Applying of information and communication technologies in the education process

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Abstract. The authors emphasize that the reform of the education system leads to changes in the technological and technical nature in the educational process. Information and communication technologies are now actively used in education, which, according to the authors, contribute to the design of a high-quality information educational space for higher education and the creation of the information culture of actors in the educational process. Based on the analysis, the authors revealed that in the communication space of the educational organization, circulate both external flows - external relations with social groups that are outside the educational organization, and internal ones connected with the organization staff and students. External flows are built at the organizational and managerial level and based on media communications. Internal information and communication flows in the educational process are carried out through the introduction of electronic document management, corporate mail, student assessment through a remote system, and the use of online learning.

1 Introduction

For each state education is the main element that gives the opportunity to develop human potential and helps reduce social inequality in society. In this regard, this social institution attracts the close attention of scientists working in the framework of the social and humanitarian direction.

The transformational processes that are taking place in Russian society entail fundamental changes in various social institutions, among which is the institution of education. Like any of the components of the social structure, the institution of education is subject to the influence of external factors. Scientific and technological progress and the development of computer technology can be attributed to one of these external factors. In connection with the existing changes, the higher education system in Russia is currently undergoing a stage of technological and technical updating.

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Technological progress and globalization are accelerating changes in the framework of the educational institution, leading to the emergence of new knowledge and the use of new technologies in the educational process. Education becomes more mobile and turns into an open system, within the framework of which there is a decrease in the role of formal education and an increase in the role of non-formal education, which goes beyond the standard educational environment.

That is, the educational institution is acquiring new forms of obtaining educational services, using new methods and technologies - the educational service itself is changing. The success of the development of higher education becomes directly dependent on the flexibility and variability of interaction, the speed of response to changes, overcoming natural inertness [1-3].

The modern stage of education development is characterized by active computerization and informatization. Information technologies are actively penetrating the life of society, becoming an integral part of the education process, since Russia has the following task for the coming years: to take a course towards the breakthrough scientific, technological and socio-economic development of the Russian Federation [4]. One of the conditions for the implementation of major educational programs to meet the requirements of federal standards of higher education of the new generation is to design information-educational environment of the educational institution.

Thus, the relevance of the study of information and communication technologies in the educational process is primarily due to the increase in the volume of new information, which enhances the informative capacity of classes and requires the optimization of the educational process. Moreover, the process of informatization of education acts as a prerequisite for the introduction of new methodological developments into the educational process.

In connection with the identified focus and the challenges educational institutions face, there is an increasing need to study the technologies used in the educational process. Which in turn determines the purpose of our study - to consider the information and communication technologies used in the educational process.

2 Materials and Methods

Issues related to the sociology of education are very actively considered in the works of domestic researchers. The relevance of the subject field is the fact that many researchers believe that higher education, both in Russia and in the world, is in crisis [5], which entails reforming the education system.

One of the most developed aspects in the framework of this subject field is the study of the functions of higher education in the modernization of the educational system [6-8]. It is also worth noting that many applied sociological studies are aimed at analyzing the quality of educational services [9,10]. Touching upon issues of the quality of education, it is important for researchers to understand the technologies and mechanisms used in the educational process. In light of this, within this article, it is important to pay attention to the works devoted to the consideration of the content of information services in education [11,12]. Analysis of the process of informatization of the education system is presented in the works of K.K. Colin and V.A. Lukov [13].

Thus, based on the analysis of scientific literature on the relevant problem, we found out that the functions of the higher education system are considered, their structure is determined, changes in the functions and structure of education are described in connection with the reform of higher education. Researchers are also interested in the question of the quality of education and the content of information services in the education system. However, despite the multidimensionality of research, in our opinion, there is a lack of

works devoted to the use of information and communication technologies in the educational process.

Since education is one of the main educational institutions, it is important to apply the institutional approach in the consideration of education (E. Durkheim, M. Weber), which makes it possible to judge the tasks of professional education. This approach allows us to consider the formal and informal norms and rules coexisting in education that govern relations between people, which in turn makes it possible to evaluate pedagogical and managerial decisions at all levels of educational structures.

Along with the institutional approach, there is a structural-functional approach (E. Durkheim and T. Parsons) focused on the analysis of education as a sustainable social system that has a standard set of practically unchanged qualities. However, in the changing conditions of the modern world, it is not enough to use only two of these approaches, since there is a transformation of all areas of public life. Many researchers have noticed the crisis of the educational system on a global scale, which is associated with the pace of reforming the educational environment, which is lower than the rate of general institutional transformation, and requires the formation of a multi-paradigmatic approach to the study of the educational system [14]. Using the multi-paradigmatic approach, it seems possible to study the trends in the education system most comprehensively and to justify anti-crisis processes in the educational environment, among which the development and active introduction of innovative educational technologies predominates.

3 Results

Due to the fact that the Russian Federation has an innovative scenario of socio-economic development, to improve the quality of life of citizens, to ensure the competitiveness of Russia, the Ministry of Digital Development, Communications and Mass Media of the Russian Federation has developed the state program "Information Society". One of the planned results of this program is to ensure the development of services based on information and telecommunication technologies, including in the areas of culture, education, science and health.

As part of this study, we analyzed the use of the role of information and communication technologies in the educational process. Before describing the main results of the analysis, let us dwell on the operationalization of the concepts used in this work.

The main function of the social institution of education is the translation of social experience and knowledge from one actor to another. Therefore, it is very important to understand what communication means. Turning to the etymology of this term, we note that communication is a connection. In the literal sense of the word, communication means "shared by all" or "common". That is, communication in the educational process, in our opinion, is not just a transfer of information, but also a process of achieving coherence between those actors who actively interact with each other. Of course, the communication process is difficult to imagine without the exchange of information. Information is presented in the form of facts about the world that act as an object of storage, transformation, transmission and use within the framework of subject-object relations. The amount of information is increasing with geometric progression that involves everyone in the information society.

The phenomenon of communicative space is currently gaining special significance for the education process and is a promising area of communication management in the education system. The communicative space in education is based on the use of various communicative resources, which include information and communication technologies. Information and communication technologies in education are a set of software and hardware facilities and methods that provide the collection, storage, processing, analysis

and transmission of information among the actors of the educational process in order to reduce the complexity of the processes of using information resources, while increasing their efficiency and reliability [15].

In the communication space of the educational organization, circulate communication flows of both external nature - relations with social groups, which are outside the educational organization, and internal nature, relating to the organization of staff and students.

Considering external communication flows, we noted the organizational level of the use of information and communication technologies in the framework of the interaction of the state with the educational organization and the managerial level in the communication of the educational organization with applicants.

In the interaction of the state and the higher education organization, attention should be paid to the regulatory documents aimed at the development and implementation of information and communication technologies in the field of education and science: the Law "On Education", the Federal Target Program "Development of a Unified Educational Information Environment", Project "Informatization of the Education System" Priority national project "Education", the state program of the Russian Federation "Development of Education" for 2013-2020. In the framework of the implementation of these regulations, higher educational institutions are equipped with modern computer technology, multimedia and communication equipment, educational software. In general, these documents are aimed at designing a high-quality information educational environment of higher education and the formation of an information culture of the actors of the educational process.

At the managerial level, in the interaction of a higher education organization with applicants [16,17], we single out one of the most commonly used information and communication technologies - the site of an educational organization. It should contain complete reliable information about the educational organization, its goals and mission of the higher school. The site describes the full structure of the organization with personal listing of employees of the organization, contact details of each structural unit. The site should contain information on admission rules and enrollment information for each of the main educational programs: a set of exams, the number of passing scores, the program of entrance examinations, statistics of enrollment for previous periods. On the website, you also need to post information about the main educational programs implemented by the educational organization of higher education: the curriculum of programs, the calendar plan, the schedule for the implementation of the main educational programs, brief annotations for each of the taught disciplines and full work programs of the disciplines. The information on the website of the organization should be complete and clear. Since control over the implementation of the main educational programs of higher education and the activities of universities is carried out by Rosobrnadzor (Federal Service for Supervision in Education and Science) as part of accreditation activities, the first stage of which is remote - familiarization with the information available on the site.

Touching upon internal communication flows in the organization, we also highlighted the organizational and managerial level - the use of information and communication technologies that allow building a convenient and effective communicative management for the educational organization. For operational communication between the management team and staff, corporate mail is used, an electronic document management system that allows them quickly coordinate documents, reducing time costs and not tying employees to a specific location to solve the task of issuing orders, recommendations, and approval of reports. There is also a IC university system with the ability to create and edit curricula and load balancing of faculty remotely. In the interaction of the management team with students, there is a student personal account system, where the student can find relevant information on the educational program, a list of disciplines studied in a particular

semester, contact the teacher in electronic mode, and lay out his/her work for assessment by the teacher. The personal cabinet system also allows students to fill out a portfolio and participate in university competitions for academic grants, material support during training.

We believe that with the help of such information and communication technologies in education, employees and students of higher schools become more mobile and can solve emerging issues remotely.

Since the knowledge paradigm of education has been supplemented by a competency paradigm, the approach to teaching students is changing. The following characteristics of higher education are indicated in UNESCO documents today: expansion of access to higher education, its mass distribution; development of distance education; the formation of a network of cross-border higher education based on information and communication technologies; focus on continuing education; orientation to “educate, train and conduct research”; orientation to the development of personality [18-20]. With such a premise on the informatization of society, it is difficult to avoid the use of information and communication technologies in teaching students. None of the university courses can do without presentation materials, which can often be found on the university website. Now it is becoming popular to include online courses as part of one of the modules of the discipline. There are entire online education platforms. For example, open education. Here students can enroll in courses of interest to them, take distance education, pass exams and receive certificates that the teacher has the right to take into account when setting the final grade in the discipline. Assessing students is also carried out with the use of information resources. Many universities have a system of point-rating assessment of students, where each teacher has access to the grading system and can remotely set grades for students based on the proposed fund of assessment tools within the discipline (Fig. 1 [19]).

Fig. 1. Educators opinion on the effectiveness of simulations.

Thus, the use of information and communication technologies in the “student-teacher” combination allows students and teachers to stay in touch in the remote access mode, where they can exchange the necessary information and resolve issues. Online learning gives students a sense of freedom and their own control over their development process, which is a good motivator for the educational process. The higher education system is becoming flexible, mobile, and affordable.

4 Conclusions

Based on our analysis, we found out that in connection with the informatization of society, information and communication technologies are actively being introduced into the educational process. The use of information and communication technologies in education takes place within the framework of external and internal flows in the communicative space of the educational environment. External flows are built at the organizational and managerial level and based on media communications. Internal information and communication flows in the educational process are carried out through the introduction of electronic document management, corporate mail, student assessment through a remote system, and the use of online learning.

The reform of the higher education system should be based on the development and implementation of the pedagogical projecting of the educational process in higher education using new information and communication technologies, since they make the educational system more flexible, accessible and mobile for all categories of citizens.

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