. It is extremely important to preserve ties in the educational process to the cultural and historical context, historical memory and moral values. It is important to cultivate a respectful attitude towards the natural environment, towards living things as the highest value.

3. Acknowledgements

The work was carried out within the framework of an internal grant from the Russian State Social University based on the results of the research "Analysis of the target markets of educational services of the university." Lot 1, order dated April 30, 2020 No. 530, order dated May 26. 2020 No. 593.

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