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THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN EDUCATION

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Abstract

The article is devoted to one of the topical problems of the education system, the transformation of all levels of education in the context of information and communication technologies used in the educational process. Now the state faces the challenge of enhancing the quality of education in order to train highly qualified specialists who meet modern requirements of the time. Achieving the quality of education is possible only if the educational process uses modern practice-oriented, individualized forms of training that meet the requirements of didactics and scientific and technological progress of society. The competency-based approach allows us to solve the above problems, because in the process of this approach, students quite successfully, due to the use of various interactive technologies in the educational process, master the competencies necessary for their self-realization as individuals, as future specialists. In addition, the educational environment of the institution plays a large role in the formation of competencies, since it is the environment that creates the conditions for the improving of the intellectual and creative potential of a developing personality. Currently, technologies are changing rapidly, and the use of digital resources when organizing the educational process with students is of great importance. The introduction of digital resources in the educational process is justified by the demand for society in these technologies.

Keywords: Competency-based approach, information and educational environment, information and communication technologies, distance learning, digital resources.

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1. Introduction

Education has always been and remains one of the priorities in the implementation of public policy and public relations management. According to the Constitution of the Russian Federation, education is one of the basic and inalienable constitutional rights of citizens of the Russian Federation. So, in Russia the right of citizens to free secondary education and the opportunity to study on a budgetary basis in secondary special and higher educational institutions are guaranteed. In this case, financing of the corresponding budget places and state orders for certain vacant posts comes from the needs of the state and the shortage of certain specialists in the country. The state determines the professions necessary for the socio-economic development of Russia.

State policy is aimed at addressing issues of professional competence of specialists that meet the requirements and standards of modern society. A specialist should be, first of all, in demand on the labor market, and secondly, competitive and mobile. The last two qualities are formed in the system of the competency-based approach to education, which allows the future specialist to acquire the professional skills necessary for successful professional activities and personal development.

The problem of training highly qualified specialists, therefore, seems urgent, since the social and state order for the development of the educational system has appeared. The quality of education can be achieved through the use of various technologies. According to the identified problem, we decided to consider information and communication technologies as a means of developing the education system in Russia.

2. Problem Statement

The research problem is caused by not effective use of information and communication resources in the educational process of the preparation of highly qualified specialists

3. Research Questions

The use of information and communication technologies in education.

4. Purpose of the Study

The purpose of the study is a theoretical review of the scientific literature on the use of information and communication technologies in the educational process.

5. Research Methods

We used theoretical research methods: analysis of the scientific literature on the research problem; generalization and systematization of the results formulated in the form of conclusions.

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6. Findings

The problem of using information and communication technologies in education is currently considered as one of the central problems in the education system. This problem is justified by rapidly developing technologies in education and the demand of modern society for the quality of specialists.

Currently, the educational system uses a competency-based approach, the essence of which is a practice-oriented activity aimed at the students obtaining the professional skills necessary for the successful self-realization.

We intentionally focus on the skills that a schoolchild or a student acquires in the process of educational relations. These skills realize the goals of the modern education system through the competency-based approach. In the context of the implementation of this approach, the central figure in the educational process is the teacher. In the modern educational system, the teacher not only gives knowledge on his subject, he must help the student to acquire the necessary competencies and, most importantly, learn to apply them in real life situations. Accordingly, the solution of this problem directly depends on his professional competence. Thus, the teacher's professional standard states that the teacher is a key figure in educational reform. In a rapidly changing open world, the main professional quality is the ability to learn.

In accordance with this statement, the teacher must prepare competent graduates who can set the task, independently choose methods for solving it and successfully complete it. Thus, the competency-based approach is designed for students on the basis of existing knowledge to resolve the contradictions and problem situations that arise in the process of educational activity. Moreover, much attention is paid to the ability of students to use this knowledge in practice. In such a situation, all subjects of educational relations should be ready for new communication, contributing to the acquisition and development of those competencies that ensure the development of the personality of a specialist capable of successful professional self-realization.

It is obvious that such training is qualitatively changing the process and the content of education, since now only knowledge is not enough for a modern graduate. It seems possible to modernize the system of training specialists by including non-traditional methods and forms of training in the educational process, which are now widely and actively used in the educational process at all levels of education.

Today, the school system, and secondary special, and higher education have moved to new standards, where the teacher's main the role is to manage educational technologies that open up all kinds of resources for a developing personality. In this case, the educational environment of the educational institution has a significant impact on the construction of educational relations. This fact is explained by modern educational technologies, involving the use of interactive forms of learning, in which the student independently acquires the knowledge, skills necessary for him to master competencies.

As Reutova (2012) points out, the introduction of interactive learning technologies in the educational process leads to improved training of students and is a prerequisite for the effective implementation of a competency-based approach. According to the author, the advantages of the competency-based approach are:

- there has been a transition from informative forms and methods of teaching to active ones;
- there has been a reorientation from a knowledge-based approach to an activity approach;
- it has become possible to combine students' theoretical knowledge with their practical needs.

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In addition to interactive educational technologies in the modern education system, a special role is played by the informatization of education, due to the rapidly developing information and communication technologies actively used in the educational environment, as well as the request of the society itself (Shmelkova, 2016).

Rubenko (2017)believes that information and educational environment is a condition that provides a new level of quality of education, in which each student has the opportunity to reveal his creative potential regardless of a number of facts: territorial location, state of health, socio-economic conditions, etc. Thus, in accordance with the Federal State Educational Standard, the information and educational environment acts on the one hand as a means of implementing the standard itself, and, on the other hand, as the most important information and methodological condition for the implementation of basic educational programs at all levels of education.

Initially, the issues of the information and educational environment were considered in the works of Pozdnyakov S.N., Bashmakova M.I., Kuznetsov A. and other authors. There were various approaches to understanding this concept (Kramarenko & Kvashin, 2017).

Trubitsyna (2009) in her work "Two Approaches to the Definition of the Information-Educational Environment" offers two approaches in substantiating this concept. The author highlights the program-technical and socio-pedagogical approaches in the information and educational environment. From the point of view of the program-technical approach, she considers a system of program and technical resources capable of ensuring the most effective implementation of the educational process (Trubitsyna, 2009).

According to Sokolova (2001) these resources include various hardware and software, the main purpose of which is the storage, processing and transmission of information.

Ilchenko (as cited in Kozlova, 2018) in this approach includes a set of informational, educational and methodological, as well as technical support, accompanying the educational process. This includes technical equipment and equipment used in the educational process, as well as various information resources provided by students with access to electronic libraries, educational and methodical complexes of disciplines and programs, as well as various resources of various educational sites.

Korotenkov (as cited in Karakozov & Uvarov, 2016) defines the information and educational environment as an area and an integrated resource for the implementation of educational process and educational interaction, which, under the influence of informatization, has become information-educational, information-cognitive, information-active and information-communicative.

From the position of the socio-pedagogical approach, the central concepts of the information-educational environment are the concepts of personality, activity and environment. Accordingly, the socio-pedagogical approach is all the closest informational environment directly included in the activities of all subjects of the educational process (Akimova & Scherbin, 2018).

The scientists Grinshkun V.V., Grigoryev S.G., Lapchik M.P., Zhdanov S.A. and others indicate that the information and educational environment functions in the educational system as a single integrated system. This system will be effective if a model of the educational process is built. With this approach, the educational process should include the possibilities of using information and communication technologies (as cited in Kapranov & Kapranova, 2012).

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The Federal State Educational Standard interprets the educational information environment as an open pedagogical system formed on the basis of various educational information resources. In this case, information educational resources are understood as modern information and telecommunication facilities, as well as pedagogical technologies, the purpose of which is to form a creative, active personality and competence of all participants in educational relations. The interaction of subjects of educational relations is aimed at solving educational, cognitive and professional tasks through the use of information and communication technologies (Atanasyan et al., 2007).

Thus, the use of information and communication technologies is becoming one of the important components of the pedagogical process and of education as a whole. The use of these technologies is justified, since their use in the educational process allows us to improve the learning process.

The undoubted advantage of this technology is the ability to use information and communication technologies with all age groups at all levels of education, including preschool children. The use of information and communication technologies in working with preschoolers allows to create interest in the upcoming educational activities and to qualitatively convey the content of educational and methodological support, since this technology allows you to simultaneously work with several senses (the child sees, hears, etc.), which improves the sensory development of the child (Lavrov, 1986).

For older children, as well as for students, information and communication technologies can expand the sources of information received. These age categories quite easily possess all possible information tools in order to provide themselves with the necessary knowledge. Through the introduction of information and communication technologies children and adults gain access to many educational sites that allow them to operate with a sufficiently large amount of information. In addition, the search for any information will not be difficult for this age category (Ivanova & Scheblekov, 2017).

Taking into account the educational value of this technology, do not forget about the automation of the control system, assessment and correction of students' knowledge. The educational process, in this case, is aimed primarily at organizing the individual work of students, as well as the ability to integrate various forms and strategies for mastering knowledge in a particular subject (discipline). Thus, we can talk about the individualization and differentiation of education, which is an important component of the Federal State Educational Standard.

All this, ultimately, allows us to judge the automation of the process of assimilation, consolidation and application of educational material, taking into account the interactivity of the educational environment, which indicates the formation of the competencies that are necessary in our time for rapidly developing digital technologies.

Digital education is undoubtedly convenient and effective both for the student and the teacher. In connection with the development of Internet resources, it is, above all, accessible to all participants in educational relations, since each educational institution has the necessary material and technical base to implement the requirements of the Federal State Educational Standard (Frumin, 2003).

In addition, this educational technology makes it possible to develop a system of continuing education. This form has long been actively used in the educational system of higher and postgraduate education. This is the so-called distance learning form, which is acceptable in the situation when the student

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needs to get an education, but does not have the possibility of full-time education for certain life circumstances.

So, distance learning allows residents of those regions (for example, residents of the far North) who have no other opportunity, to get high-quality education or professional retraining. Significant territorial remoteness from the university, the impossibility of separation from work - this is only a small part of the factors that determine this form of education.

Also, in the school system, this technology is effectively used in working with children with disabilities who are not able, for certain circumstances, to be “full-time” in the same educational space (in the classroom) along with all students. Thus, when determining the educational route using distance learning forms, children with disabilities receive a full-fledged education, studying at a more convenient pace and flexible mode.

In the light of recent events (COVID 19), practically the entire education system temporarily switched to distance learning on the basis of an order of the Ministry of Science and Higher Education of the Russian Federation dated 03.14.2020 in order to prevent the spread of coronovirus, which covered most of the globe.

Pupils, students of various advanced training courses and professional retraining are forced in this situation to independently master a large amount of information in order to master competencies (Stroganov et al., 2004). To provide students with this knowledge, digital technologies are being actively used, which makes it possible to use information and educational resources concentrated on a single educational platform, for example, the LMS Moodle e-learning system. In addition, the university’s webinar rooms are actively used: Zoom, Skype, Webinar, Microsoft Teams, etc. Such educational platforms have long existed in universities, since they are one of the requirements for organizing the activities of higher educational institutions by the Ministry of Science and Higher Education of the Russian Federation. Аналогичные электронно-образовательные ресурсы используются и в системе среднего общего и средне-специального образования. Similar electronic educational resources are used in the system of secondary general and specialized secondary education.

A single platform of online courses allows schoolchildren and students to easily receive information on the disciplines of the training course. Teachers, as well as students, are equal participants in the educational process and they determine the content of the courses, are responsible for their filling, systematization, differentiation and control of students' knowledge. Thus, distance education focuses on the individual development of each student, regardless of his age, location, abilities, capabilities, etc.

The current practice shows that digital education, which we are increasingly using now, creates conditions for the development of students, taking into account accelerated development. Moreover, in this situation, the student is not included in the specific framework of the educational process (for example, lessons in the classroom at the school, classes in the student group at the university, etc.).

Digital education can be characterized as following:

- this system is quite flexible. The student has the opportunity to choose the way of his development, depending on his interests and needs. According to the volume and complexity of the task student plans the time it takes for him to complete the task;

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- mobility allows him to improve and develop through a sufficiently voluminous flow of information, to respond as quickly as possible to changes in the educational environment;
- technologies allow a student to organize his educational process using various information and communication resources;
- dialogicity, as well as interactivity, is achieved through dialogue between the teacher and the student, even if in on-line mode (for example, with the option of distance learning). At the same time, we do not even take into account that interaction in the form of a lecture should contain visual material according to the Federal State Educational Standard, which is also implemented in the educational process through information and communication technologies.

With all this variety of characteristics in favor of interactive-communicative forms of learning shown in the framework of digital education, one should not forget about the deficits that arise as a result of using these technologies. Computer virtual programs, on-line courses will not replace the live interaction between the student and the teacher. The lack of direct communication in this situation, ultimately, can also affect the quality of the material studied, affect the strength of assimilation of knowledge. In addition, a network culture problem arises. And in this situation, it is very important to involve students in productive educational activities and distract from useless surfing the Internet.

7. Conclusion

The use of information and communication technologies in the educational process is justified by its practical significance in organizing the educational process at all levels.

This technology helps pupils and students to master the curriculum at a free flexible pace. The widespread use of multimedia training materials and electronic resources allows students to acquire knowledge and master competencies in a specific field of knowledge. With the proper level of organization of training for subjects of the educational process with the help of electronic resources, the volume of acquired knowledge and skills increases, and at the same time, their responsibility for the effectiveness of educational activities increases.

Digital resources that are used quite actively in the educational activities of students allow to overcome the barriers of traditional education: the rate of development of the program, the choice of methods and forms of training, the choice of the teacher. In this situation, education is considered as a dynamic process. So, with the transition from the knowledge component to the active one, practice-oriented, individualized education is gaining importance. Undoubtedly, the main goal of the entire educational system of Russia is to improve the quality of education, which is possible only with the participation of a competent teacher who owns various educational technologies, among which an important role is given to information and communication technologies.

It is quite obvious that many competing sources are available to students and teachers: digital educational resources, training programs, online courses and various online services, etc. and all of them are directly used in the educational process.

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Thus, the use of information and communication technologies in education creates a new stage in the digitalization of society, which makes this technology publicly available and reliable for solving the tasks in terms of developing the quality of education.

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