

EDUCATION FOR FUTURE WITH DIGITAL TEHNOLOGIES

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Abstract. Digital society is the result of the invention of computers and the creation of the Internet. It was created new opportunities for communication and receiving information. People can find data of many scientific achievements and cultural particular qualities now. Thanks to it people changed their attitude to education. The modern world is undergoing rapid transformation, dramatically changing the socio-economic structures and lifestyles of people.

Mankind has been approached to own cognitive limits through technological and social development (Malinetskiy G.G., Kapelko O.N., 2013: 193). Modern life requires widespread using of information and telecommunication systems and computers. It requires quality education for real results too. But quality of education is falling.

Cognitive limits are a definite condition of contemporary culture. The information and knowledge dimension has irrepressible and uncontrolled grow and characterizes on one hand civilization itself and on the other hand every individual sphere of knowledge. On the one hand there is an illusion that information is easy to find on the Internet, but on the other hand in this case the necessary information and knowledge volume for effective action cannot be obtain, understand and used. This limit can became as well serious obstacle for the civilization development, as resource limitations such as mineral resources, pure water and fresh air. Overcoming this barrier is largely due to the revision of form and content of education with wide using digital technologies with interdisciplinary approach.

Prior to the beginning of the XXI century, the basic form of education was based on traditions of antiquity. This tradition goes back to Euclid. Philosophy was the most popular scientific tradition in antiquity. Philosophers of ancient Greece were mathematicians mostly. We can prove this idea by mentioning Pythagoras, Democritus and of course Plato himself. Mathematical way of thinking about the world quantitative characteristics developed in the philosophy field (Malinetskiy G.G., Kapelko O.N., 2013: 197).

Now the importance of mathematics is increasing. It is necessary to calculate the resources to determine the necessary actions.

Social development very hardly depends of existent educational system. Education is a base for technological evolution that creates new opportunity for a society and its development. Social development very close connects with evolution of technologies also. It is creating base for economical development.

When mankind began using any technologies for the main purpose of education was creating elites. But technologies come for appeared not only technological elite, but some new ways for social life too. Thanks to digital opportunities now more and more people have new ways for education. That's why education is making life for all the people –not for elite better.

The waves of World economical development were described by Russian economist Nicolay Dmitrievich Kondratyev (Kondratyev, 1989: 523). They are connecting with technological modes and educational patterns creating new opportunities for designing new technologies and the Social development. As result of this connection we can definite a new technological mode for every economical wave. New technologies demand new types of education.

The using of digital technologies allows adding various forms of information for learning and adding different practices to consolidate the material. Digital technologies are giving the opportunity of the development of the education around the entire World.

The more difficult life is required the more training for new technologies and opportunities. Network communications gives a good role in bringing together more and more professional communities, with more than 64% of the participants being between 21 and 35 years of age. Thanks to digital technologies market is increases for educational practice. Many people offer educational services over the Internet and their quantity are growing every year.

Keywords: social development, economical waves, economical cycles, interdisciplinarity, innovative education, digital technologies.

Introduction

Problems of contemporary civilization are different from problems of previous epoch ones, but education has really inertness. According to special research, each technological regime has its own basic technologies. (Malinetskiy, G.G., 2015: 89-90). Changing of present educational approaches is result of our researches.

Contemporary education as a fundamental of receiving skilled personnel was studied by us in several research projects, as «Complex systems analysis and mathematical modeling of the world dynamics» has been implemented in the program of Presidium of RAS «Economics and

sociology of knowledge». This gives many opportunities to see and understand social dynamics and change it for the future.

Objectives / Purpose of the study

The main challenges to be faced humanity at our century are different from those already resolved. The aim of our research is to analyse new approaches in education connected with digital technology and interdisciplinary context. It has been established that a lot of catastrophes, wrong decisions, troubles had happened because there was no staff able to cope with these problems.

One of the new aims for education is to prepare staff for solving new problems facing mankind now. These problems have interdisciplinary character now so education must match them too. Digital technologies let us allow is connecting different areas of research into a single overall picture.

How educational policy could change in accordance with changeable situation in the World? Education gives opportunity all society for functioning.

Using self-organization and digital technologies for educational processes helps to explore and analyse the situation in educational area according with row of factors of increasing complexity of the social world. We try to formulate some ideas and proposals for changing educational approaches for correspondence them for future demanding. Implementation of new approaches for school and higher university education needs using digital technologies too. We consider digital innovations as a way for design this process.

Methodology

We can recognize that our education is today in front of its cognitive limits. New approaches in education connect with digital interdisciplinary context and self-organization (Malinetskiy G.G., Kapelko O.N., 2011: 76). You can listen to any lecture or its parts that are not immediately learned several times using digital recordings.

Basing on mathematical modeling of decision-making process in various fields it becomes clear which parameters are playing a most important role. Selection of the basic parameters or order parameters allows us to find new ways for future thanks to design new technologies in education.

Changing of educational approaches according the next technological mode allows create skillful staff for own technologies. We make research for every mode what kind of education needs for it.

Result / Findings

Technological development depends on economy conditions. The model of it was created by brilliant Russian economist Nicolay Kondratyev. He made a description with the waves of World economical development and showed

the mechanisms of innovation evolution (Kondratyev N.D., Yakovets Yu. V., Abalkin L. I., 2002: 551). The beginning of technological development goes back to 1770. Now we are seeing further development that corresponds to Kondratiev's research.

The first technological mode mostly associated with the appearance of the textile industry and mechanical engineering for the textile industry. England easily and quickly gained a new colony, including a huge India using the technology of the new textile industry and the military.

The second technological mode characterized with using of ferrous metallurgy, steam engines and the emergence of machine- and steamship-building industry. Scientific basis for this is the use of Newton's laws and mechanics. The use of steamships has given new and better connections between countries on different continents.

The third technological mode associated with using of inorganic chemistry, electric motors and steel allowed to develop the electrical and heavy engineering, to establish production and distribution of steel, power lines began to develop rapidly. Thanks to electrical power lines, Russia began to glow and shine in the evening and at night across the country.

The fourth mode is result of creation of internal combustion engines and petrochemicals allowing to create new industries such as automotive, non-ferrous metallurgy, oil refining and organic chemistry, the production of durable goods and synthetic materials and plastic products. Thanks to the fourth mode, Russia has received rapid social development.

Next, fifth technological mode was created with using microelectronic components. Thanks to it were created new kinds of industries, such as electronics one, fiber optic computer equipment, software, telecommunications, robotics and information services. A whole group of countries such as America, Japan, South Korea then China using these technologies have risen to the next levels (Malinetskiy, G.G., 2015: 89-93).

Now there is a transition from V to VI economical cycle and from V to VI technological mode. We can see at the Figure 1.

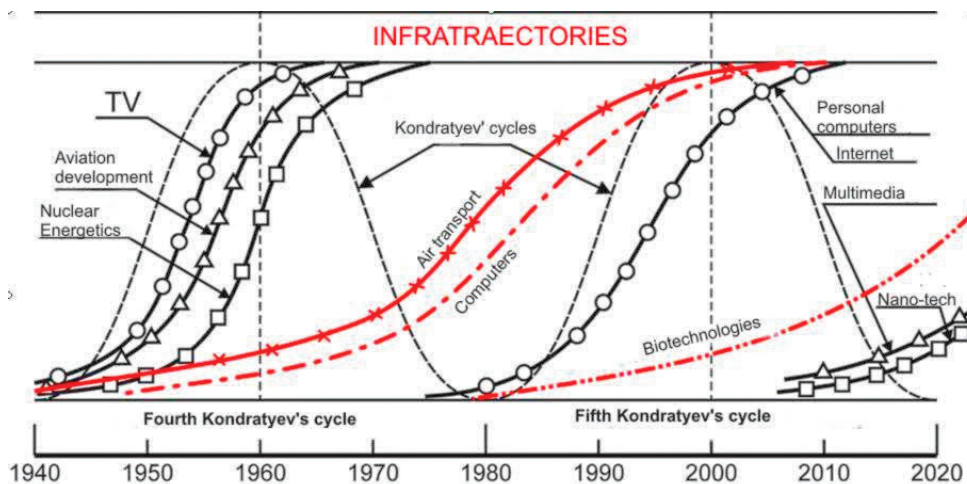


Figure 1 - Economics circles and innovations

As a result we concerned the changed education necessity and our point of view has been formulated. Alvin Toffler presented the following technological regime, which correlated with information technology and how they change education (Toffler, A., 1980: 266).

Ulrich Beck, a sociologist from Germany, called the emerging society a risk society, as it is a consequence of increasing technological, environmental, economic and social risks in the process of technological modernization (Beck, U., 1986: 544). Beck and Giddens both approach the risk society firmly from the perspective of modernity: "a shorthand term for modern society or industrial civilization... modernity is vastly more dynamic than any previous type of social order. It is a society... which unlike any preceding culture lives in the future rather than the past" (Giddens, 1991: 94).

There are differing opinions as to how the concept of a risk society interacts with social hierarchies and class distinctions (Caplan, 2000: 6).

Education is a product, which creates future and will be demanded tomorrow. It is necessary to realize the needs for the society, not only as for today but for tomorrow too. Now it makes easier with using digital opportunities.

Recommendation

All the social situations in the World have changed as many times before. So it is necessary to modify traditions too. Modern "Fast" world needs new educational approaches, so the new education and science must be different from the previous time. We suppose to change narrow education to interdisciplinary way. A lot of problems and risks of contemporary civilization get into interdisciplinary area and demand corresponding

specialists for solving. Our education has its cognitive limits and demands new ways for future. For overcoming the cognitive limits we have to mark out key essence algorithms of solution problems in different areas and ways of action that address the problem not a single person, but the whole team.

We recommend for successfully solving many new problems for human being in the new world, to use new digital technologies for education.

As the social situation in the World has changed from past then we have to modify our social traditions too. "Fast" world needs new educational approaches, the new education and science must be different from the previous. We suppose to change narrow education to interdisciplinary with digital technologies

We recommended to successfully solving new problems for human being in the new world, to use new technologies for education. Now we have a new approach in this direction, connect with digital mode. With using self-organization in educational process for selection some order parameters we can to find necessary steps for the digital process. As a result we can cut the time for studying and reach good results.

Conclusion

We conclude that education now became the most important for all society. The use of digital technologies allows expanding educational opportunities. Education is a product, which creates future and will be demanded tomorrow. It is necessary to realize the needs for the society, not only as for today (which is already can be regarded as the past for education), but for tomorrow. These needs are connecting with new digital technologies for new technological mode. The new technologies demand skill personal and became a great origin of a social risk. To decrease this risk we need to prepare and training people thoroughly for using the new technologies.

Using self-organization in educational process for selection some order parameters help definite really necessary steps. As a result time is cutting for studying. So education get new dimension and quality of education became a new characteristic for all the process with monitoring from very beginning till the end.

For technological mode we need prepare stuff for the new technologies such as bio- and nano- technologies, multimedia-programs and high humanitarian technologies using forecast and foresight based on mathematical modeling. This processes became base for development of civilization.

Important to create organization all-round complex approach for monitoring of the educational processes. This monitoring system of quality becomes now stimulus for educational institutions for maintenance of necessary educational level and improvement of quality of their educational programs.

And finally, we will briefly discuss new approaches in education connect with interdisciplinary context and digital technologies.

If we all succeed in working out a new interdisciplinary or synergies education, the chances for successful evolution of humanity in the XXI century really increase.

School teachers' and college professors' complains on generality of study programs, fragmentariness and incompleteness of modern education rise sharply nowadays. Science and industry leaders complain about the acute shortage of competent, creative-minded researchers. These are the signs that people today come very close to the cognitive barrier. If we want to overcome this barrier we need to learn digital opportunities and new interdisciplinary approach. Future human being must be a creator and not an appendage to a computer or other machine. "Leave to human being humanistic and to machine cybernetics" father of cybernetics Mr. Norbert Wiener said. And now we have to convert this challenge into reality.

The most important issue for today is public awareness of contemporary cognitive challenges and responses to them that we can and must give. This will determine our common future and good results are reaching with new technologies. The beginning of new history of human civilization uses new technologies, for example interactive forms of interaction have become one of the most popular areas of modern education so digital technologies are the key to the way to the future now.

Acknowledgements. Research of the authors partially supported by grants: Russian Fond for Basic Research, grants 18-011-00567 Interdisciplinary and methodological analysis of future design technologies and digital reality and 18-511-0008-Bel-a Interdisciplinary analysis of the ways of development and prospects of digital society.

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