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## DESIGN AND IMPLEMENTATION OF DISTANT EDUCATIONAL TECHNOLOGIES FOR BACHELORS

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### *Abstract*

The article considers distance learning as the most mobile, flexible, democratic form of education, which allows to practically realize the right of everyone to education and information. Learning tools represent the content of learning, control and management of educational and cognitive activities of students. In the traditional educational process, such means are: textbooks, teaching AIDS, reference books, floppy disks with educational information, blackboard entries, posters, movies, videos, as well as the teacher's word. The most common types of distance education involved in the educational process are: videoconferencing-video image exchange, accompanied by sound; audio conferences-audio information exchange; teleconferencing, conducted using a computer; video lectures; classes in chat; web lessons; radio; television channels. Apply these types of training is possible, both individually and in a complex. Distance education is now very common in many educational institutions, both higher education and secondary. There are such pedagogical models of distance education as: correspondence, regulated training, consulting model, case model, radio-television training, network training, model of mobile technologies, etc. However, there is no single generally accepted systematization of distance learning models yet. Nowadays there is a great demand for distance learning the Russian Federation mainly in the regions, as in remote regions the level of educational institutions is much lower than the level of Metropolitan or international higher education institutions. The development of distance education in Russia provides access to quality education and gives an opportunity to get a place in the world market of educational services.

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**Keywords:** Distance learning, educational environment, distance training, bachelors degree.



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## **1. Introduction**

The relevance of the study is considered by the needs of the modernized Russian education in a specialist with social and professional mobility, combining a high level of culture, intelligence, education, good behavior, strategic design and implementing life plans. Modernization of educational system becomes the main task of Russian educational policy. Modernization of educational system is a comprehensive update of all links in the educational system and all areas of educational activity in accordance with the requirements of modern life, while maintaining and multiplying the best traditions of national education. This is a reformation of the educational system's principles inherited from a bygone era, as well as the principles of managing this system. The modern educational system is experiencing big changes in the content, technology and organization of the educational activity itself. This also carries significant rudiments of the past and is largely subordinated to the modern issues. These are profound changes in the educational worldview, which is still to a large extent authoritarian and totalitarian in educational policy. It is still divorced from the needs of the individual, society, and country. There are new teaching technologies, techniques and approaches used for its modernization. Technology of distance learning is a way of educational modernization (Akopyan et al., 2019).

Distance learning is one of the new approaches to learning which combines the latest technological advances in telecommunications with the latest methods of self-education and self-control.

## **2. Problem Statement**

The problem statement is set due to the increasing number of students dealing with distance learning methods. Most students are striving to study for free and full-time, though the scholarships are decreasing, so many people choose distance learning technologies as an alternative. The basis of distance learning are advanced technologies that make it possible to open and accessible education for students regardless of their location.

## **3. Research Questions**

The research question is considered distance technology in higher education.

## **4. Purpose of the Study**

The purpose of the study is to consider approaches to the use of distance technologies in higher education.

The tasks set and solved are the following:

- concepts of distance educational technologies;
- the features of the use of distance learning technologies in the preparation of bachelors didactic material on distance learning.

## **5. Research Methods**

The study was conducted using the following methods:

- retrospective analysis of domestic and foreign experience on the research problem;
- theoretical methods (comparison, analysis, synthesis, abstraction, concretization, classification, pedagogical design, etc.);
- methods of studying and generalizing modern pedagogical experience in the field of research problems.

## 6. Findings

Distance learning technologies widen the educational boundaries. Population living in a distant area and citizens from other regions have the opportunity to study at leading educational institutions of the Russian Federation online, which reduces the expenses within the same quality of education. Also, distant learning technologies contribute to the education of different layers and groups of the population, regardless of the health and social status of citizens (Shevchuk, 2007).

The Law of the Russian Federation on Education allows the possibility of combining several forms of education, obtaining the following advantages using distance learning technologies:

- Making educational process more flexible and focus on personal features;
- Developing a lesson plan within an individual approach, certification and designation of training periods.

Based on the goals and conditions, educational institutions have the opportunity to choose one of the new models for the implementation of distance learning technologies.

The definition of a model for the implementation of distance educational technologies considers the following:

- bringing to a unified system of organization of educational institutions;
- bringing to a single system of organization of educational activity of students and trainers.

The formation of the distance learning system was due to various conditions and a variety of models (Zhiryakova, 2016):

- geographical conditions;
- an affordable level of information and telecommunication technologies;
- the level of the transport system development;
- the level of computer technology in higher education;
- the level of observance of traditions in the field of higher education;
- the availability and training of the pedagogical personnel to work in the distance learning system.

undeniable contribution to science. There is a University in Saratov named after him.

In the last decade, a huge bet has been placed on distance learning technologies. If earlier the society focused on the sphere of technology, now it is focused on the information sphere. The time has come for the information era. Humanity is going through a phase of telecommunication growth. Education and work today are inextricable synonyms: information technology is being developed while

the professional knowledge is getting irrelevant. Thus, the educational system needs to be developed into the open source for everyone. Since nowadays we are experiencing more developed communication infrastructure, a system of constant self-training, a worldwide exchange of knowledge and information no matter the time and spatial zones characteristics distant education is becomes crucial. According to the 21st century's issues, distance education is known on of the most effective system for teaching education, retraining personnel, training middle managers and the most accessible technologies for people with disabilities (Abdullaev, 2007).

The modern educational system presents different types of specialized software often used to develop distance learning courses. The most common and popular instruments are *Learning Management System* – a learning management system, *Moodle* – a course management system, e-learning, *Teachbase* – an online learning system.

“LMS” is a repository of educational materials: video lessons, lectures, presentations, books and courses, which can be accessed from any device anywhere in the world.

The abbreviation consists of three words:

1. “Learning” – to teach. Using LMS, you can create a single database of electronic courses and training materials.

2. "Management" – management. Learning is administered by an administrator. He assigns users courses and tests, checks homework.

3. “System” – an electronic system. LMS automatically checks the tests and records how much time each user studied. The system generates data in the form of a summary report.

“LMS” is a learning management system. This is a cloud-based system that allows you to create, manage, and train online courses by providing the access to these courses. Online training takes place in the right order, at the right time from the beginner to the professional. The functionality of different "LMS" is different, but mainly divided into five main parts:

- work with educational materials;
- management of educational processes;
- interaction between users;
- analytics;
- E-commerce (electronic commerce).

The scientific content includes the creation of educational content and the ability to work with it, the creation of the courses themselves and the attachment of various materials, video, audio, text and other documents.

Conditions for a teacher to conduct the lesson include a webinar room, and activities of checking and commenting on homework, conducting tests and assessing students.

The educational process management is a user's personal account, a register of teachers and students, a class calendar, student activity and academic performance rating, document management, generation of certificate of attendance, and archiving and hosting of training materials.

Communication between users is a student reporting functionality and feedback on them, the exchange of documents and content.

Students interacting with each other and with the teacher – chat, forum, side and commenting, application processing system for personal consultation with teachers and mentors.

The analytics block includes performance statistics, training analysis and assessment of the result.

Payment functionality – payment of a subscription, payment of access to courses and payment by installments.

If the payment functionality and communications is transferred to other services, the work with the material, process management and analytics cannot be separated from LMS. These three blocks are the main ones in the work of the system (Topunova, 2012).

Knowledge management systems are more commonly used by commercial companies to train thousands of employees around the world. This provides several advantages: it helps to maintain at the same level the awareness of employees of both the central office and branches; increases the speed of learning when a new product line or opening a new unit. After all, users get access to online courses at any time, and one person can control the system from anywhere in the world. All you need is an Internet connection.

Often, “LMS” is confused with “LCMS”, but these are different systems. “LCMS” is also a management system targeted to develop the content of the lesson, not people. The abbreviation “LCMS” stands for Learning Content Management System.

“LCMS” pulls up courses from various libraries and forms a curriculum for the needs of each student. For example, at the start, a new employee passes an English proficiency test, and the system selects courses based on the results of testing.

“LMS” undergoes training on existing programs pre-loaded by administrators. LMS works with ready-made educational content, unlike LCMS, which forms it dynamically.

“LMS Moodle” is a learning management system. This system was created over ten years ago by the Australian programmer Martin Dugiamas and his colleagues, who set the goal to create a free and convenient software product for distant learning students. Australia is one of the leaders in distant learning development. There are more than seventy million people using LMS Moodle. The Moodle system is listed in the top 10 of the best online platforms for 2016.

Most educational institutions with thousands of students use it on a regular basis, for example, Open University in the UK, Goethe Institute, Oxford. In any country, you can find an educational institution that uses LMS Moodle, because there are translations into all languages of the world. Russian educational institutes also use this system widely: schools, continuing education, commercial and non-profit organizations. “LMS Moodle” unites students and teachers in one educational platform. There are different web application instruments available for free: forums, conferences, chats, seminars, lectures, additional materials, a library. Full-time students can also use the distant learning system to communicate with teachers during their gap-years (Shostak, 2018).

“LMS Moodle” is a very flexible system considering all the needs of students and teachers. Teachers in this system can change their discipline, breaking it into blocks, students can also share information for blocks. For more complex issues, this system involves programmers who can change the program code. “LMS Moodle” allows you to create a variety of tasks, so you can answer the teacher’s question by filming a video. This system allows you to watch interactive lectures within the format of

seven minutes. During this time, teachers try to present the material, since this is the optimal time for which the student perceives the video and what is explained there. If the teacher's video does not cover all the topics, there are additional videos on this topic on the "LMS Moodle". Also, "LMS Moodle" contains seminars where student assessment is possible by the students themselves. When performing tests, you can instantly see your own grades as well as you will be able to chat with your colleagues and professors (Ogannisyan & Akopyan, 2016).

Though the LMS Moodle system has its advantages and disadvantages. The list of advantages includes a completely free system, readiness for implementation; a powerful testing apparatus; a variety of educational elements, implementation of differential learning, a variety of pedagogical scenarios and educational strategies. Among the disadvantages users note the fact, although the system is free, one need a server to install it on; to requires the developed server system and consumes a lot of resources, which entails financial costs; the system itself requires serious study.

It is worth emphasizing that distance learning technologies are a complex system that includes three components:

- 1) organizational and methodological system (reveals the degree of importance of distance learning technologies, despite the fact that its models were formed, but the mechanisms of work were not completely adjusted);
- 2) information technology (are an integral part in modern distance learning and determine the further development of its technologies; require further development and implementation of innovations, because they can become basic in the future);
- 3) pedagogical methods (their application in the learning process and the creation of training materials is also necessary).

Many higher educational institutions present their own distant learning technologies that have a number of advantages (Olnev, 2011):

- the possibility to study at any time is guaranteed by the stable system performance, within a fixed amount of time according to the individual plan;
- the most comfortable conditions to study, to have an access to the internet, is guaranteed by an individual automated work area, with easy access to the network from different parts of the world, which is available also for disabilities;
- the time to study the discipline is not controlled, however, there is virtual mid-term examinations to pass which varies depending on the discipline;
- the modules created for the purpose of further development from a complex of independent educational areas that meet personal or mass needs;
- the possibility of synchronous training with traditional teaching, or advanced training;
- internet communication, interaction between students and teachers; the concept of virtual seminars is implemented, which implies an increase in the time for conversation, thus the chat itself exists in the primary form;
- unified form of educational material;

- anonymous Internet communication to express their opinion to people who cannot communicate directly, therefore, a student can only be recognized by success in certain fields of activity, without any interventions, and despite the physical capabilities, a student can communicate from any place where Internet connection is available;
- the possibility to update the material so that student could open lectures at any time, since they are downloaded online and are available as an electronic resource;
- independence, self-control and the persistence to achieve the goal, as the student realizes that there is no one to control as in full-time education;
- sites produce almost the entire workflow of the university;
- these universities provide both distance learning and full-time and distance learning;
- the websites of many universities support communication not only between the students and teachers, but also between students and the dean's office, students and the department head, personnel department and rector, which, of course, positively affects both distance education and the work of the university itself;
- in addition, there are information portals for parents about the students' academic performance, the portal at the same time allows parents to communicate with teachers and senior management of the university;
- taking part in different webinars and conferences.

Though there are limitations and dependencies (Semergey et al., 2015):

- the communication channel of the client site;
- credibility gap since Internet has recently been very often used by fraudsters to earn money by cheating (of course, control and neutralization are carried out, but since it is possible to be online anonymously, impunity flourishes);
- the success of teaching depends on the technical means and skills, the ability to work in a worldwide network and overcoming technical problems (although this is usually the task of a technical support service, but it does not always work quickly);
- lack of laboratory techniques, devices and general technical support;
- many rural areas have no technical equipment and access to the Internet, which are the main conditions of the distant educational system, this is one of the important issues of disabled students;
- lack of personal contact between the students, which negatively affects the sociality of the student, as there is no live communication;
- the variety of forms of the learning process within the educational system is reduced;
- technical capabilities that do not meet the requirements for teaching aids are limited to html;
- insufficiently built-in mechanisms for creating educational material;
- as many students perceive information through audio better than visually from the screen, there is a need for a teacher to conduct lectures, though transmitting information into the large text document is still ineffective.

To identify the didactic possibilities of research tasks for students of vocational training, the authors developed methodological recommendations on distance learning in the Fundamentals of pedagogical skill program.

Distant learning students should be provided with the material and technical base with access to the Internet, which can be a desktop computer, laptop, modern tablet computer or smartphone with appropriate software and technical capabilities (Web camera, headset, etc.) (Rankine, 2008).

All the training materials are available if students go through the following algorithms:

1. Registration on the site [go.teachbase.ru](http://go.teachbase.ru) from various Internet browsers. The name of the platform *Teachbase* is driven into the search bar when opening the browser. To register in three lines, you should type *name, phone, email* and press *try*. An e-mail with a confirmation of the password and a link for further passage comes to e-mail (Slobodchikova, 2008).
2. After confirming the registration, go to the main menu of the site and select the *Users* section, fill in the user name and click the *Position* button, mark *Participant* and save.
3. To search for the course add the supervisor of the training course. Also, in the *Users* section in the upper left corner, select *Invite user* and enter the course leader's e-mail. You will see the surname and name of the course supervisor with a group of students in the data line.
4. Next step is to receive a letter from the course supervisor inviting to take the course, click *Record* and put a tick on *I agree with the terms of the user*.
5. After confirmation, a course opens containing the materials of the discipline "Fundamentals of Pedagogical Excellence" and access to the electronic library with all the additional materials for the course.
6. To get all the information on the organization of the course, you should return to the main menu and select the *Video Meetings* section with all the required information indicated with the date of the video meeting. There you will have an opportunity to have all your questions answered.

If the site undergoes different changes and modifications, students get information via email. For any problems appeared one should contact the support service, which also immediately responds to the emails.

## 7. Conclusion

The study contains didactic support developed for distant learning of bachelors in the field of *Vocational industry training* of the training profile *Logistic and technical service of motor vehicles* in the *Pedagogical excellence* course. The results of the study can be used by teachers in the preparation of bachelors and students in preparation for classes.

Like any other learning technology, distant learning has its advantages and disadvantages identified within the study results. The main advantage, according to the authors, is the opportunity to study outside the walls of the university. Since this technology allows you to study without leaving your home, with the same efficiency as full-time study, it can be said that education has become available to almost everyone, including people with disabilities. One of the main disadvantages of distance learning technologies is the impossibility and the great complexity of creating instruments (Shuvaeva, 2005).



Having considered all the advantages and disadvantages of the distant learning system, the study suggests developing the system though it is still a good source. Most of the distant learning systems function similarly, which means that in the future, the development of didactic material will take much less time and effort, as it will be improved.

Distant learning, based on modern information technologies, allows to provide a fundamentally new level of accessibility of education while maintaining its quality. Using new pedagogical technologies, information-computing and telecommunication facilities, the learning process gains great flexibility in terms of location, time, content, choice, accessibility, qualifications and training resources.

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