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DISTANCE EDUCATIONAL TECHNOLOGIES IN INDEPENDENT
WORK OF STUDENTS AND UNDERGRADUATES

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Abstract

The article analyzes the essence and features of distance learning, highlights its positive aspects, which allow organizing mass continuous self-learning, universal exchange of information, regardless of time and space zones. Minimization of direct communication between the teacher and students, the impact of the teacher's personality, low motivation and self-organization of students make this type of studying not always effective and lead to a decrease in the professional training of students in several areas. The use of distance education technologies in traditional studying allows reducing the negative factors of full distance learning, using all the possibilities of electronic resources. With a view to exploring the attitude of students at the University to distance learning, a survey was conducted, which was attended by 135 students and undergraduates. The results obtained show that the introduction of distance learning is primarily determined by the compliance of education with global development trends. It is preferable when implementing advanced training courses and retraining programs. The main problems of introduction and implementation are associated with a low level of technical and psychological readiness of teachers. The use of distance education technologies, as well as distance learning in general, increases the effectiveness of independent work. Its organization is difficult due to the poor preparation of students for the perception of scientific information, independent work on its understanding, and insufficient involvement in the educational process. Effective implementation of the educational route becomes possible when using modern electronic educational resources.

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Keywords: Distance learning, distance educational technologies, individual educational route, independent work, electronic resources



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1. Introduction

In the modern world, information technologies with high potential are implemented in all spheres of human life, and the sphere of education is no exception. It has been confirmed in recent months, when, during the period of self-isolation during the pandemic, educational institutions at all levels were switched to distance learning or online learning using remote technologies.

2. Problem Statement

However, the use of Internet technologies and distance learning is not new to the education system. In Russia, the distance learning system has been developed since 1995. And if in the beginning, as an educational system that complements intramural and extramural education, now there is an opportunity to get education remotely. Thus, to date, we have accumulated some experience in the use of such technologies, which allows us not only to see but also to engage new opportunities in the organization of the learning process. Specialists on strategic issues of education (A. A. Evseev, G.E. Zborovskii, V.A. Sadovnichii, A.V. Khoroshilov, S.A. Shchennikov, etc.) call distance learning the educational system of the 21st century. Such studying provides equal opportunities for all people, regardless of their social status (schoolchildren, students, civil and military personnel, the unemployed, etc.) in any part of the country and abroad to give effect to their rights to education and information. Ago as 2018 M. Medvedev expressed the opinion that distance learning should become the norm in the Russian education system to equalize the conditions for obtaining it at all levels. It is the system that can most adequately and flexibly respond to the needs of society and ensure the implementation of the constitutional right to education of every citizen of the country. However, this form is unusual for the majority of the Russian population, which is focused on education. According to sociological surveys, only 18% would like to receive education remotely. First of all, they are those who already have a higher education, and it will be a second higher education or an advanced specialization in the existing one.

3. Research Questions

Distance learning is a method of didactics, which is based on special computer technologies that provide studying of students in the framework of an academic discipline according to individual optimal programs with learning management (Okolelov, 2003). It makes it possible to create systems of mass continuous self-learning, universal exchange of information, regardless of time and space zones.

Pedagogical technologies used in distance learning, are information technologies that can be considered as the process of preparing and transmitting information to the student, via a computer. Distance educational technologies can fit into both the traditional learning process and distance learning (Belavina, 2013).

The effectiveness of distance learning is determined by its inherent pedagogical meaning, among the interpretations of which two significantly different approaches should be distinguished. The first approach, which is quite common today, implies the exchange of information between a teacher and a

student by distance learning. Knowledge is understood as information that is broadcast, and students' personal experiences are not acquired and their knowledge-building activities are almost unstructured.

In the second approach, the dominant feature of distance learning is the personal productive activity of students, which is built using modern means of telecommunications. This approach involves the integration of information and pedagogical technologies that ensure the interactivity of the educational subjects' interaction and the productivity of the educational process. In this case, the exchange and transfer of information play the role of an auxiliary environment for the organization of students' productive educational activities. Studying takes place synchronously in real time (chat, video communication, virtual whiteboards with graphics shared by remote students and teachers, etc.), as well as asynchronously (teleconferences based on email). Distance learning's features of this type are the personal, innovative telecommunications nature of education, its purpose is the creative self-expression of the remote subject of the educational process (Seregina, 2018).

Currently, distance learning has reached a new level of interaction between the teacher and the student. Using the Internet and personal computers allows you to communicate in real time, and modern software makes it possible to work effectively with various multimedia information in virtual space, whatever the actual location of the main subjects of the educational process due to different Internet resources.

Despite the undoubted advantages and active promotion of distance learning, there are currently negative aspects of this type of learning. As such, we can consider the fact that disciplines are transferred to distance courses that fundamentally require feedback, constant explanations and "live communication"; reducing or even eliminating the impact of the teacher's own personality, while an integral element of education, along with studying, is the education of the individual. In the case of higher education, the process of vocational education is completely or partially disrupted, and students have limited opportunities to acquire knowledge directly and personally from professional teachers in a particular field.

Another significant problem is related to the motivation of students, their attitude to the learning process, which requires much greater independence, responsibility and organization. In the situation of distance learning, the initial low motivation of the students, the habit of control by the teacher, the weak self-organization of the learners, the lack of emotional and psychological contact with other learners, the lack of feeling of belonging to a group and so on play a negative role (Labutina, 2016).

Besides, working in the framework of distance learning leads to additional loads for teachers: it is necessary to restructure the educational process; master the full potential of technical means and means of new information technologies; develop a program, taking into account the individual characteristics of students; make changes to the methodological apparatus; organize a system of monitoring and evaluation, concisely stating the material for lectures; develop practical tasks for fixing the lecture material, etc. In developing the curriculum, the peculiarities of students' perception of information, their level of knowledge and training, and their ability to perceive information must be taken into account.

4. Purpose of the Study

Since the impact of distance learning is directly related to the motivation of learners, it is important to understand their attitude to this form of learning.

5. Research Methods

To this end, a survey was carried out in order to identify ideas about the purpose of introducing distance learning, its place in the education system and the obstacles to its implementation. The survey was attended by 135 students and undergraduates of the Institute of humanitarian education of FGBOU VO "MSTU named after G.I. Nosov". Among the respondents, 70 (51.9 %) people are getting intramural education and, 65 (48.1 %) people are getting extramural education.

6. Findings

As a result of the survey, it was revealed that in general, undergraduates (94% of respondents) have an idea about distance learning. Only 6 % of respondents answered this question in the negative. When answering the question about the significant goals of implementing the distance learning system, it was suggested to choose several options (Fig. 01).

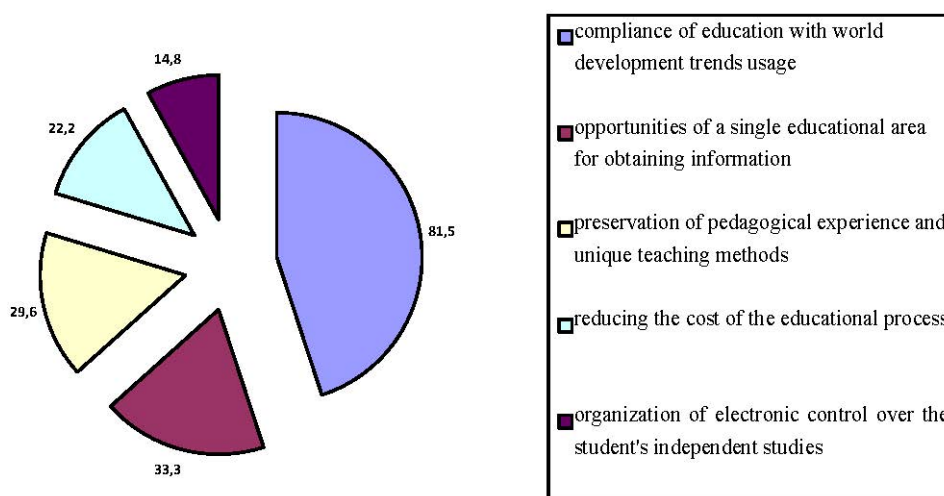


Figure 1. Goals of implementing distance learning

81.5 % of respondents believe that the introduction of distance learning is primarily determined by the compliance of education with global development trends. 33.3 % of respondents believe that such learning allows you to use the opportunities of a single educational area for obtaining information. 29.6 % believe that it allows you to preserve the pedagogical experience and unique teaching methods. 22.2 % of students assume that the active introduction of this type of learning is associated with the desire to reduce the cost of education. 14.8 % see the main goal of organizing electronic monitoring of students'

independent classes. At the same time, regardless of the main goal of implementing distance learning, 74 % of respondents support it, while only 7.4 % are categorically against it.

Slightly more than half of undergraduates, people who already have higher education (51.9 %), believe that distance learning is preferable when implementing advanced training courses and programs for retraining specialists. 33.3% believe that this type of learning is possible when studying certain subjects of theoretical and special cycles. According to 22 % of respondents, distance learning makes it possible to organize the monitoring of the students' independent work better (see Fig. 02).

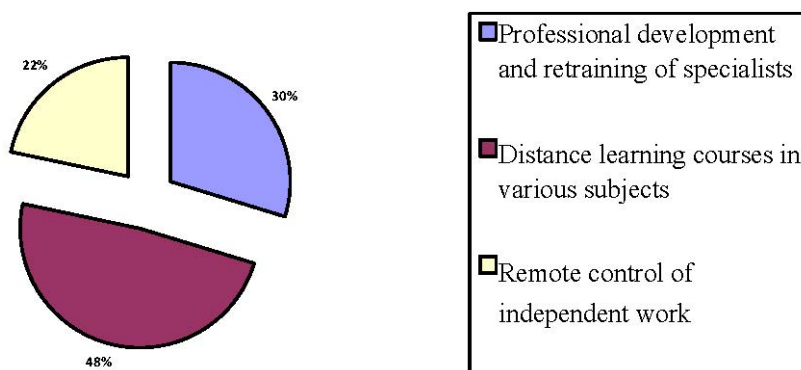


Figure 2. The place of distance learning in the education system

According to the respondents, the main obstacles to the introduction and development of distance learning are the lack of technical equipment and the lack of readiness of teachers for distance teaching, teachers' insufficient knowledge of information and communication technologies, and insufficient readiness to use remote forms of interaction. Such responses indicate that, according to the interviewed undergraduates, the main problems of implementing distance education are related to the lack of readiness of teachers, their inability to organize students' educational work in conditions other than working directly in the classroom.

7. Conclusion

However, despite the current shortcomings and problems of distance learning, this form of education is actively promoted. In particular, the availability of distance learning opportunities for students has become a mandatory requirement of the federal state educational standards of higher education (FSES HE). The use of distance education technologies allows us to minimize its shortcomings and preserve the quality of professional education. It is important that the use of distance education technologies, as well as distance learning in general, increases the effectiveness of independent work, opens access to non-traditional sources of information, gives completely new opportunities for creativity, contributes to the rapid acquisition and consolidation of various skills, allowing the teacher to implement fundamentally new forms and methods of learning.

Independent work plays a special role in the professional training of students and undergraduates. It is its successful planning and execution that guarantees the assimilation of the material studied remotely. Independent work is one of the educational activities aimed at the general education and special

training of students. It can be managed by a teacher, or it can be performed with the maximum degree of independence, which implies the training of a specialist who has professional socio-pedagogical thinking, a high level of self-organization and reflection, able to see himself as a subject of activity (Belko et al., 2016).

The organization of students' independent work is difficult because they are not prepared for the perception of scientific information and independent work on its understanding, are not involved enough in the educational process, are not psychologically ready to rebuild their educational activities. There is often resistance, which creates additional difficulties in learning. Most students need help in developing self-organization and self-control in the new learning environment, in developing educational and professional motivation. The use of distance education technologies will ensure the individualization of the educational process. In this way, in addition to developing the necessary theoretical knowledge and practical skills, students will actively develop their intellectual abilities, as well as their desire for self-education and self-improvement (Mameteva et al., 2017).

An individual educational route is defined as a purposefully designed differentiated educational program that provides the student with the position of the subject of choice, development and implementation of the educational program when teachers provide pedagogical support for his self-determination and self-realization (S.V. Vorobyova, N. A. Labunskaja, A.P. Triapitsyna, I.U.F. Timofeeva et al.). It is determined by the educational needs, individual abilities and capabilities of the student (the level of readiness to master the program), as well as existing standards of educational content.

Along with the concept of "individual educational route", it is necessary to consider the concept of "individual educational trajectory", which has a broader meaning and involves several directions of implementation: content (variable curricula and educational programs that determine the individual educational route); action-related (special pedagogical technologies); procedural (organizational aspect). Thus, the individual educational trajectory provides for the existence of an individual educational route (content component), as well as a developed method of its implementation (technologies for organizing the educational process). The development of an individual educational route allows you to choose the optimal forms, means, methods and rates of learning, to use those teaching methods that best suit the individual characteristics of the students. One of the most effective means of implementing an individual educational route is the organization of independent work with the use of remote technologies. Learning along an individual educational route increases the flexibility, dynamism, and variability of the educational process. The student gets the opportunity to see the meaning and weight of the discipline in the context of future professional activity, and the idea of the future is a factor that drives the learning process (Galyaev & Hasanova, 2017). An individual educational route is based on students' diagnostics. As a result, when designing an individual educational route, the volume of the material being studied, its complexity (single-plan, multi-plan, multi-aspect) and the form of presentation, differentiation of tasks by level of complexity, the inclusion of additional tasks are taken into account.

In practice, little attention is currently paid to the individual approach, because it is a more time-consuming process for the teacher, requiring special attention as to the personal qualities that should be formed and developed by the students, and the content and methodological aspects of studying. An individual approach to learning will be effective when the individual, cognitive activity of students will

act as an organic element of their independent work, organized as a single system that accompanies all stages of learning.

In the content of education, there is an invariant core and a variable component. An invariant part of the content of education is the basic minimum of mandatory training for each student, which is determined by the standard program for the course. The variable part of the content of education is aimed at growing the needs for knowledge, ways of activity and relationships of students. When organizing individual educational activities of students, it is necessary to take into account that they are divided into three groups according to their professional development. The first group is self-developing: students with a high level of professional training, characterized by high motivation to learn. The second group is stimulated: students with an average level of professional training. The third group is passive: students with a reduced level of professional training who avoid intellectual stress (Zaslavskaya, 2019). Each group of students assimilates invariant content, enriched with fragments that are necessary for this group. Based on this, independent work can be presented in the form of the following levels:

- 1) the literal reproduction of the information;
- 2) independent work on the model;
- 3) reconstructive independent work;
- 4) independent heuristic work;
- 5) creative (research) work.

The organization of independent work within the framework of the studied discipline should have the following characteristics:

- focus-independent work should be aimed at achieving a consciously set goal;
- thoughtfulness-independent work should involve students' choice of ways and means to achieve their goals, as well as the sequence of further actions;
- awareness-the content of the master's independent work should involve conscious planning and anticipation of the possible result for students, the construction of a certain logical scheme;
- structurality-the work must involve the construction of a specific structure, a specific set of actions and a sequence of their execution;
- effectiveness-completion of independent work of the master should be reflected in a certain result of his activity (Sysoyev et al., 2015).

The learning process will be the most effective if there is free access to modern electronic educational resources:

- organizational issues of the distance course (goals and objectives, purpose and content);
- electronic lecture notes, which must be structured in accordance with logically completed modules for the successful assimilation of educational material;
- electronic educational publications with multimedia capabilities;
- virtual practical classes;
- tests for checking knowledge, test tasks of different types: one correct answer, multiple choice, correct/incorrect, matching, short answer, numeric, etc.);
- lists of links to virtual libraries and materials for independent in-depth study;

- glossary (list in alphabetical order, with hyperlinks from sections of the course, provides a definition of the main concepts while enriching the vocabulary);
- chat (allows you to organize real-time consultation of students);
- reference system in the form of a database for the entire course;
- a block of research tasks for independent work of students (Belko et al., 2016).

At MSTU called after G.I. Nosov Such work is carried out on the basis of the learning management system of the modular object-oriented learning environment Moodle. The use of distance educational technologies provides an opportunity to receive feedback in the optimal time, communication with the teacher can be carried out by e-mail or through an educational portal. These technologies can also be used in the organization of knowledge control, they make it possible to create a system of cumulative assessments, tests and so on, which can perform a motivating role. In addition to the traditional types of control (exam, test, course work, etc.), students' self-control can be updated, which is organized using computer training systems and techniques, answers to control questions or doing tests in separate sections of the discipline (Orinina et al., 2019).

Thus, the use of remote educational technologies allows you to use the capabilities of electronic resources while maintaining direct communication between teachers and students. The inclusion of such technologies in the educational process ensures an increase in students' self-mastery, their responsibility, organization and activity, generally creating conditions for the improvement of the quality of vocational education.

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