

Changing the Educational Paradigm in Post-Pandemic World: Possibilities and Risks of Artificial Intelligence Using

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Abstract: *Modern technical innovations are marked by an extremely powerful symbiosis with scientific achievements. Today, there are a number of technologies that can reproduce human thinking and such skills as understanding complex information, drawing independent conclusions, and the ability to engage in meaningful and coherent dialogue. They testify to the possibility of innovative achievements in neuroscience to individually assess the level of concentration and perseverance of students, pace, best time to learn, etc. The robots are not able to inspire despite their computing power, simplicity of interface and ability to store information. They lack empathic abilities. They do not fully promote the realization of social skills. The global pandemic has actualized and intensified the introduction of artificial intelligence in the practice of education. Researchers have expressed a number of concerns that artificial intelligence in exchange for the rapid acquisition and effective use of a variety of information by a person will help to do levelling of the spiritual and emotional sphere of a person, i.e. "human nature in a human being."*

Keywords: *artificial intelligence; pandemic; education; technical innovations; empathic abilities.*

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Introduction and relevance of the research topic

The events surrounding the pandemic have shown the fragility and tenderness of the human world. The virus once again reminded us of what we had so passionately and persistently denied. Namely, that we are mortal, that we are not separate from the living world, that we are created from a rather delicate matter. On the contrary, we are quite strongly connected by invisible threads of dependence and interaction with the world of all living and non-living things. The pandemic caused a large-scale crisis and human social existence. The point is that it destroys the normal functioning of public life, exacerbating the situation of uncertainty and unpredictability, causing a loss of integrity within the meaning and comprehending of today's realities. Modernity is full of alarming forecasts and dangerous risks, large-scale crises phenomena, etc., which destroy not only the basic structures of public order, but also the logic of their existence. Occasionality, spontaneity, probability, situatedness are increasingly becoming the determining factors in the development of the social world. Such a world is increasingly determined by the present, it happens "here and now" and it is unknown what will it look like in the future. The present is considered as a kind of bifurcation point, which contains a number of options both for the death of society and human being, and for their further development. It does not have a single centre that would determine its further progress. Everything is possible and acceptable in it.

It is obvious that humanity is experiencing a large-scale crisis of the current generation, the consequences of which are difficult to be predicted. The crisis nature of the situation is exacerbated by the fact that the intervention of the COVID-19 virus can serve as a dress rehearsal for the following crises: economic, political, climatic, sanitary, and so on. French sociologist Eva Illoous, analysing the research of infectious diseases expert Dennis Carroll, warns that unknown viruses will further threaten humanity in the future. This is due to the so-called "consequences of zoonosis", i.e. the results of increasing contact between pathogens of animal origin and humans. These contacts are caused by an increasing human presence in ecozones, which for some time remained out of our reach Illoous (2020). Crises are always perceived as a threat, as a collapse of the stable and well-established things, which brings everything unknown and unpredictable. However, crises are a necessary condition for development. They, on the one hand, symbolize going beyond the clear, predictable, comfortable, etc., and, on the other hand, open opportunities for reaching radically new horizons of development. Changing the situation and its reassessment,

transition to new stages of development testify to the viability of society. Crises put society or a human being in a marginal environment or a neutral zone, i.e. in a situation where the usual stereotypes and behaviour no longer work, and new ones still not exist. The situation is experienced as a crisis, when a person ceases to see possible ways out. But at the same time, a person is open to new experiences during a crisis, which means that a crisis can serve as a basis for positive change and can become a positive part of personal or social experience. The pain that a person feels during a crisis motivates him/her to seek new ways, solutions, resources to acquire new skills, knowledge and as a consequence for development. The basic idea is to understand that moments of crisis are not only manifestations of social disease, but also the search for potentially new conditions, resources and opportunities. Each civilizational crisis that humanity has gone through had its own context and content. Modern crises are associated with the depletion of the potential and drive of industrial society. They symbolize the rejection of the previous belief in social progress in favour of ambivalence and eclecticism.

Today, along with the awareness of the crisis, there is an active search for solutions and attempts to understand what is happening to us as a human community, how it will affect the world and our lives in the future, what to prepare for, what risks and problems we will face in the future. The peculiarity of the situation is that a number of issues that have arisen before humanity, despite their depth, severity and lack of any standard options and algorithms for solving, will have to be resolved quickly and radically to somehow secure ourselves in the future. Decisions that could normally take years of reflection and discussion are now made in a matter of hours, so the alternative is even worse (Hanaba et al., 2020). Today, entire countries are taking part in large-scale social experiments. Hardly anyone would dare to do such experiments at normal times. And the times are completely different today. One of such experiments is the education system transfer into online mode. We are talking about network education. Despite the fact that it has become relevant and widespread in recent decades, the mass transfer of the educational system into online mode has caused a number of problems, difficulties and risks. They have their own specific nature in different countries, but there are a number of problems that are common to many countries: inequality of consumer access to educational resources, lack of modern educational programs, insufficient level of media literacy of some teachers and so on. Of course, the governments of different countries are working to solve these problems, so to speak, at the tactical level.

However, a number of unresolved strategic issues remain. Given that education is one of the main resources of social development, how will changes in education affect further social progress? What changes will the teaching style undergo and what will be the role of the teacher in the learning process? How will the content and methodology of teaching change under the conditions of transfer to online mode? What new teaching aids will become widespread in the near future? Will the traditional education system be preserved and in what form? How will modern scientific and technological innovations affect the field of education? etc. Thus, eternal questions need to be rethought: what to teach, how much to teach, how to teach, why to teach. Finding answers to these questions in the context of civilizational challenges will not merely help to eliminate the contradictions between them and those forms of life practices that are broadcast by educational institutions. They will also allow constructing education much-in-demand in the modern information technology age, which is able to function effectively in an era of crisis and constant change, and so on.

Of course, the analysis of the outlined number of issues involves a number of thorough studies in the future. Within the article, we will consider the possibilities of using artificial intelligence in creating an educational paradigm.

Artificial intelligence in education: opportunities and risks

Modern technical innovations are marked by an extremely powerful symbiosis with scientific achievements. Today, a real revolutionary breakthrough is taking place in the field of science that results in a series of discoveries referred to by experts as nano-bio-geno-neuro-info-computer-network and other technologies. Today, there are a number of technologies that can reproduce human thinking and such skills as understanding complex information, drawing independent conclusions, and the ability to engage in meaningful and coherent dialogue. These technologies in the field of scientific research have received a common name – artificial intelligence. One of the subtypes of artificial intelligence is machine learning. Such learning is a process in which software learns on the same principle as humans. During such learning, the program analyses significant layers of data and looks for regularities to classify information or create forecasts. The cyclical nature of this algorithm allows the program to “learn”, changing its intentions depending on previous findings. Artificial intelligence can perceive much more information than humans can. And therefore perform tasks much faster and more accurately. In general, artificial intelligence is an entire digital “nervous system” that is able to exceed the intellectual potential

of a person of any profession. This circumstance allows a number of world analytical institutions to make serious assumptions and predictions not only about the replacement of almost half of current labour actions and operations with “smart machines”, but also to express concern that the world of machines will eventually make significant adjustments to the human world including a number of dependencies and own domination. According to a recent report by the McKinsey Global Institute, about half of today’s labour operations could be automated by 2055 (Manyika et al., 2017). Can “teaching” be present on this list? What is the role of artificial intelligence in educational institutions? The opinion of the well-known physicist M. Kaku is interesting. He outlines the great prospects for the introduction of artificial intelligence into education in his works such as “The Future of the Mind” (Kaku, 2015) and “Physics of the Future” (Kaku, 2011). Yes, the researcher believes that education will be based on Internet technologies and gadgets such as Google Class in the near future all. They are transformed into tiny lenses and will be able to download all the necessary information. Already today, there are glasses of augmented reality, which have such a function. Therefore, in 1-2 years, schoolchildren and students will be able to easily search for answers on the Internet on exams. It will be enough for them to blink and the necessary information will appear at once (Kaku, 2015). As a result, on the one hand, there will be no need to overload the brain with unnecessary knowledge, most of which, as practice shows, is not used in the future. On the other hand, the release of part of the mental reserve will lead to a reorientation to the development of the ability to think, analyse, argue and make decisions. Of course, a person will become more autonomous, he will take more responsibility for his life and the role of self-education will grow accordingly. If the innovations of artificial intelligence are already able to offer a number of technical opportunities for self-education, then a person is not always intellectually and emotionally, psychologically ready for it. It is about the ability to take a conscious approach to lifelong learning. Another feature of the education of the future will be that a person will be able to study not only in an educational institution. Already today in social networks there are many educational programs, educational platforms that help a person to acquire knowledge in any field. In the future, these technologies will not only become widespread, but also undergo qualitative changes. Thus, cities of the near future, filled with information and communication resources, will in themselves become active participants in the new educational environment. In particular, games can be offered for children, which will take place within the city environment for many days and months. We will learn to equip

textbooks with artificial intelligence and they will be able to select educational materials such as photos, texts, videos, tasks and diagrams according to the needs of a particular student (Kaku, 2011). Even today, it does not look like a fantastic circumstance that proves the possibility of innovative achievements in neuroscience to individually assess the level of concentration and perseverance of students, pace, best time to learn, how long it takes for information to pass from short to long memory, etc. Thus, the main aspect of learning is to create an individual trajectory for each student's learning.

What dangers and risks of introducing artificial intelligence into the practice of education do we see today? First, artificial intelligence lacks empathic abilities. Robots are not able to inspire despite their computing power, simplicity of interface and ability to store information. Inspiration is a product of empathy. This is a state when the teacher can "join" the inner-emotional world of the student through sincere approval, emotional praise or even through non-verbal behaviour in the audience. An educator can inspire his students to learn, create and succeed. Artificial intelligence with state-of-the-art facial imaging cannot assist in such a case. In this way, values are not nurtured in the human soul, are not an attribute of his inner world. They are modelled using certain technologies and are instilled in a person from the outside, depending on the circumstances and needs. Second, artificial intelligence does not fully promote the social skills needed to navigate in our complex world – where, we are constantly negotiating, coordinating our actions, motivating and persuading. Third, computers do not know what to do next, so homo sapiens will continue to ask questions that need to be addressed. It is also important to remember that observation and imitation are important aspects of primate learning. A person learns best from imitation and practice with other people.

Ideas of introducing artificial intelligence into the practice of education

In general, innovations of artificial intelligence were quite carefully rather tested than implemented into educational systems prior to the pandemic. An exception may be the education of leading Asian countries. In particular, the Chinese have been increasing the number of classrooms equipped with artificial intelligence cameras and brainwave trackers in recent years. Educational institutions in South Korea and Japan use a variety of humanoid robots to better learn a foreign language.

The events of the pandemic did not just make serious adjustments to the learning process. They have accelerated and deepened the crisis of the

classroom model of education, which has prevailed since the Enlightenment times. This model of education is focused on scientism, fundamentality, the concept of completed education, subject-fragmentary, unified and standardized construction of knowledge, disciplining, demonstrative-illustrative construction of learning, didactic isolation of educational content and appears as a rigidly structured space in which the use of information sources tends to narrow to instructions. It does not meet modern socio-cultural needs and necessitates the reorientation and modernization of education in the direction from the person who is being taught to the person who learns. If the network model of education was considered as an alternative to classroom one, now under pandemic conditions, it turned out to be almost the only possible in the provision of educational services. In spite of the fact that the network model allows everyone to learn at their own pace and helps them adapt to different types of tasks, perform individual diagnostics and track positive learning progress, we believe that machines cannot replace “live communication” of a teacher. A teacher is a person who not only has a certain hemisphere of knowledge, but also possesses unique human skills, values, individual aspirations. Innovations in artificial intelligence must be combined with an active human facilitator. They are designed to make the work of a teacher easier and more efficient. The routine in education should be gradually removed and passed on to intelligent assistants. Scientific and technical innovations transform the process of acquiring knowledge into a kind of industry, producing a number of social, including educational phenomena. They contribute to the development of visualization in educational activities, etc. radically change previous perceptions of the learning process. They take it beyond educational institutions, making it open and accessible, contributing to the formation of digital culture and connectivism as a principle of education, and so on. Priority is given to the creation of new knowledge, rather than the consumption of ready-made information, the ability to comprehensively and contextually solve problems and outline new ones in familiar situations, the ability of a person to develop and self-develop for life opportunities.

Conclusions

Education has always been one of the important factors of human socialization. It acquires its new characteristics and outlines in the context of the demands of a certain historical epoch. The powerful development of the information technology sphere produces a special cyberspace and requires a different education. Such education involves the use of artificial intelligence and is characterized by a high level of mobility, is open and accessible to a wide range of people. The global pandemic has accelerated the transfer from

the classic classroom system of education to the network one. It updated and intensified the introduction of artificial intelligence in the practice of education. The robots are not able to inspire despite their computing power, simplicity of interface and ability to store information. They lack empathic abilities. They do not fully promote the realization of social skills. Researchers have expressed a number of concerns that artificial intelligence in exchange for the rapid acquisition and effective use of a variety of information by a person will help to do levelling of the spiritual and emotional sphere of a person, i.e. "human nature in a human being." Undoubtedly, these issues require a number of studies and are relevant in a pandemic, crisis society.

References

- Illoous, E. (2020, Mars 23). L'insoutenable légèreté du capitalisme vis-à-vis de notre santé. *BIBLIOBS*.
<https://www.nouvelobs.com/idees/20200323.OBS26443/l-insoutenable-legerete-du-capitalisme-vis-a-vis-de-notre-sante-par-eva-illouz.html>
- Hanaba, S., Mysechko, O., & Bloshchynskiy, I. (2020). Solidarity of Efforts as a Common Condition for the Survival of the World in a Pandemic. *Postmodern Openings*, 11(1Supl2), 29-38.
<https://doi.org/10.18662/po/11.1sup2/137>
- Manyika, J., Lund, S., Chui, M., Bughin, J., Woetzel, J., Batra, P., Ko, R., & Sanghvi, S. (2017, November 28). Jobs lost, jobs gained: What the future of work will mean for jobs, skills, and wages. Report. *McKinsey Global Institute*.
<https://www.mckinsey.com/featured-insights/future-of-work/jobs-lost-jobs-gained-what-the-future-of-work-will-mean-for-jobs-skills-and-wages>
- Kaku, M. (2015). *The Future of the Mind: The Scientific Quest to Understand, Enhance, and Empower the Mind*. Anchor Books.
- Kaku, M. (2011). *Physics of the Future: How Science Will Shape Human Destiny and Our Daily Lives by the Year 2100*. Knopf Doubleday Publishing Group.