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International Scientific Conference**EVOLUTION OF EDUCATIONAL REALITY: DIGITAL ASPECT**Victoria Viktorovna Vikhman (a)\*  
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**Abstract**

This article is aimed at understanding the changes in the digital educational reality, which is understood as the social phenomenon of education existence format connected to all the processes occurring in it. It seems that the educational reality is constantly undergoing obvious changes every time digital and technological challenges emerge in society. Such technological challenges include the development of computer innovations and industrial technologies. The Internet, artificial intelligence technologies, big data, virtual reality, the Internet of things, and so on can be called bright markers of technological computer trends as they appear and integrate into society. Each historical era of the existence and formation of education as a key social institution of the society can be aligned with several specific technological trends. It is argued that the evolutionary process of changes in educational reality in terms of the introduction of digital technologies into it (digitalization, networking) is natural and logical. It is seen that education has passed certain stages in its development from the "universal computer literacy" of the 90s to the formation of a digital network reality of the present. The novelty of this work lies in the acceptance of the following circumstance that education enters a new development stage of its reality, namely, the birth of its newest network formation. The result of this paper is the assumption that this type of educational reality can change not just the idea of education as a social institution itself, but the nature of the transformation processes occurring in it.

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## **1. Introduction**

Digitalization...Network management...Virtualization... headlines of scientific publications are full of such terms, transforming, marking, and fixing a new reality of education. A comprehensive "digital" agenda and initiatives are shaping a new type of educational reality, designed to bring society and education to a different level of development which is integration, global and cross-border (Vikhman, 2020). But the question is what preceded this terminological turn in educational reality? What digital impressions did the processes of integrating computer technologies into education make?

Let us immediately note the following key aspect. This paper does not set the task of deep historical immersion in the depths of computerization of educational realities and practices. The main message is to identify the key trends in the computerization of education and to fix the stages of this process.

## **2. Problem Statement**

Scientific and technological breakthroughs and innovations invariably transform the educational reality in terms of its formats and ways of existence. A natural question arises: is it possible to identify the main characteristic features of the digitalization of domestic education in the nearest historical periods, as a kind of response to such scientific and technological challenges? The problem situation, this work is aimed at solving, can be formulated in the form of a question: is it possible to record the periods of domestic education in which it existed in the development of its digital image? And what is characteristic of them?

## **3. Research Questions**

The paper raises the following questions: what stages of its development has education as a leading social institution passed in terms of transforming its reality, responding to scientific and technological challenges? What digital features are characteristic of certain stages?

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

The given paper is aimed at analyzing the ontogenesis of educational reality in the context of the evolution of its digital existence formats, by highlighting the era and the key aspects of the introduction of digital technologies in educational realities.

## **5. Research Methods**

The methodological basis of the given paper is, on the one hand, an appeal to the historical method, which allows us to trace the main trends in the formation and specifics of the educational reality of domestic education. On the other hand, the hypothetical-deductive method is aimed at revealing the patterns of development of digital educational reality and reflecting the stages of its formation.

## 6. Findings

It is more expedient to conduct a multi-sided analysis of the development of educational reality in the context of the inclusion of computer innovations in educational practices from the moment domestic education was discussed at the state level, as a national strategic task.

A rather bright, but quite modest by today's standards, the example of the appeal of domestic education to computer technologies can truly be called the era under the slogan "everybody should be computer literate". Let us recall how the national agenda demanded all secondary-level educational institutions to integrate the course "Fundamentals of Informatics and Computer Technologies" into the educational process. There was not a single school or college in our country, where this discipline would not be taught by the end of the 90s. As a result, society began to produce trained specialists with an understanding of the basics of computer knowledge. By the beginning of the 21st century, the era aimed at introducing a new generation to the possibilities of computer technologies in the educational process has ended. This educational reality can be described as a Pro-digital educational reality.

The beginning of the 2000s was marked by the continuation of the agenda for the growth of computer literacy in domestic education, both among teachers and students. We mentioned earlier that any scientific and technological breakthrough in society was also projected on education. Thus, from 2000 to 2005, the growth of technological capabilities in terms of connecting both within educational institutions (local) and a limited number of them (regional) to computer networks brought educational reality to a new stage of development, which we call digital educational reality. At this time, training programs and simulators in various disciplines, which were localized on single servers within the classroom or institution, were introduced into the educational process. This allowed all students of the class to freely access the server and be simultaneously included in the educational process. These were the first real network processes in educational practices. The growth of technological capabilities has allowed educational reality to reach a new level. The widespread connection first to regional and then to global networks caused a surge of interest in the computerization of education.

Since the introduction of the Internet into the educational process in 2015, in terms of implementing electronic, on-line, open, and other variations of education, modern technologies were no longer considered a breakthrough, but an educational daily necessity. No one will be surprised by the fact that the participants of the process are located apart from each other, but at the same time, they cooperate during the class. It is possible to call this stage of development of educational reality such as networking. In other words, education is included in the educational networking reality.

The emergence of new technological trends, such as artificial intelligence, the Internet of things, virtual technologies, digital twins, blockchain technology, etc. inevitably led to the fact that the educational reality began to look closely at them. It can be assumed that a new era of educational reality that is the latest network educational reality is now beginning to emerge. What is the latest network reality of education? What is it characterized by?

First of all, this stage is no longer just the digitalization of education, as a way to enrich the educational process by using the best computer technologies. This is a higher stage which is understood as digital transformation (Kozlova, 2019). It is obvious that "we are witnessing a huge technological

revolution that takes place in an extremely short time from a historical point of view, changing almost all the aspects of human activities, and, as a result, completely transforming the field of professions" (Serditova & Belotserkovsky, 2020, p. 9). The digital transformation paradigm is characterized not by a simple trivial inclusion of computer technology achievements in various educational practices, but by a joint change in personnel support, management methods, and mechanisms in education. In other words,

by identifying the key vectors and tasks of the development of pedagogical education, it is reasonable to set goals, plans, and discover new meanings of teacher training under the plane of digitalization of educational reality", namely, "changing the structure of professions (alongside with changing the nature of labor functions of existing professions); the de-localization of labor markets and increasing their mobility; deepening social and labor stratification and inequality with a sharp devaluation of low-skilled labor. (Makarenko et al., 2020, p.114)

Secondly, this era has its markers. For example, virtual laboratories that

can give students meaningful virtual sensations, with the help of which it is possible to repeat any failed experiment or expand knowledge in the practical part. In addition to the advantages in obtaining results, the interactive nature of such teaching methods provides an intuitively understandable and pleasant learning environment and interaction with a virtual laboratory. (Nemtinov et al., 2020, p. 161)

and simply integrated elements of virtualization of both educational and scientific-educational processes, in particular,

the forms of implementing students' scientific creativity in a virtual environment are so diverse that they cover almost all areas of Internet technologies. They provide a qualitatively new level of scientific interaction that allows one to interact as quickly, efficiently, and professionally as possible. They meet young people's information needs, expand the potential of traditional forms of students' research work, promote the establishment of professional contacts, and in general influence the innovative development of scientific activities in educational organizations. (Fedotova, 2017, p. 116)

Let us take artificial intelligence technology, for example, which has aroused particular interest in the educational scientific community (Akhmetova, 2020; Paskova, 2019; Polyakov & Belonovskaya, 2019; Pyrnova & Zaripova, 2019). In search of the latest tools in the field of management decision-making in education, researchers turned their attention to distributed registry technologies or blockchain (Bogdanova, 2017; Zaslavsky, 2018). This technology, from these scholars' point of view, has all the necessary and sufficient potential to obtain a certain managerial universe in terms of administrative and legal support for education. In particular,

blockchain technology opens up great prospects in improving the concept of e-learning, taking into account the current requirements of the digital economy. This technology can conceptually change the storage system of data archives, increase the reliability of information protection against falsification, and significantly speed up the execution of requests for information and data processing. (Shamsutdinova, 2018, p. 56 )

Scientific and technical innovations are coming closer to the boundaries of educational realities, for example, they are looking at the technology of digital twins concerning real educational objects and their digital shadows, but unfortunately, at present, the assessment of the effectiveness of the technology implementation in both domestic and foreign education systems does not have sufficient foundation.

Leaving the assessment and social effects of the introduction of end-to-end modern technologies in education out of the scope of this work, we note the key aspect that is the process of forming educational reality, is closely related to them. Technologies act as a kind of catalyst for modifications in education, changing the face of educational reality.

## **7. Conclusion**

Education as a leading social institution of our society is closely related to the technological processes taking place in it. The digital image of educational reality is directly influenced by key trends in computers and other technologies. Educational reality undergoes several transformations, reacting to their integration into educational practices.

The formed type of educational reality is nothing more than a result, a type of scientific and technological breakthrough projection born by each era. A multi-faceted analysis of the computer technologies stages introduced in education has shown that educational realities have gone from the trivial and widespread introduction of the national digital agenda of computer technologies in the educational process to the digital transformation of the entire educational paradigm. And if this process can hardly be called digitalization, but rather pro-digitalization of education in the first case; the current state of the latter is dominated by the benefits of the digital world. In other words, it seems that the process of educational reality transformation is a transition from the pro-digital era to a new digital era in terms of its usage and coverage. Transformational processes taking place in modern educational reality are exclusively network-based covering the space from the educational process to management decisions.

To sum up, the educational reality is determined by scientific and technological trends and its form is a response to their challenges. But is the educational environment capable of using all the technological innovations or are there boundaries of what is reasonable and necessary? Or have the digital technologies already integrated into education had any effect on it? These are the types of questions to be considered in our further works.

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