Significance of the Organization of E-Learning Management System in a Modern University

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Abstract. The article considers the advantages of distance learning as the most effective and least expensive method of training during the economic crisis. The introduction of E-learning (EL) in the educational process provides new opportunities for the growth of the global education market, provides everyone with the necessary knowledge, and develops digital literacy competencies. The authors consider measures taken by the Russian government to apply Internet technologies in the education, as well as targets set for a priority project aimed at the development of online education. The analysis of the degree to which IT technology penetrates the major segments of the education market in Russia is provided. The article summarizes some theoretical issues of LMS Moodle application both on the positive and negative sides, and offers practical suggestions for the qualitative integration of e-learning in the process of teaching and learning in the higher education institute on the basis of effective e-learning management and good management. The system of e-learning management is developed on the modeling method, the main purpose of which is to apply modern electronic technologies in the educational process, to prepare the methodological base of electronic educational resources, and to improve electronic educational technologies in the e-learning format.

Keywords: E-learning · E-educational technologies · E-learning management · LMS Moodle · Modeling method

1 Introduction

One of the most important trends in the economy today is to optimize business processes using information technologies. At the moment entrepreneurs, having exhausted the potential of automating routine operations, are moving to create new business models based on online interaction of all participants. The education sector has not escaped these changes either. Although modern economy is often called the knowledge economy, the introduction of information technologies in the sphere of their production lags far behind the sphere of trade, financial services and many others. Just look at how the work has changed over the past 20 years in banks, universities, schools and preschool educational institutions. If banks were able to almost completely automate
interaction with consumers of their services and make it almost independent, the work of educational institutions has not changed much. The reason for this is the inflexibility of the management system of budgetary educational institutions and the need to follow the standards set by the state for many commercial educational institutions.

However, institutions that provide services in the field of business training, having evaluated the effectiveness of information technologies and e-learning, began to switch gradually to the electronic version. E-learning market, like any other market, follows the classical laws of Economics and is designed to establish direct links between buyers and sellers of educational services and materials. According to the calculations of Education International [6], the global education market has reached a volume of $5 trillion in 2017, and the volume of educational services provided with the help of digital technologies amounted to 165 billion dollars, or 3% of the total market. According to the forecasts made in this study, by 2023, the volume of the online education market will reach $240 billion, growing by 5% per year.

According to an optimistic version of the forecast the volume of this market will grow to this value by 2020 with an average annual growth of 17%. Thus the pedagogical community is actively discussing the issue of the educational system in the “post-viral era”. According to the expert assessment of the rector of the National Research University Higher School of Economics Kuzminov, there will be a total transition of University education and office work to an online format [7]. Taking into account the wider possibilities of transmitting materials in electronic form, it is difficult to disagree with the changes expecting the classical model, which translates knowledge in the classroom.

At the same time, much attention is focused on the positive opportunities that were previously insufficiently mastered. Thus, we are witnessing a new reality, which is based on the technological revolution and the achievements of industry 4.0. Not long ago e-learning was one of the possible forms of the educational process, but now it is becoming one of the leading functional technologies [5, 8]. So, according to Similarweb, the Russian online educational platform Uchu.ru entered the top ten sites in the world in the “Education” category in April 2020. According to the Zoom video conferencing service, the number of daily paid and free users exceeded 200 million in March 2020, while in December 2019 the maximum number of users per day was 10 million [9].

Therefore, in the near future, the development of e-education will largely depend on the quality of information technology. According to the report “State of Technology in Education”, presented by Promethean analysts, in the next 1–3 years, cloud-based tools for organizing and conducting classes will take the leading position (35.8%). This is followed by online assessment resources for students (31.4%), virtual and augmented reality (25.3%), programming and robotics technologies (21.8%), and distance learning (21.6%). Researchers are convinced that the absence of borders will be a characteristic feature of future education [4]. Thus, the first purpose of the research is to focus on the positive aspects of using EL in comparison with the traditional format in a modern University. The second one is to pay attention to the effective management of e-learning in order to improve the quality of education.
2 Methodology

At the meeting on the current situation in the educational system which took place on May 21, 2020, Vladimir Putin noted the tremendous opportunities offered by digital and telecommunications: “We have all gained a unique experience. And it should work to improve the quality of education, and to develop advanced distance educational technologies. It is necessary to accelerate our work on the development of modern informational infrastructure in education” [10]. Taking into account the data of a recent survey conducted by Houghton Mifflin Harcourt, the majority of teachers approximately 85%, view the potential of technologies very positively as they help them make the learning process more accessible and expand its capabilities [4].

E-learning becomes particularly important in the context of the introduction of the Federal state educational standards of higher education 3++, for which it is important to increase the independent content of students and reduce classroom work. According to the Federal state educational standards of higher education 3++, e-learning is seen as one of the leading functions of the electronic informational and educational environment of the University [3].

In recent years, open source platforms for creating online courses have become relevant. With the help of EdX, Google course builder, Coursera, Udacity, and so on, teachers can create massive open online courses MOOCs and BOOCs-platforms for open e-courses based on leading universities in Europe, the United States, and Russia, allowing them to receive education remotely using the Internet. Moocs can be integrated as part of the EL in the LMS. Most of these courses are free of charge, allowing anyone around the world to enroll these courses, attend them online, and receive certificates of education [2].

One of the most significant online platforms created at the state level and universities is Coursera, which has already more than 3,800 free online training programs, 65 million students, including 1.8 million in Russia, more than 4,000 courses from leading world universities and industry teachers, so Coursera has one of the largest datasets for identifying current trends in the field of competencies. According to the latest indicators (July 2020) of the global skills Index (GSI) from Coursera, Russia occupies a leading position among 60 countries in the field of technology, namely: human-computer interaction, programming, information systems protection, system software development, computer network and database skills, as well as in the field of data science, including: statistical programming and statistics, data management, machine learning, data visualization, mathematics. Russia ranks first in the field of technical skills due to high-quality technical education at the universities of Moscow, Saint Petersburg, Novosibirsk and Tomsk [2].

The ninth place according to the global skills index 2020 (GSI) from Coursera belongs to business competencies with a level of ownership of 87%, namely: marketing and sales, communication skills, accounting, Finance, management. This good position indicates the inclusion of a large number of active people in various governmental projects, for example, “Russia is a country of opportunities” and the development trends of Russian entrepreneurs who actively and successfully occupy the international market, such as mobile game developer Playrix, retailer Vkusville or the InDriver
app. However, more than 35% of graduates note insufficient development of business competencies in training, which is confirmed by a survey conducted by the ANO “Russia is a country of opportunities” [2].

Thus, the most sought-after skills on Coursera and business competencies relevant for further careers can help higher education institutes build a trajectory for their future development. According to the general director of Coursera Jeff Maggioncalda: “The recovery of the labor market after the pandemic depends on the opportunities for professional retraining. Government and business institutes should take the leading position in this process, giving people equal access to the skills they need to work in the future. The global competency index reveals key trends and insights that will inspire the public and private sectors and help them coordinate efforts to develop new skills and knowledge in the employed population.” Thus, one of the most popular competencies in connection with COVID-19 are risk factors and contact tracking, symptoms, public health, and the most popular course is the free “COVID-19 Contact tracking Course” developed by Johns Hopkins University [2].

However, one of the biggest challenges of these online courses is maintaining students’ motivation. So only 30% of students on the Coursera platform complete the training process successfully. Another important issue is the effective assessment of students’ knowledge, as well as the creation and management of a productive collaborative environment [2]. There is also a problem for students to familiarize themselves with multiple systems, as different teachers may use different systems.

3 Results

The higher education institute “Samara State Transport University” uses the LMS (Learning Management System) Moodle. This educational content management system has a number of positive features, the main of which are the ability to grant access rights (an administrator, a course creator, a teacher with or without editing rights, a student, a guest), keep track of students, show analytical reports, results of tasks and testing, use external informational systems and apply mechanisms for both synchronous and asynchronous communication, organize personalization. This online platform has great opportunities for organizing theoretical and practical classes, provides individual and group learning activities for students.

Moreover, LMS Moodle is characterized by a user-friendly and intuitive interface that allows teachers to fill the e-course with the necessary content themselves, using only the help system, and manage this course. Various elements of the course: tasks, lectures, wiki, Glossary, forums, chats, blogs, etc. are added to the e-course quite simply. The teacher can structure the course both calendar-wise and thematically.

In addition, LMS Moodle provides a large toolkit for creating tests and conducting training and tests, which is especially important for e-learning, where testing is an important form of knowledge control [1]. Despite a number of positive aspects, there are some negative aspects in LMS Moodle that do not allow us to teach students of “Samara State Transport University” well and, consequently, implement educational programs. One of the negative aspects of LMS Moodle at “Samara State Transport
University” is using of an imperfect system of technical resources. It is also impossible to say that these resources are actively used in the educational process.

Another significant negative side is the inactivity of the educational system at the University, which is not ready to respond effectively to the challenges of the present days, as well as the inability of teachers to organize the work of electronic educational content from a methodological point of view. It should also be noted the age of most of the teaching staff of the University – these are people of the third age, who do not doubt that the educational process is possible without the use of modern technologies. However, due to the rapidly changing situation in the modern world, the educational system requires specialists who are competent in the use of digital technologies, able to use new educational technologies to create a variety of electronic resources.

The situation of creating full-fledged electronic content at Samara State Transport University is aggravated by the lack of time resources for teachers due to their high workload. Moreover, it is necessary not only to create high-quality content, but also to update it in a timely manner in order to maintain it in a good condition because of constant changes. However, it is very difficult to make changes in time, that requires creating a network of universities, which today is quite difficult to assume when it will be implemented.

Moreover, the Department of technical and electronic learning tools, designed to help teachers provide technical support, effectively organize and administer online training on the LMS Moodle platform, does not have enough specialists. As a result, most of the courses developed by teachers are repositories of pdf format material. However, replacing a live lecture with an electronic textbook is a gross violation of the requirements of state educational standards. There is an obvious need to revise the curriculum and, as a result, make changes in Federal state standards.

In addition, the study of textbooks instead of “live” lectures, electronic textbooks causes great difficulties in mastering the material for students, since independent study of the discipline requires much effort. Low motivation of students also reduces significantly the quality of education in an online environment, where there are far fewer external factors that contribute to good academic performance. In many cases, students are left to their own devices during learning activities, and no one motivates them systematically to achieve their learning goals. As a result, studying according to the deadline during online learning can become difficult for students who do not have strong self-motivation and time management skills [11]. Taking into account the fact that the intermediate and final certification of students takes place in the format of tests, another tricky point of e-learning is the incompetence of many teachers in the preparation of correct tests that can effectively assess the results of the development of disciplines by students.

Therefore, the active use of low-quality online technologies is of great concern due to the deterioration of the level of training of students at this time, because even students studying by correspondence have a significantly higher level of training than students of distance learning. Consequently, there is a concern about the lack of demand for graduates of higher education institutes on the labor market due to low-quality training. This situation will not satisfy society, the state and students.
4 Discussion

Ensuring the quality and accessibility of education and as a result, the implementation of the priority goal of the higher education system, outlined in paper 69 of the Federal law “About education in the Russian Federation” – “training of highly qualified personnel of all main areas of socially useful activities in accordance with the needs of society and the state, meeting the needs of individuals in intellectual, cultural and moral development, deepening and expanding of educational, scientific and pedagogical qualifications” [3] is accompanied by a number of difficulties in the higher education institute “Samara State Transport University”. No doubt, effective e-learning management and good management can contribute to the qualitative implementation of e-learning.

We have developed e-learning management system at the higher education institute “Samara State Transport University” based on the modeling method (Fig. 1). In the scientific literature, modeling is considered as “the process in which the researcher studies the sides of an object of interest (including its hidden properties) and the construction of a model that reflects the features, properties, and connections of the object of study in a simple and visual form convenient for analysis” [12]. The basis of the developed e-learning management system in “Samara State Transport University” is a systematic approach, according to which the e-learning management process is seen as a system that includes a set of elements.

The developed e-learning management system at the higher education institute “Samara State Transport University” has the following management functions: planning, organization, motivation, coordination, control and consists of three interrelated elements: organizational and managerial; technological; documentation. The planning function involves creating of a conceptual framework for e-learning management, development of strategic and tactical plans of preventive measures, and development of resources for implementing of e-learning management technology. The organization’s function involves creating of a Department for e-learning management and delegating authority to manage e-learning and such resources as personnel, money, equipment. The motivation function is seen as the improvement of the informational skills of the staff, Department heads, deans, Directors of institutes and creation of an enabling learning environment; initiating intra-University competitions for the design of e-learning courses; development of an effective organizational culture among the staff of the educational institution, creating technologies for economic and moral incentives for e-learning management.

The coordination function examines the analysis of analytical materials for e-learning management; the discourse of problems regarding the e-learning management system on seminars, trainings, refresher courses, meetings; and assistance to users and responsible structural units when registering for e-learning system resources; work on the approval of local regulations confirming the expertise of online resources, development of open online courses (mooc and mooc format) for their placement on various platforms, including the University platforms; discussion with educational and methodological councils of institutes for assessing the quality of e-learning resources;
writing guidelines for organizing effective e-learning courses; development of methods and technologies for training sessions using e-learning.

The control function takes into account the analysis of all programs and activities for e-learning management at the higher education institute “Samara State Transport University”; clarification of the circumstances of failure to implement the e-learning management plan; monitoring of the online platform Moodle; marketing of online educational programs; diagnostics of the frequency and duration of requests to the course and its modules by students and teachers; administration of databases, software, backup; establishment of expertise, developed online courses; writing reports on the implementation of e-learning at “Samara State Transport University”; making corrections of the e-learning management system.

5 Conclusion

The main goal of the development of an e-learning management system at the higher education institute “Samara State Transport University” is to develop innovative education, active use of e-learning in modern education in accordance with international standards, a wide spread of scientific knowledge through the use of modern educational technologies in the educational process, the popularization of the
University on the market of educational services, the competitiveness of its graduates. The basis of the e-learning management at the higher education institute “Samara State Transport University” should be the diagnosis of the level of the development of e-learning, the evaluation of in-house methods, forms and elements of the management system of electronic training. The electronic learning management system at the higher education institute “Samara State Transport University” should be focused on the development of the educational organization and management of e-learning, the development of a model of information competence of teachers; determination of goals and objectives for the development and implementation of e-learning; establishment of principles and strategic directions of e-learning; analysis of the results and correction of the e-learning management system. No doubt the electronic learning management system at the higher education institute “Samara State Transport University” should be based on a highly professional staff. Thus, the e-learning management system at the higher education institute “Samara State Transport University” is considered as an informational management system, the main purpose of which is to use modern electronic educational technologies in the educational process, in the preparation of a methodological base of electronic educational resources, and to improve electronic educational technologies of distance education.

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