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Qualitative and quantitative aspects of the development of distance education in the Russian Federation

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***Abstract* — The article is devoted to the qualitative and quantitative aspects of the development of distance education in the Russian Federation.**

The effectiveness of the educational process in the educational institution should be constantly monitored for feedback, allowing you to quickly manage the educational process. To do this, it is necessary to have the appropriate tools to assess the effectiveness of the educational process. Performance measurement systems can be used as such tools. Visualization of efficiency factors will allow not only to monitor the effectiveness of the educational process, but also to motivate students to learn, to increase their interest in obtaining knowledge.

Keywords* — *higher education, digital technologies, online learning market, management, innovation

I. INTRODUCTION

The information society assumes that the majority of citizens seek higher professional education. As for Russia, we also officially live in the information society, but for a number of objective and subjective reasons, not everyone can provide the education they want. Assessing the importance of solving this problem and the potential of innovative educational technologies, a number of decisions were made at the highest level to create a system of distance education in the Russian Federation. It declares the need for the use of distance learning technology in combination with traditional educational technologies.

In the field of distance learning are intensively used information and communication technologies (ICT), which are the basis for the performance of the main functions of a higher education institution and are a characteristic feature of the modern educational context. The widespread distribution of distance learning has given rise to growing concerns about the quality of this service [4].

The technology of distance learning (TDL), in our opinion, should be considered as some method of pedagogical activity to achieve educational goals with indirect or not fully indirect interaction of subjects. The rational distribution of activities into procedures and sequence of execution with their subsequent coordination and synchronization is the essence of the method used. This distribution is carried out systematically, consciously and preliminarily on the basis and using the best practices of pedagogy, scientific knowledge and related and related Sciences.

In addition, distance learning technology comes in two forms: an action program containing procedures and operations, and services built in accordance with this program. In this context, the technology of distance learning can be considered as a system of science-based techniques used in practice in the educational environment, i.e. as a pedagogical technology of learning.

II. MAIN CONTENT

Through the development of distance learning technology services teaching methods are implemented. They carry out a targeted set of pedagogical procedures, which in turn regulate the operational composition, structure and development of students. A number of characteristics based on the analysis of theoretical developments that are inherent in any kind of effective distance learning technology are identified:

- distance learning technology involves the use of more thorough and detailed planning of the student's activity, its organization, a clear definition of the objectives and goals of training, the provision of special training materials;
- interactivity is one of the key concepts of the learning process based on distance learning technologies, which provides the maximum opportunity to use interactive teaching methods between the student and the teacher, the presence of feedback between the student and the learning material, providing opportunities for group learning;

- effective feedback is one of the important conditions of the TDL, giving confidence to students in the correct direction from ignorance to knowledge; it should both provide operation-by-operation control, be prompt, and be delayed in the form of external evaluation;
- motivation is also one of the most important elements of training with the use of TDL, which allows the use of a variety of methods and means of training. For it one should use the modular structure of the course, as a result of which the trainee has the ability to clearly track the process of studying the material from module to module, but voluminous modules or courses significantly reduce the motivation of training.

With this in mind, the services of distance learning technologies are understood as ways, methods and means of pedagogical technology used in the purposeful process of interactive interaction between students and educators, as well as with learning tools, invariant (indifferent) to their location in space and time, which are implemented in a specific didactic form.

The main criterion for the effectiveness of the educational process at the University is the level of assimilation of students' knowledge and mastery of cognitive and intellectual and practical skills. The main indicators of training include:

- the quantity and quality of knowledge gained in the process of learning;
- development of practical skills;
- the degree of intellectual development (the ability to logically and coherently present the material, systematize and summarize it);
- ability to apply the obtained theoretical knowledge in practice;
- communication skills.

The effectiveness of the educational process in the educational institution should be constantly monitored for feedback, allowing you to quickly manage the educational process. To do this, it is necessary to have the appropriate tools to assess the effectiveness of the educational process. Performance measurement systems can be used as such tools. Visualization of efficiency factors will allow not only to monitor the effectiveness of the educational process, but also to motivate students to learn, to increase their interest in obtaining knowledge.

In general, digital education is one of the fastest growing segments of the global education market. The annual growth rate averages 23% from 2012 to the present. However, in the total volume of educational services it still occupies a very small share - less than 3%.

The share of educational institutions implementing educational programs using distance learning technologies for higher professional education in the regions of the Russian Federation for 2018 is presented in Figure 1.

The Russian Federation's Law on education states that distance learning technologies can be used in all forms of education provided by the legislation of the Russian Federation or in combination, during various types of training, laboratory and practical training, practices (except for manufacturing practice), current control, certification of students. To date, the following TDL services can be defined.

Case technologies are based on completing sets (cases) of teaching materials and providing them to students for self-study. This service uses the following types of instructional materials: printed materials on paper (educational and methodical complexes, textbooks, manuals); audio, video materials (training audio and video cassettes); materials on CD-disks (video lectures on CD, educational and training complexes on the basis of Macromedia Flash technology, educational games). The provision of materials ensuring interaction between the participants of the learning process is possible with the help of traditional mail, Fax, telephone, as well as means of telecommunication technologies.

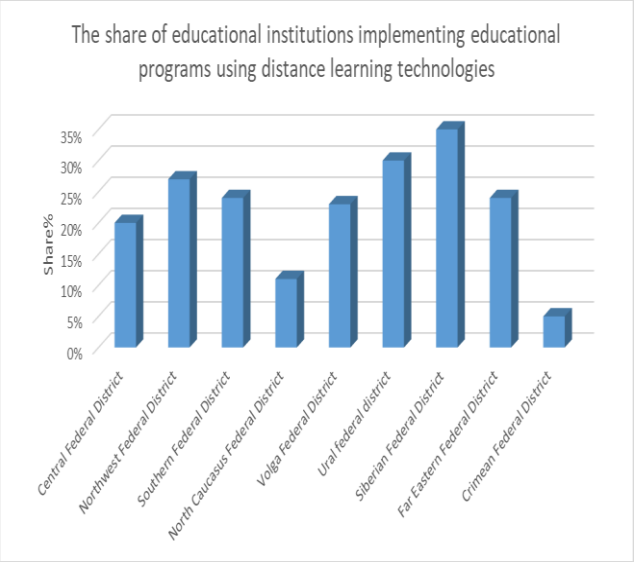

Fig. 1. The share of educational institutions implementing educational programs using distance learning technologies for higher professional education in the regions of the Russian Federation for 2018

The most reliable way to answer the arisen quantitative questions – to simulate process of distance learning.

Before starting modeling, we will designate the conceptual environment of future model. As it is about distance learning, as model of the trainee it is necessary to accept model spontaneous persons. Generally speaking, distance learning is a certain intermediate link between compulsory training by means of the teacher and self-training when the pupil sets to himself tasks and determines the content of the training. In any case, self-organization elements in distance learning are indisputable.

The block diagram of the distance learning process modeled in Simulink environment is presented in Figure 2.

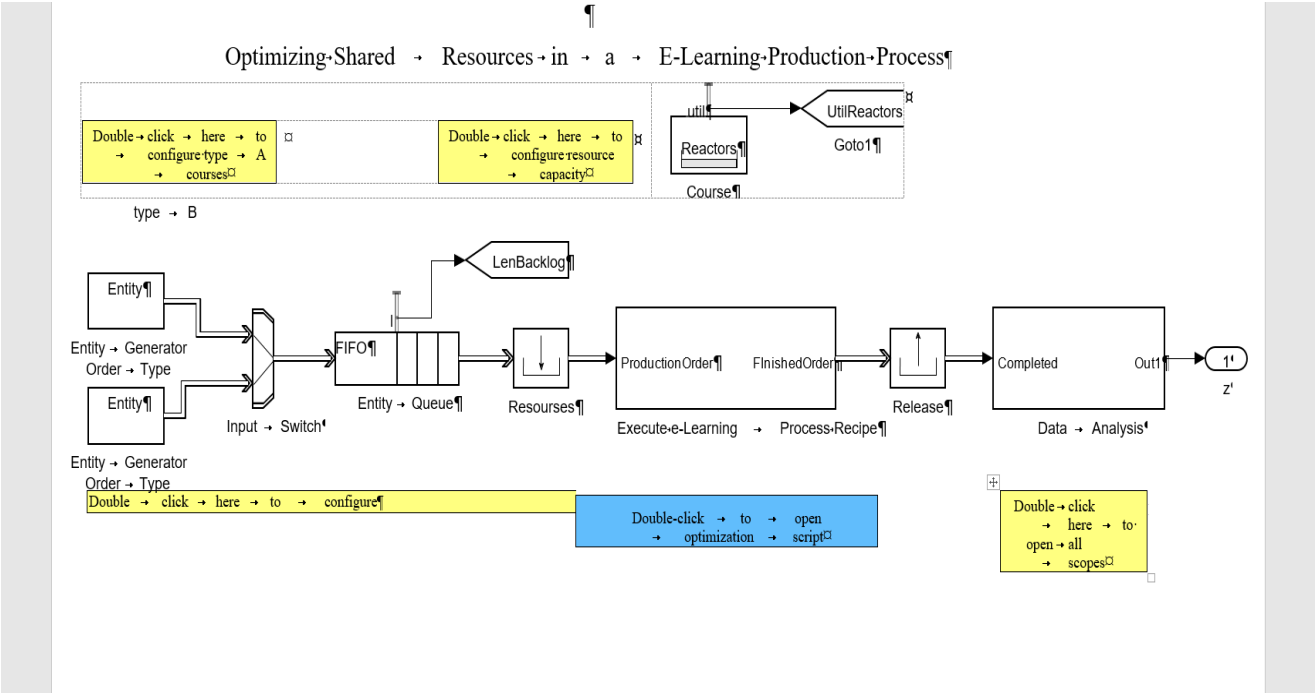

Fig. 2. The block diagram of the distance learning process modeled in Simulink environment.

The study determined that any model of the process of training an information technology specialist using the services of TDL provides:

- flexible combination of independent cognitive activities of students, the use of various sources of information, training materials specially designed for this course;
- systematic and operational interaction with the teacher, the course leader, the consultant coordinator;
- group work with different types of training in cooperation (cooperative learning) with the participants of the course, which use a variety of problem, research, search methods in the course of work on the relevant modules of the course;
- joint telecommunication projects of the course participants with the organization of the discussion;
- presentations of groups and individual presentations of intermediate and final control of the result during the electronic teleconference in the exchange of views and information with any partners via the Internet.

In assessing the success of such training, it is necessary to ensure operational control and provide for the development of appropriate training materials, including the final and ongoing control in the form of abstracts, tests, creative works and presentations.

During the training the future specialist with the use of TDL services, educational-methodical and information materials are located on training portals and resources that provide protection against unauthorized access, structuring users by categories, authentication and authorization of access, formation of a directory of information resources, etc.

The introduction of elements of distance learning in higher education provides the following benefits.

Education is available to people of different ages and social groups. Also, distance learning allows people with disabilities to get an education.

The possibility of increasing the level of qualification without interrupting their work and learning throughout life. The pace of development of modern society has led to an avalanche of professionally significant information. Because of that modern man needs to replenish and update his knowledge almost constantly throughout his life.

The possibility of individualization of the learning pathway for each student. Each student has a different level of theoretical and practical knowledge, so some students from the first class begin to lag behind, others break far ahead of the group. Individual approach allows taking into account these features of the student in the organization of the learning process.

One should also pay attention to the most typical groups of problems associated with the process of distance learning:

- insufficient development of information and communication infrastructure in Russia. To organize the process of distance education teachers and students should have modern personal computers, software.

- insufficient computer literacy of students and teachers. The user of distance learning technologies should be confident in technical and software tools. In particular, the teaching staff should have the skills to use graphic editors, programs for processing video, sound and multimedia components.

- lack of comprehensive methodological materials on the organization of distance learning, a certain shortage of qualified professionals who can conduct training of teachers in the use of distance learning platforms at a qualitative level.

Based on the above-mentioned specifics of the use of distance learning technologies in education, we can consider the model of the module of distance education. The model

consists of three main building blocks: theoretical information block, the block of control of knowledge and testing, construction elements for providing feedback.

Theoretical information block includes a set of ordered set of lectures, which are equipped with automatic elements of intermediate control. Each course contains keywords that are used to index the course page in search engines. The information is presented in two modes. The training courses provide for the possibility of individualization of the student's learning pathway. According to the interim results, the system can change the complexity of tasks and the depth of the material presented. The theoretical elements are divided according to the training weeks.

The block of practical tasks and knowledge control includes: basic and complex tasks, various elements of knowledge control. It is possible to adjust the complexity of the tasks in relation to the learning outcomes of the student. The finished task may be completed either in the form of a separate file or in the form of entering the answer in the special column under test. The system of knowledge testing is represented by the following elements: tests with a single or multiple-choice answer, graphic tests, tasks with the input of the answer.

The purpose of the third block is to provide methodological and reference information in asynchronous mode, organization of feedback. Knowledge base for open courses contains solved typical examples of tasks that were used in the training of full-time students of higher education. The second important component of this unit is a video library, which contains records of training sessions for full-time. Recording is done in real time, followed by editing the most important points.

So, we can draw undermentioned conclusion.

III. CONCLUSIONS

Due to the creation of a mobile and distributed educational environment and a significant reduction in unit costs per student in comparison with traditional learning technologies, the services of distance education technology provide a fundamentally new level of access to education while maintaining its quality. Such education is a very promising form of education for the population of Russia in the XXI century and contributes to the development of the information society of the country as a whole.

Improving the effectiveness of distance learning requires the introduction of innovative approaches and techniques. Improvement of courses from distance learning is associated with the development of high-quality multimedia software, the introduction of active methods and interactive teaching methods, increasing the diversity and complexity of the fund of evaluation tools; providing opportunities for individualization of the learning path for students.

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