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Presentation date: February, 2020
Date of acceptance: May, 2020
Publication date: July, 2020

NEW INFORMATION TECHNOLOGIES

AS THE BASIS FOR IMPROVING THE QUALITY OF HIGHER PROFESSIONAL EDUCATION

NUEVAS TECNOLOGÍAS DE LA INFORMACIÓN COMO BASE PARA MEJORAR LA CALIDAD DE LA EDUCACIÓN PROFESIONAL SUPERIOR

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Suggested citation (APA, seventh edition)

Gulyaeva, T. Y., Kostenko, E. G., Mirzoeva, E. V., Sharova, E. I., & Tolstykh, O. S. (2020). New information technologies as the basis for improving the quality of higher professional education. *Revista Universidad y Sociedad*, 12(6), 220-225.

ABSTRACT

At the present stage of development, the level of education of an individual, his/her intellectual and creative potential, his/her ability to develop and use breakthrough methods in science and production are a determining factor. This situation actualizes the need to use modern didactic support for the processes of building and developing new knowledge and skills, the active use of innovative pedagogical technologies and multimedia training courses, i.e. all the innovations that contribute to improving the quality of education. Already the first experience in the introduction of computer and information technologies has significantly improved the methodology for selecting the content of professional training of specialists; improve planning, organization, management, control, and quality of the educational process; improve the quality of education, its individualization; to identify new forms of interaction between a teacher and a student in the learning process, qualitatively changing the content of their activities. Under the conditions of informatization, a contradiction between the achieved level and the necessary level of specialist education was clearly manifested. It should be noted that professional teacher education (in contrast to other areas of education) is distinguished by the availability of its own line of development with complex and peculiar dynamic. And this is natural, because such a situation reflects the trend in the formation of the social relations regulation system, including also means of pedagogical activity. All this became the motive for choosing the topic of our study.

Keywords: Informatization, information space, education system, professional and pedagogical activity, quality of education, information technology.

RESUMEN

En la etapa actual de desarrollo, el nivel de educación de un individuo, su potencial intelectual y creativo, su capacidad para desarrollar y utilizar métodos innovadores en la ciencia y la producción son un factor determinante. Esta situación actualiza la necesidad de utilizar el soporte didáctico moderno para los procesos de construcción y desarrollo de nuevos conocimientos y habilidades, el uso activo de tecnologías pedagógicas innovadoras y cursos de formación multimedia, es decir, todas las innovaciones que contribuyen a mejorar la calidad de la educación. Ya la primera experiencia en la introducción de tecnologías informáticas y de la información ha mejorado significativamente la metodología para seleccionar el contenido de la formación profesional de especialistas; mejorar la planificación, organización, gestión, control y calidad del proceso educativo; mejorar la calidad de la educación, su individualización; Identificar nuevas formas de interacción entre un docente y un alumno en el proceso de aprendizaje, cambiando cualitativamente el contenido de sus actividades. Bajo las condiciones de informatización, se manifestó claramente una contradicción entre el nivel alcanzado y el nivel necesario de educación especializada. Cabe señalar que la formación del profesorado profesional (a diferencia de otras áreas de la educación) se distingue por la disponibilidad de una línea propia de desarrollo con una dinámica compleja y peculiar. Y esto es natural, porque tal situación refleja la tendencia en la formación del sistema de regulación de las relaciones sociales, incluyendo también los medios de actividad pedagógica. Todo esto se convirtió en el motivo para elegir el tema de nuestro estudio.

Palabras clave: Informatización, espacio de información, sistema educativo, actividad profesional y pedagógica, calidad de la educación, tecnologías de la información.

INTRODUCTION

The modern realities of the social development are characterized by the fact that for the first time in the history of the civilization development, the pace of renewal of engineering and technology, and the forms of intellectual labour organization have begun to outpace the humanity generations changes. There is a significant lag in the level of education from the new realities of human life, which is manifested in the growing formation and deepening contradictions between the ever-increasing amount of necessary individual knowledge and skills and the limited capabilities of the modern education system for mastering those skills in accordance with the Concept of informatization of the educational sphere in the Russian Federation.

Today, our country has already formed the basic conditions for building a single Ross information space, which allows it to become an integral part of the global information space, a full member of the international information integration of regions, countries and peoples; actively use new information technologies; and improve the quality of professional education.

Under these conditions, the category of quality is undoubtedly a key category of state educational policy, which harmoniously corresponds to the context of the development of the Russian Federation as a social state, which is focused on a steady increase in the quality of life of the country's population.

It is difficult to overestimate the higher education quality, as this is what determines the quality of the entire education through the use of the mechanism focused on reproduction of personnel within the lifelong education system, as well as the quality of reproduction of the country's intellectual resources, its public intellect, science, culture, all aspects of life, and, ultimately, the formation of competitive advantages of the Russian Federation.

The study of the higher education quality requires analysis of many multidirectional factors, including analysis of the teaching staff's professionalism; analysis of the used curricula and computer information technologies quality; analysis of the students' preparedness quality; analysis of the infrastructure quality (sophistication level), etc.

All of the above actualizes the need for an in-depth study of pedagogical theory regarding the problems of improving the higher professional education quality.

METHODOLOGY

The methodological and theoretical basis of the study was the philosophical, sociological and pedagogical provisions on the role and importance of education, pedagogy, knowledge about a person in society; about the essence of training, education, professional and personal development; the concept of personality-oriented education; theories of informatization in society and education, and works on the educational environment development.

In the course of our study, general scientific and special methods of cognition were used, including induction and deduction, analysis and synthesis, construction of analogues; questioning, conversations, comparison, grouping, and generalization.

The reliability and validity of the obtained scientific results are ensured by using modern theoretical and methodological approaches to solving the problems under study; their qualitative analysis; and a set of complementary theoretical and empirical methods.

DEVELOPMENT

The problems of improving the quality of education are always in the foreground of the social development, for there is always a direct relationship between this quality and the sustainability of the dynamic development of any state.

Analysis and generalization of special scientific literature and dissertation research allows us to understand the concept of "improving the quality of professional education" as targeted enhancement and improvement of methods and techniques for acquiring knowledge, skills, active formation of worldview, development of potential opportunities in the field of professional activity (Arkhangelsky, 1980; Grebenyuk, 2008; Selezneva, 2013).

Such concepts as "higher education quality" and "problems of the higher education quality" are actively used in the specialized literature.

In general, the "higher education quality" is presented as a balanced correspondence between higher education and the diverse needs, goals, norms, standards, etc., i.e. all that allows us to characterize the training quality of highly qualified specialists (Bryzgalova, 2014).

Of course, the concept of "quality" is a rather relative concept; the following aspects can be noted regarding the subject of our study, which is higher professional education:

1. The design quality of the professional training course corresponding to its substantial and organizational capabilities.

2. Operational qualities corresponding to the level of implementation of the educational process.

3. Functional qualities corresponding to the ultimate goal achievement level for the professional education of specialists.

Undoubtedly, ensuring proper quality is one of the key tasks of modern higher education. No interpretations are allowed here; its solution involves the use of a systematic approach to quality in order to create the interest of the higher-education teaching personnel and the university leadership in improving the quality of the educational process through the development and use of material incentive mechanisms, and mobilization of personal growth potential.

Experts note that numerous attempts by scientists and practitioners to determine the scientific and pedagogical formula built in accordance with the principles of traditional classical didactics and being able to neutralize the main difficulties of pedagogical activity, have remained unrealized. Today it is already obvious to everyone that most of the teaching theories used do not meet the requirements of modern teaching practice. New theories are required that have a pronounced operational and instrumental character, and allowing a new way to uncover the essence of the "teaching technology" concept (Bogoudinova, 2014).

The concept of "technology" is a derivative of the concept of "technics" and in the conventional sense it means a certain process of processing and transformation for the production of a particular product. It also characterizes the normative side of the process under study: what and how to do in order to implement the necessary transformative process.

As for pedagogical activity, information technologies have been very actively used here in recent decades to improve the quality of professional higher education. For this purpose, a whole set of single-order synonymic expressions such as "computer-based learning technologies", "computer-based pedagogical technologies" and others are involved. Moreover, most researchers are simply talking, as a rule, about replacing traditional educational principles with new ones, without revising or filling them with such content that will allow the use of information technologies in a constructive way under the new conditions.

Moreover, in the course of our study, we were convinced that there are many more teachers who perceive the informatization in education as a process of introducing electronic computer technology into the higher education system.

Undoubtedly, all this requires the use of general didactic principles, certain provisions of the theory on step-by-step construction of mental actions, and also programmed, modular and problem-active teaching.

Arguing in this way, we proceed from the fact that the system of requirements for the total application of information technologies in universities should comply with the systematic approach principles, i.e. it should act as a holistic phenomenon occurring in the framework of pedagogical activity. In an enlarged form, modern technologies in education are represented by three areas in the form of information technologies; active teaching methods and distance teaching.

There are many approaches to the definition of information technology, which, in general, can be reduced to two platforms.

One group of researchers considers the concept under study in the form of a scientific and educational process. It is organized on the basis of using a combination of fundamentally new tools and data processing methods that are being introduced into training systems for the purposeful publication, transfer, storage and display of information products with minimal costs, taking into account the patterns of cognitive activity of students (Verbitsky, 2010; Kovalenko & Zhukovskaya, 2012).

Proponents of the second approach, agreeing with the above concept in general, make some correction: the use of information technology allows us to create a specific technical learning environment (Dolmatov, 1998; Mingaleva, 2016; Usoltseva, 2019).

In the course of the study, we found that there are many researchers who are free to consider new information technologies. We are talking about the adjective "new." Something can be new only if it has an innovative breakthrough characteristic, i.e. if it is fundamentally different from previous similar areas of technical development. Experts are well aware that on the basis of modern teaching tools and the corresponding instrumental environment, a lot of well-designed software products are created that do not really bring anything new to the theory of learning. It is simply about any automation of educational process, about the modernization of the computer version, but no more.

Hence, in our opinion, information technology can be considered new if it allows us to satisfy the basic principles of pedagogical technology and find new solutions to the problems of higher professional education.

For large-scale informatization in education, it is necessary actively to introduce everywhere new information technologies, the advanced achievements of modern pedagogical science, to change radically the requirements

of the social order for the training of future specialists. The development of the educational process based on the proper use of new information technologies allows us to improve the quality of professional higher education and gives this process a creative character (Kurin, 2010; Novikov & Novikov, 2010).

In addition to the problems of choosing new information technologies, modern universities are also forced to deal daily with organizational and pedagogical problems and ways to solve them. There are many key approaches to solve them, involving the use of a balanced ratio of pedagogical and information technologies, and organizational modernization of the actual structure. The informatization in higher professional education is also manifested in the dominant role of the strategic plan for improving the quality of education.

Informatization in education forces the entire teaching staff to actively develop targeted training programs for the use of new information technologies in the educational process; create automated training systems; create software and information products (business computer games, etc.) of educational purpose for use in the processes of improving the quality of professional education. At the same time, the main link in higher professional education is not knowledge, its transfer and certification, but it is the person who is applying this. Moreover, information technology is developing so rapidly that yesterday's new types of technology may already be traditional today. Apparently, the UN has replaced its thesis "education for life" based on these realities with the more relevant modern requirements of human life: "education through life". In these conditions, universities need to realize that the implementation of only an educational function is no longer enough. Today, universities must actively engage in the organization of an intellectual creative process in order to survive in the competition, involving a harmonious combination of research and educational process.

This is not only about the formation of information society: the foundations of building the prerequisites for the formation of an information civilization are being laid.

It is clear that a dilemma is inevitable here: in which direction to go in order to raise the quality of education for all subjects or an elite group... In any case, there is a graduate education standard that is characterized by such basic components as students' general outlook and erudition, their competence, quality of thinking, and ability to analyse, ability to cognitive activity, social and life activity, etc (Grebenyuk, 2008).

To develop a system of strategic management involving the quality of education, it is necessary to identify and analyse a set of indicators consisting of many multidirectional factors. Among these are the following:

1. Motivation of the teaching staff and students (factors such as personal and social goals; the level of teachers' remuneration and the size of scholarships; prestige of the future profession, etc. affect the level of its functional dependence)

2. Professionalism and personal qualities of the teaching staff (we are talking about pedagogical skills and scientometric indicators of teachers).

3. Compliance with the optimal ratio of teachers, students and service staff, taking into account the profile of the university.

4. The quality of the planning of the educational process (the optimality of the structural and logical connections between disciplines, topics; organization, monitoring and controlling, and the educational process management).

5. The level of development of the educational and material and technical base, its relevance to the tasks being solved.

6. The basic level of training of students, their personal qualities.

When developing a strategic plan for managing the quality assurance of higher education, it is necessary to proceed from the provisions of the Federal Law of the Russian Federation "On Higher and Postgraduate Professional Education", which consider professional higher education in three senses:

1. As a result of pedagogical activity.

2. As a process of pedagogical activity.

3. Directly as an educational system.

This approach allows us to gain an insight into the basic concepts in the field of higher education quality, develop sound standards and criteria, monitor and control, diagnose and manage the higher education quality.

During the development of the quality management system of higher education, it is necessary to solve a number of problems regarding the choice of goals and priorities, the development of appropriate policies and strategies for improving the quality of education: all this is a component of strategic planning. Using a systematic approach to the quality of higher professional education allows us to consider an educational institution as an interconnected set of many subsystems that act as independent objects of strategic management.

We consider it appropriate to note one of the current problems of modern pedagogy, i.e. the lack of common approaches for quantitative and qualitative determination of the levels concerning development of the educational material content. Basically, all the various interpretations of this concept are limited to being guided in this case by their pedagogical experience.

The work of Kurin (2010), gives 3 levels of knowledge assimilation: perception, comprehension, memorization; the work (Shatalov & Afanasyev, 2008) gives 4 levels of scientific knowledge and in Shabanov (2006), six levels of learning material are given.

It is noteworthy that, in general, when determining the required levels of knowledge, none of them speaks of such an important condition as the initial level of training, i.e. how the student learned the previous topics. Of course, this is essential, because it speaks of the possibilities of training a specialist with guaranteed professional quality of training.

Today it is no longer conceivable that a specialist training (in any specialty) has no the extensive use of new information technologies.

The analysis of a wide range of information training tools allowed us to formulate a number of general (basic) requirements for new information technologies as a didactic system used in the process of higher professional education: adaptability, stability, usefulness, simplicity, productivity, controllability (Lerner, 1978; Osipov, 2010; Tikhomirova & Chmykhova, 2017).

A generalization of the recommendations set forth in the most popular works allowed us to propose the following step-by-step technology algorithm for optimizing the selection of effective methods for organizing and managing cognitive processes in developing programs to improve the higher education quality based on the use of new information technologies.

Step 1: Determination of the most urgent tasks for the formation of students' knowledge and skills for each specific training session.

Step 2: The selection of the content of the educational material, basic scientific concepts, laws, skills that a learner must learn.

Step 3: The construction of the logic on the disclosure of the topic in accordance with the basic didactic principles and taking into account the professional sphere of the future specialty of students.

Step 4: The choice of a possible optimal combination of methods, forms and computer training equipment for the implementation of the topic and planned tasks.

Step 5: Determination of time costs for the implementation of the training objectives within the framework of training sessions.

Step 6: The choice of an effective scheme for managing cognitive activity of students.

Step 7: Determining the optimal pace of learning, taking into account the capabilities of students in the assimilation of information on the academic discipline and its topics.

Step 8: Determination of rational content, volume of tasks for students' independent work.

It seems to us that the modified approach that we proposed to develop an effective program to improve the quality of higher professional education based on the active use of new information technologies as a didactic system gives teachers great opportunities to identify how fully they can implement the above algorithm focused on the development of individual characteristics of students.

The proper use of new information technologies fundamentally changes the role and functions of teachers and students; the ratio of didactic functions implemented within the system "teacher - new information technologies - student" also changes; complication of programs and teaching methods of the corresponding disciplines, etc. is also observed. All this leads to significant changes in the structure of the entire pedagogical system. This situation, unequivocally, allows students to better master a significant amount of theoretical knowledge, to form developed practical skills and abilities, to learn how to use them creatively in their future professional activities.

CONCLUSIONS

Analysis and generalization of special scientific literature, theses and other sources on the problems of ensuring the quality of higher professional education allows us to talk about the existence of more problems in this direction than the solutions found. In the course of our study, we tried to concretize the concept under consideration, distinguish its levels, propose a quality management system for training senior specialists, and develop an algorithm for step-by-step technology in order to optimize the selection of effective methods for organisation and management of cognitive processes in developing programs to improve the higher education quality using new information technologies.

The professionalism of modern specialists, in addition to their achievements in mastering special branches of

science, presupposes the availability of certain capabilities for interdisciplinary synthesis, system integration of scientific and educational knowledge and practical skills. In these conditions, the importance of information technologies is especially growing, because they radically change the content of training in the professional sphere.

3. Under these conditions, universities need to realize that it is no longer enough to realize only an educational function. Today, universities must actively engage in the organization of an intellectual creative process, involving a harmonious combination of research and educational process in order to survive in the competition.

Our proposed modified approach to the development of an effective program to improve the quality of higher professional education based on the active use of new information technologies as a didactic system gives great opportunities for teachers to identify how fully they can implement the above algorithm focused on the development of individual characteristics of students.

It seems to us that the main experts in assessing the quality of educational services should be their consumers and employers in the labour market. For this, it is necessary to constantly monitor the educational services market, develop an effective marketing strategy, carry out strategic planning and ensure the necessary level of quality of educational services.

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