Digitalization of education: problems of transition

By

Olga Vladimirovna Proshkina

Kazan Federal University, Candidate of economic sciences, associate professor, associate professor of the department of production management, Naberezhnye Chelny Institute of Kazan Federal University

+7-917-289-73-25

Id scopus: 57216807240

ORSID: 0000-0001-7309-494X

Email: ovproshkina.kpfu@mail.ru

Abstract

Relevance. Changes in modern society dictate the need for transformations in the field of education. The use of digital technologies in the organization of the educational process not only increases its effectiveness, but also contributes to the socialization and adaptation of students to the modern requirements of the information society. **Purpose:** to reveal the main problems of the modern period of transition to global digitalization of education. **Research methods:** system analysis; comparison and generalization method; analysis of literary, statistical and Internet data; observation. **The article analyzes** the modern information and communication educational environment, explores the problems of adapting the educational process to the requirements of the information society. The role of digital technologies and communication resources as the most important condition for quality education and successful professional implementation is disclosed. In addition to the technical difficulties of moving to a new level of educational communications, the article analyzes the difficulties of staffing and psychological restructuring of teachers. **Originality/value:** the state and main directions of the information transformation of society are assessed to ensure structural adjustment of the educational environment in order to increase the competitiveness of graduates and the country's economic growth. **The scientific and practical significance** of the study is to justify the need for technical, technological, financial, personnel, and psychological preparation of the society for an innovative transition to the use of digitalization technologies in the educational process. Keywords: education, training, quality of education, information technology, information society, digitalization.

1. Introduction

Over the past centuries, society has experienced four industrial revolutions that completely changed our lives. These changes also affected the education system. The restructuring of educational paradigms takes place with each new revolution in society.

With the development of digital technology, humanity has entered a new era of civilization. Radical changes affected not only science and education, but also the social sphere, culture, economy, and the labor market. The revolution of technological order entails personnel and social restructuring. A new network society, a new network culture, a new network consciousness is being formed. This transformation poses other moral aspects and values, the consequences of which we have yet to evaluate. All the more responsibility lies with those who are at the forefront of the fourth industrial revolution.

The degree of knowledge of the problem. Digitalization, information and

communication technologies, e-learning, open educational resources are very popular topics of discussion in the scientific community at present. It is simply impossible to list all the authors who have made a significant contribution to the theory and practice of using information technology in education. Some devote their works to the problems of introducing and implementing digital education in higher and secondary schools (Proshkina et al., 2019; Akol'zina, 2013; McKerlich et al., 2013), others consider technological factors of readiness for the transition to e-learning (Al-araibi et al., 2016; Asmas et al., 2016; Bychkova, 2011), while others study the impact of open education and information and communication technologies on the quality of education (Pitt, 2015; Grimaldi et al., 2019). Nevertheless, a systematic assessment of the modern educational environment from the standpoint of the technical, personnel, psychological, financial preparation of society for the innovative transition to digitalization of the educational process has not yet been given.

2. Methods

Research methods are system analysis, method of comparison and generalization, analysis of literary, statistical and Internet data, observation. The theoretical and methodological basis of the research is the scientific works of Russian and foreign experts in the field of digitalization of education, materials of international conferences and publications in world scientific databases, statistical data and regulatory documents. The practical basis of the study is the experience of modern practicing teachers, the results of a survey of students and a statistical analysis of their work with electronic resources.

3. Results and Discussion

The 21st century is the century of nano- and information technologies, and education in this area is no exception. It is difficult to challenge the importance of information and communication technologies for modern education, the quality of which moves to a new level due to their using in the educational process.

Thanks to the open dissemination of data, anyone can find the right information in a timely manner. This allows people not only to freely use publicly available sources, but also to actively introduce their developments and innovations (including in the educational sphere).

The emergence and widespread dissemination of multimedia technologies, as well as the World Wide Web, provide the opportunity to use informative technological processes as communication, education, and integration into the global community. Innovations in education make it possible to educate individuals who are able to achieve success in any sphere (Krol, 2017).

However, while the Internet revolution has made distance learning accessible, the structure of our education system is still unchanged. The effective development of multimedia tools also involves the appropriate psychological restructuring of a teacher. For the most part, students gain knowledge passively, and the teacher limits his activity to verification and control. Learning outcomes are still being tested against the criteria of the last century.

To improve the quality of education, it is necessary to solve the problem of the lack of new, qualified personnel. For teachers who seek to use information and communication tools and multimedia equipment in training, further training is necessary not only in the field of information educational technologies, but also in the field of psychological and pedagogical

foundations of a new educational environment. An important role is played by the increasing load on the nervous system of teachers, which can affect psycho-emotional stability and even cause professional burnout (Proshkina & Efremova, 2019a; 2019b).

The easiest and shortest way to solve these problems may be to improve existing technical means of communication, update software and actively introduce social media resources into training, which should lead to the progress of information exchange between teacher and student, since the use of information communicative technologies in educational activities allows to strengthen the feedback of the teacher and students and improve the quality of education.

Information technology is the latest exciting activity for students. The use of graphs, illustrations, animated components, fragments of educational films, sound background contribute to the effective organization of the educational process, fill the teaching work with new content. Graphics, animation effects, photos and pictures, audio and video presentations in an interactive mode create a new environment where both the student and the teacher receive new development and opportunities.

Thanks to information technology, modern teaching methods have become more informative. However, it is very important to find motivation for students, to teach them to navigate independently in the information received.

The main goal of interactive technologies is to optimize and intensify the activity of students in the classroom and extracurricular activities (Isupova & Suvorova, 2014). Particular attention should be paid to the structuring and algorithmization of independent work (self-learning). Learning should keep up with modern technology. It should educate people who need to live in a modern information society. Informative technological processes today represent and create conditions for the student to want to learn.

Every year, everything becomes more convenient to study: you do not need to go to the library, look for the right books on dusty shelves, rewrite and formulate the information presented. More and more people are refusing printed books, and more and more students are not seeing textbooks in their hands, but smartphones. This is normal in the 21st century. A modern student lives in the world of modern electronics.

Along with this, the role of the teacher is changing: he must study, analyze new teaching methods, adapt them, improving the quality of the educational process. Computers, laptops, multimedia projectors, IT technologies should be used in educational institutions. The time has come to use Internet resources both in preparing for lessons and in assigning homework. In classes where there are computers, research work can be carried out. Such classes increase interest in the subject, and the use of the search capabilities of the network facilitates the preparation of reports, essays, creative and competitive works.

Currently, educational institutions are working to create their own media library including audio and video manuals, electronic textbooks and presentation materials on various subjects. Schools keep electronic school diaries. In preparation for the lessons, teachers turn to various electronic libraries, online tests and other opportunities. As a result, "the development of training courses and the use of modern educational and information technologies in the curriculum have a positive impact on the quality of knowledge and skills of graduates (Proshkina, 2019). It is established, that "innovations and acceleration the pace of life increases the desire of students to develop and educate themselves and, in General, contribute to the

growth of vocational training" (Proshkina et al., 2019; Cervantes, 2021; Chan & Zhang, 2022).

On the other hand, the modular system allows you to disable unclaimed functions, if necessary, thereby reducing time and financial costs. And the flexibility of the platform creates ways to modify any requirements of individual educational institutions – from secondary schools to corporate universities.

A modern education system should provide equal learning opportunities for consumers of all ages and nationalities. The older generation needs to be introduced to digitalization no less. Given this, the specifics of teaching people of different ages should be different. At the same time, the training model should be sufficiently personified.

Drawing up an individual learning path allows you to take into account not only the individuality of the character and abilities of the student, but also to form specific competencies, taking into account the geographical, market, technological situation in his place of residence. This is a unique system of individual development.

Another aspect of digital learning is the answer to the question: does it form the necessary skills? Will they be in demand in 3-5 years? Can it provide support for progressive projects? Demand for interdisciplinary competencies is increasing. An invaluable advantage of the digitalization of education is its accessibility, both physical and economic. However, the effectiveness of distance learning is still in question.

The knowledge and proper use of multimedia allows you to conduct classes at a new level. But for a full-fledged transition to the new paradigm of the educational process, this is still not enough: the timing of creating many digitalization projects is not respected, the specified funding limits are not maintained, and the effectiveness of the implemented solutions does not always correspond to the plans.

Nevertheless, the already achieved results of using modern technologies provide an increase in the level of training of graduates. Current specialists are already ready for professional activities of a different level, for work in conditions of rapid adaptation to technical innovations and progress. They have such information skills that can successfully apply the acquired knowledge and skills in solving both specific and general professional tasks.

4. Summary

1. Innovative activity in education is especially important as a socially significant factor that determines not only professional, but also moral improvement of a person.
2. Digitalization of education is a necessary pedagogical condition for improving its quality. Information and communication technology is the path to successful professional implementation of graduates.
3. The advantage of digitalization is the automation of the educational process, its unification and standardization, the rapid change and flexibility in educational methods and techniques.
4. The modern educational environment has all the possibilities for improving the educational process. Nevertheless, there are a number of problems in adapting the educational process to the realities and requirements of the information space.
5. First of all, these are the technical difficulties of moving to a new level of educational communications. The simplest solution to these problems may be to improve existing technical means of communication, update software and actively introduce social

media resources into training.

6. The second most important factor is the personnel issue. There is a sharp shortage of teachers who are able to make the transition to global digitalization of science and education.

7. There are difficulties not only with staffing, but also with the psychological restructuring of teachers. A number of educators still do not realize the role of information technology as a major factor in improving the quality of education.

8. Thanks to digitalization, distance learning has become available to all segments of the population. However, for a teacher, the main goal of interactive training is to optimize and intensify students' activity and learn them to navigate independently in the information space.

9. Particular attention should be paid to the structuring and algorithmization of independent work. The training model should be sufficiently personified. Drawing up an individual learning path allows to consider not only the individual abilities of the student, but also to form specific competencies, taking into account the geographical, market, technological situation in his place of residence.

10. Electronic-digital training has a positive impact on the quality of knowledge and skills of graduates who are ready for professional activities in conditions of rapid adaptation to technical innovations and progress.

5. conclusions

Thus, training is the most important part in the development of modern man. Unfortunately, due to a number of problems of a technical, technological, financial, personnel and psychological nature, the transition to a new, information and communication level of education in Russia has been somewhat delayed. And often the problem is not even connected with the fact that the classes are not equipped with modern equipment, or with insufficient funding, but with the fact that there is no interest in the people themselves.

Features of the modern stage of education development are associated with the promotion of information technology, which, in turn, depends on pedagogical and psychological conditions and technical support.

Despite the undoubted theoretical and practical significance, the study of the problem of the effective use of information and communication technologies in education remains open to theoretical understanding and experimental research. In today's new world, the education system must provide adequate answers to the challenges of modern society. Digitalization of this sphere is a step towards the further development of the theory and practice of general and professional education.

Acknowledgements

References

Akol'zina E.A. [2013] The use of electronic educational resources in the learning process: advantages, disadvantages. Gaudeamus, 2(22). URL:

https://cyberleninka.ru/article/n/ispolzovanie-elektronnyhobrazovatelnyh-resursov-v-protsesse-obucheniyadostoinstva-nedostatki (Accessed March 26, 2020).

Al-araibi A.A.M., Mahrin M.N.R.B., Yusoff R.C.M. [2016] A systematic literature review of technological factors for Elearning readiness in higher education. Journal of Theoretical & Applied Information Technology. 93(2):500– 521.

Asmas A., Mahrin M., Ibrrahim R. [2016] Technological Aspects of E-Learning Readiness in Higher Education: A Review of the Literature. Computer and Information Science. 9(1):113-127. http://www.ccsenet.org/journal/index.php/cis/article/view /54990 (Accessed March 21, 2020).

Bychkova O.I. [2011] Electronic educational resources in the organization of classroom studies and independent work of students. Panorama, 2:168-170.

Cervantes, J. L. (2021). Teaching Medical Advances in a Time of Crisis: A Human Microbiome Data Interpretation E-Learning Elective for Medical Students. *Research Journal of Education, 7*(2), 68-71. https://doi.org/10.53935/2641-533x.v4i2.157

Chan, J.-X., & Zhang, L. (2022). Impact of Production, Consumption Capabilities and Human Capital Capacity on the National Wealth of China. *Journal of Contemporary Research in Business, Economics and Finance, 4*(1), 16-26. https://doi.org/10.55214/jcrbef.v4i1.168

Grimaldi P.J., Basu Mallick D., Waters A.E., Baraniuk R.G. [2019] Do open educational resources improve student learning? Implications of the access hypothesis. PLoS ONE. 14(3): 0212508. URL: https://doi.org/10.1371/journal.pone.0212508 (Accessed March 31, 2020).

Isupova N.I., Suvorova T.N. [2014] The use of electronic educational resources for the implementation of active and interactive forms and teaching methods. Scientific and methodological electronic journal, 26:136–140. URL: http://e-koncept.ru/2014/64328.htm (Accessed March 26, 2020).

Krol A. [2017] Future education system 2.0. Interactive education. 1: 20-27. URL: https://hrportal.ru/article/budushchaya-sistema-obrazovaniya-20 (Accessed March 26, 2020).

McKerlich, Ross Charles, Cindy Ives, Rory Mc Greal. [2013] Measuring Use and Creation of Open Educational Resources in Higher Education. The International Review of Research in Open and Distributed Learning. 14(4). (September 30, 2013). http://www.irrodl.org/index.php/irrodl/article/view/1573 (Accessed March 31, 2020).

Pitt R. [2015] Mainstreaming open textbooks: Educator perspectives on the impact of OpenStax college open textbooks. International Review of Research in Open and Distributed Learning. 16(4). Retrieved from http://www.irrodl.org/index.php/irrodl/article/view/2381/ 3497 (Accessed March 21, 2020).

Proshkina, O. V. [2019]. Education quality improvement of animation specialists in tourist and sports-health direction in the modern economic and educational environment. Economic and Humanitarian Sciences, 1(324), 71–82.

Proshkina, O. V., & Efremova, O. I. [2019a]. The Cyclical Phenomenon of the Burnout Syndrome. Journal of Research in Applied Linguistics, 10(SI), 234–241. URL: https://doi.org/10.22055/rals.2019.15097 (Accessed March 31, 2020).

Proshkina, O. V., & Efremova, O. I. [2019b]. The Periodic Process of the Teacher Burnout in ELT Classrooms. Journal of Research in Applied Linguistics, 10(SI), 1270–1281. URL: https://doi.org/10.22055/RALS.2019.15368 (Accessed March 31, 2020).

Proshkina, O. V., Sotnikov, M. I., & Efremova, O. I. [2019]. Contradictions of the use of electronic educational resources in higher education. IIOAB JOURNAL, 10(3), 149–152.

Proshkina, Olga Vladimirovna, Candidate of Economics, Associate Professor, Naberezhnye Chelny Institute of Kazan (Volga Region) Federal University. She graduated with honors from the Kama Polytechnic Institute (Russia). She has been teaching a number of economic disciplines for more than 18 years, including in magistracy. She has more than 90 published scientific, educational and methodological works and electronic educational resources.