



Preparing Teachers to Use Web Technologies for Independent Professional Development

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Article History	Abstract
Received: 06 June 2023 Revised: 05 Sept 2023 Accepted: 06 Dec 2023	<i>Explores the evolving landscape of education, emphasizing the imperative for continuous professional development, particularly in the field of pedagogy. It underscores the challenges posed by the rapid advancements in information technologies and the need for educators to adapt through self-education. The discussion encompasses the role of information processes intensification, the impact of global communication, and the necessity for a proactive, open, and accessible education system. The importance of fundamentalization and advanced education principles is highlighted, with a focus on preparing individuals for the dynamic challenges of the 21st century. The text concludes by emphasizing the importance of continuous education, self-education, and the integration of web technologies in shaping the future of teacher training.</i>
CC License CC-BY-NC-SA 4.0	Keywords: Continuous Education, Self-Education, Information Technologies in Education

1. Introduction

One of the priority tasks of improving the quality of education and ensuring the innovative nature of its development is the creation of a system of continuing education, training and retraining of personnel, postgraduate professional development, of which self-education is becoming an increasingly important part.

Modern continuous postgraduate education of educational workers is carried out mainly through the system of additional professional education (DPE). Professional development, which is implemented for the vast majority of specialists once every five years, is no longer enough today to master new knowledge, skills, and abilities for professional activity.

All of the above fully applies to the field of pedagogical education. Moreover, as the development of education becomes a catalyst for innovation in the economy, the change in knowledge and technology in the field of education acquires even greater dynamics. In these conditions, professional development and the ability of teachers to successfully retrain through self-education is becoming increasingly relevant and important.

As Vladimir Putin noted at a meeting of the organizing committee for the Year of the Teacher in the Russian Federation, significant changes should take place in the system of professional development of the teaching staff. Personalized systems for improving the qualification and retraining of the teaching staff using ICT tools should be developed, tested and implemented, conditions for preparing teachers to work in an information and communication educational environment should be created, new approaches to collective forms of professional self-education based on Web technologies should be introduced.

The defining feature of the development of professional activity at the present time is that the pace of updating knowledge and technology is largely ahead of the pace of generation change. Currently, there is such a rapid development of modern information technologies (IT) that the process of understanding the new opportunities offered by IT and their impact on all aspects of life lags behind the pace of development and growth of IT. Educational structures all over the world, the entire global education system cannot remain aloof from this understanding. On the one hand, CITES provide new opportunities for the needs of education, on the other hand, education should prepare a new foundation for a successful life in a modern, continuously "updating" information society.

Informatization and global mass communication of society is characterized by the process of active use of information as a public product in the context of the development of the global information environment, which allows to form the information environment of a particular user in accordance with his interests and needs.

"A characteristic feature of our life is the increasing pace of change. We live in a world that is completely different from the one in which we were born. And the pace of change continues to increase. It took 38 years to get 50 million radio users, television three times less - 13 years, and the Internet three times less time, only 4 years. Today's students will have to:

- * Work in professions that do not exist yet;
- * Use technologies that have not yet been created;
- * Solve problems that we can only guess at"

The relentless, ongoing struggle for speed, efficiency of interaction and communication has been especially vividly manifested in the intensive development of means of direct transmission of information: printing - telegraph - telephone - television - Internet. The historical growth of information processes contributed to the acceleration of the development of productive forces, changes in production methods, and a gradual reduction in the time between the change of social formations and professional activity.

The main components of the intensification of information processes are [86]:

- * Increasing the speed of message transmission;
- * Increase in the amount of information transmitted;
- * Acceleration of information processing;
- * Using feedbacks;
- * Increasing the volume of new information being extracted and accelerating its implementation;
- * Acceleration of the introduction of inventions;
- * Visual display of information;
- * Improvement of technical means.

In relation to our study, we will reveal the first 4 components of the intensification of information processes.

Increasing the speed of message transmission. Only communication makes social life possible, because communication means interaction and organization.

A real revolutionary revolution occurred with the development of network technologies and with the advent of the Internet, which finally destroyed the boundaries and brought people closer together on different continents of the globe.

An increase in the amount of information transmitted. Along with the increase in the speed of message transmission, as technology developed, technology improved and new technical devices were created, the volume of information transmitted steadily increased.

In fact, the modern generation of people reproduces, transmits and uses a much larger amount of information than dozens of previous generations combined. As a result, the volume of scientific, economic, statistical and other information has become so large that there is a significant disparity between the speed of obtaining information and the ability to process it. This has led to the need for the widest application of computer technology for the operational processing and analysis of information.

Acceleration of information processing. The computing speed on modern computers is approaching the limit value, limited by the speed of light (in optical VMs), and equal to billions of operations per second. And the use of nanotechnology to record information in device memory opens the way to an almost unlimited increase in RAM, the recording density of which reaches 10 Tbit per square inch.

In general, computers installed in the homes and workplaces of millions of people around the world create not only new working conditions, but also a new living environment with access to a huge information resource of mankind.

Using feedbacks. The more fully and efficiently feedback is used in functional systems, the more stable the system is, the management is optimal and the rate of development is higher. An integral attribute of self-development is self-learning, which is based on feedback.

One of the key areas of intensification of social development is related to the education system. A powerful tool influencing the effectiveness of the education system is the creation and improvement of educational information resources. This has become possible thanks to global computer networks and a new form of education - remote, network.

The global scientific community is aware of the key role of education in the process of further development of civilization. At the same time, the education system is beginning to be perceived not only as the most important factor in the technological development of a country, but also as a strategic factor in the survival of civilization and overcoming its global crisis.

At the same time, most researchers quite reasonably believe that a radical restructuring of the existing education system is necessary, which no longer meets modern requirements and cannot ensure timely preparation of people for the future, which is rapidly developing and poses more and more global problems to humanity. These problems, called the challenges of the 21st century in the scientific literature, should determine the content of education and its strategic target orientation today.

* With regard to the content of the problems of computer science development, the following challenges are of the greatest interest.

* 1. Information challenge (transition to an information society and adaptation of people to a new information environment, the problem of information inequality). It requires strengthening the information orientation of the 24

* education system; developing the information culture of society; expanding the training of specialists for the widespread use of information technologies, including in the field of education and distance learning.

* 2. Dynamic challenge (lagging public consciousness from the dynamics of global problems). It requires strengthening the fundamentality of education; the implementation of ideas and principles of advanced education; the formation of planetary thinking among students; the introduction of new disciplines: global studies, prognostics, synergetics, methods of system modeling and forecasting, the fundamentals of computer science.

* Thus, the most important distinguishing features of a promising education system that would be able to find the necessary answers to the challenges of the 21st century should be the following:

* * The fundamentalization of education, which should significantly improve its quality;

* * the proactive nature of the entire education system, its focus on the problems of post-industrial civilization and the development of human creative abilities;

* * Openness and accessibility of the education system through the widespread use of distance learning methods;

* * Continuing education, an important part of which is self-education based on promising information and telecommunication technologies.

* The term fundamentalization refers to a significant improvement in the quality of education and the level of education of people receiving it, due to a corresponding change in the content of the studied disciplines and methods of implementing the educational process.

* The fundamentalization of education presupposes its increasing orientation towards the study of the fundamental laws of nature and society. This is what should allow people to independently find and make responsible decisions in conditions of uncertainty, in critical and stressful situations, as well as in cases when they are faced with new, very complex natural and social phenomena.

* The main content of the idea of advanced education is that a promising education system, as one of its priority goals, should have the task of forming such qualities in people that will allow them to successfully adapt, live and work in the conditions of the coming XXI century. Therefore, future orientation is the key idea of advanced education.

* When forming the concept of advanced education, it is extremely important not only to determine the knowledge and skills that people of the XXI century should possess, but also, first of all, to understand exactly what qualities these people should possess in order for them to be able to adapt to a rapidly changing world, use its new opportunities and solve new, previously unknown problems.

* One of the urgent problems of informatization of education is to provide information support for the search for necessary scientific and educational information. In recent years, the demand for such information in the field of education has been steadily increasing. The reasons for this are the emergence of a number of new academic disciplines related to the fundamentalization and humanitarization of education, as well as the lack of necessary literature in the libraries of educational institutions. All these forces teachers and trainees to increasingly turn to public libraries to find the information they need, and moreover, to resort to the services of automated information systems [110].

* Nowadays, there is an increasing belief that educational activity is an integral and natural part of human life at any age. On the one hand, the need for postgraduate education is directly related to the interests and needs of different periods of adult life, the desire of a person for versatile development. On the other hand, the concept of continuing education is based on the needs of the economy, when qualifications should be flexible, oriented towards adaptation in accordance with changing professional requirements associated with continuous socio-economic changes, the dynamism of global and social development.

* As already noted, the dynamics of updating knowledge and technology activities are significantly ahead of the pace of transition from one generation of people to another. In order to maintain the necessary level of readiness for the successful completion of professional activity, the education system must switch to continuing education. In turn, the priority principles of continuing education should be its proactive nature and a significant increase in the share of self-education.

* As A.V. Barannikov notes, "the basic principles of continuous education are accessibility of education, its variability (diversification of educational structures and educational content), continuity of content and forms of education, integration of formal and non-formal education (horizontal and vertical integration). The fundamental principle of continuing education should be its proactive nature, it is important to predict the need for future professional qualifications and to obtain in advance the knowledge that will be needed in the foreseeable future" [26].

* Based on the above, it follows that it is impossible to accurately predict the knowledge that will be needed to perform professional activities with constantly updated qualification characteristics of a particular profession, and even more so it cannot be done only within the framework of basic and vocational education. The solution to this difficult task should be continuous education - systematic professional development, various forms of retraining, self-education.

* The continuous change in the content and nature of professional activity caused by the introduction of new technologies requires appropriate changes in the qualification characteristics of the teacher, the content of his training, the foundations of which are laid, in general and professional education. Knowledge, skills, abilities, which until recently were considered the basis of a particular profession in the traditional system of "supportive" education, can no longer ensure readiness for effective professional activity and determine the need for the development of a system of "advanced" education.

* As Vladimir Putin noted at a meeting of the organizing committee for the Year of the Teacher in the Russian Federation, significant changes should take place in the system of advanced training of the teaching staff. Personalized systems of professional development and retraining of the teaching staff should be developed, tested and implemented, conditions for training teachers to work in an information educational environment should be created, modern approaches to the organization, maintenance and content of the teacher training system should be introduced.

* In this regard, in the system of advanced training and additional professional pedagogical education, it is necessary to actively search for new methods, forms, technologies and approaches of education in the context of the introduction of Web technologies, ICT tools within the framework of self-education. The organization of the educational process in the professional development system, aimed at preparing teaching staff for work in ICOS, should take into account the following aspects:

* * aim at maximizing the motivation of the teacher to form professional competencies to work in this environment;

- * * provide relevant competencies that allow you to independently carry out the education process based on educational Web resources;
- * * to carry out training taking into account the alignment of individual trajectories in accordance with professional needs and interests;
- * * to organize additional professional education for teachers with different levels of professional training in a differentiated approach;
- * * to carry out professional development of teachers on the basis of innovative teaching methods using new forms and methods of organizing learning in an information and communication educational environment.

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