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Research paper

Possibilities of information technologies to increase quality of educational services in Russia

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Abstract

The relevance of distance education is the unlimited increase in the opportunities for the society to receive education, as well as the availability of information technology among the younger generation of students. The modern entrant is guided by the availability of an innovative product in an educational institution to which he will give preference. Therefore, the use of distance technologies, development and implementation of online courses in the system of teaching universities is a necessary condition for the success of the university in competition. The article reveals the experience of using online courses at Minin Nizhny Novgorod State Pedagogical University and Tyumen Industrial University. We conducted a formative experiment involving 40 students from Minin Nizhny Novgorod State Pedagogical University. The purpose of the experimental work was to test the effectiveness of the use of information technology developed online course in improving the quality of education of students. There are a lot of advantages of this type of training. Therefore, this article examines the issues of improving educational process by introducing online courses into the learning process that affect the educational process as a whole and also improves the quality of educational services. For market players, this is an opportunity to attract virtually unlimited students, and, consequently, significantly increase profitability. Applying information technologies, developing broadband access to the Internet and its penetration, an online course on the discipline "Service Activities" was created. The developed online course is the only one in the electronic environment of the Pedagogical University, all other courses are designed as an electronic educational and methodical complex. According to experts online learning market in Russia shows an annual growth rate of 25%. At the same time, the volume of Russian market in 2017 is only 10.5 billion rubles, while the world market is estimated at 107 billion dollars. Guided by the results of experimental work, they came to the conclusion that the use of online courses in educational activities in the study of the academic discipline had an interest in independent work, self-examination and self-assessment of knowledge, skills and habits.

Keywords: *Online Courses; Distance Learning; Information Technology; Educational Services.*

1. Introduction

Information technology today is the most prosperous branch of human life. Every day we receive a huge amount of information. With the appearance in our life such a large and multifunctional platform as the Internet, the most significant fields of human activity were exposed to innovations: medicine, finance, art, etc. [1].
Revolutionary changes have occurred in the educational field. Today, the entire education system actively implements modern information technologies at all stages of education [2].
The Internet is the largest information network in the world. Access to it has more than fifty percent of the world's population, and this figure is increasing every year. The education system occupied its niche in this network, creating an innovative service product - a distance (online) education [3].
The relevance of distance education is the unlimited increase in the opportunities for the society to receive education as well as the availability of information technology among the younger generation of students.
The modern entrant is guided by the availability of an innovative product in an educational institution, to which he will give preference. Therefore, the use of distance technologies, the development and implementation of online courses in the university education system is a prerequisite for the success of the university in competition [4].
Currently, professional education has accumulated certain experience in the use of educational electronic resources in the training of specialists. There are theoretical generalizations on the use of computers in the study of various disciplines at all stages of education in the university [5]. However, online courses aimed at improving the process of subject training for students in the university are currently very few, only a part of the disciplines have their own development in this form [6].
Online education is a wide range of educational programs or courses conducted without direct physical presence of the trainee in the training venue. As a rule, different software (for example, Skype) or special online services is used for this purpose [7]. Training can be provided both by accredited organizations with

the issuance of diplomas and certificates upon completion of training and by non-accredited bodies [8].
Despite the relative youth of online learning, it has a complex structure that includes various directions in the b2c and b2b segments [9].
There are a lot of advantages for this type of training. For market players it is an opportunity to attract virtually unlimited number of students, and, consequently, significantly increase profitability [10].
The first sites providing online education services appeared in the 90-s, but for a number of reasons they did not get popularity. The rapid growth of this direction began in 2012 when several major players emerged in the market which are now the basis of the whole direction) [11].
The effectiveness of using online courses will be higher if first of all to reveal the peculiarities of using online courses for the disciplines of the subject cycle in the educational process of training students [12]. Thanks to the development of information technologies, the development of broadband Internet access and its penetration, the distance learning market is growing at a significant pace today [13].
In general, digital education is one of the fastest growing segments of the world education market [14]. The annual growth rate is an average of 23% from 2012 to today. However, in the total volume of educational services it still occupies a very small share - less than 3%.
The most popular is the online learning of foreign languages, including through direct communication with native speakers [15]. Also popular are online tutors, preparation for offline tests, as well as corporate training. In the latter segment, so-called "long-life learning", or lifelong learning, that is, a continuous process of training the personnel in accordance with a changing external environment, new tasks, etc., is gaining popularity [16].
According to experts, the online learning market in Russia shows an annual growth rate of 25%. At the same time, the volume of the Russian market in 2017 is only 10.5 billion rubles, while the world market is estimated at 107 billion dollars [17]. Also, according to experts, 7.2 million Russians used online learning at least once.
To the main problems of the market, specialists attribute a rather low level of profitability [18].
Due to the large distance between educational centers in Russia, online distance learning is becoming increasingly popular. A positive factor for the development of this direction is also the growth of penetration of access to broadband Internet in Russia - in 2017 it was 73.41% of the total population [19]. These factors influenced a number of Russian universities (Moscow State University, St. Petersburg State University, MIPT and others), which, having united, created an electronic platform for online education "Open Education", which was to compete with major international projects [20].
Today's online learning market comprises not only lectures and textbooks available for students to study. Leading world universities are developing programs that also include practical exercises, student assessment, and programs that require students to interact with each other, even if they live thousands of kilometers apart [19].
National Research University "Higher School of Economics" is the absolute leader among authors of online courses (22% of the total 99 courses). With a huge margin behind the Higher School of Economics is the Russian Academy of National Economy and Public Administration under the President of the Russian Federation 7% [21].
One of the main reasons for the success of the project "Open Education" is that this site was able to overcome the desire of the universities to do something of their own and united under their wing the best universities, giving them their ready site and a constant stream of students.
Most mass online courses are recorded in Moscow (73%). Strongly behind the capital of St. Petersburg (10%) [22]. Even fewer online courses are done in the regions of Russia: Tomsk (6%), Yekaterinburg (4%), Vladivostok (3%), Nizhny Novgorod (1%), and other regional universities [23]. If the gap persists, then more and more good students will choose Moscow higher education institutions as magistracies, as applicants will see the quality and level of teaching and compare with their universities [24].
It turns out that in the field of educational online courses Moscow is leading in terms of the number of video footage, the National Research University "Higher School of Economics" as the author of the courses, and, with respect to topics, the absolute leader is the economy and business [25].
Thus, the relevance of scientific research in the use of information technology and the development of an online course in the process of training students of engineering and technical specialties is primarily due to the developed and well implemented in the learning process of the online course which can increase its effectiveness and efficiency by almost 1.5 times, to strengthen interdisciplinary ties and to strengthen practical orientation of many of the courses taught.
The situation in online education helps to see the current trends in the system of higher education as a whole. The revealed contradictions and the urgency of the research allowed to consider the positive results of the development and improvement of information technologies in the university and to analyze the developed online course on the discipline "Service Activities".

2. Methodology

The first stage is a preliminary acquaintance with individual actions for the formation of an indicative basis for the implementation of its activities. The second stage is the implementation of activities in the software access of the electronic educational environment. The trainee at the same time exercises control over the performance of each operation that is part of this activity. The third stage is the pronunciation of the operations that are being mastered, for their generalization, reduction and automation. The fourth stage - the sequence of operations is spoken out to oneself for the intensification and generalization of activity. The fifth stage is the transition of activity to the internal plan. The main criterion testifying to the effectiveness of the use of information technology in the process of teaching students is to improve the quality of education of future specialists. The effectiveness of introducing the online course developed in the discipline "Service activities" into the learning process was diagnosed before and after the end of the experimental work. The data obtained are presented below (Table 1. Experimental data).

Table 1: Experimental Data

Control group			Experimental group	
score	Amount in% before experiment	Amount in% after experiment	Amount in% before experiment	Amount in% after experiment
«5»	19	20	10	29
«4»	50	47	51	57
«3»	31	33	30	14

In our experiment, a pedagogical study of the problem of modern trends in the system of higher education in the field of educational online courses was created, which affected the Minin Nizhny Novgorod State Pedagogical University. Since 2016, the university started work on the creation of online courses of disciplines, related curricula of educational programs implemented by the university.
Thus, the analysis of academic achievement at the staggering stage made it possible to reveal the percentage of students' grades "satisfactory", "good" and "excellent". So on average, half of the students receive grades "good", almost a third of the students receive grades "satisfactory".
The main criterion for analyzing distance learning and creating online courses in a university is the effectiveness of the use of information technology [26-29].

The main participants of the study are also the university employees participating in the organization of the content of the educational process.

During the research the problem of work on creating online courses was touched upon. To the experiment, teachers joined for whom the creation of online courses constitutes a problem. To clarify the need to create online courses in the educational process and improve the effectiveness of the educational process, we conducted a survey with teachers.

The questionnaire consisted of a number of questions that gave us an explanation from the teachers about the need to create online courses in the educational process.

Question 1. Do you think that modern education needs any changes?

Most of the interviewed respondents believe that the education system needs reforms and modernization. Only twenty-two percent of the respondents think that the system is not needed in the adjustment. Thus, it can be said that, on the whole, employees consider the introduction of new technologies as an appropriate measure.

Question 2. Do you need online courses in the system of student training?

67% of respondents say that online courses are needed in the system of students' education. The rest of the respondents cannot decide on these issues. Drawing a conclusion, it should be noted that none of the teachers speak out against distance education. This suggests that this system should exist.

Question 3. What are the positive aspects of online learning?

Table 2: Distribution of Respondents' Answers to Question 3

Possible answer	Significance
Lack of direct contact with students	1.8
The possibility for the student to build the work schedule himself	5
Possibility of further training or obtaining another education in parallel with professional activities	4.6
Ability to work at home	4.7
No excess waste paper	2.3
The increase in free time (due to the lack of lecture hours in the university)	2.7

It is very important to see the presence of positive qualities in distance education but the most important thing is to prioritize, highlight the most important components. Table 1 clearly shows the opinion of teachers about important features of online courses. As can be seen, the majority of the respondents identified that the ability for the student to build the work schedule himself is the most positive factor of distance education. The opportunity to work at home ranks second among the rest.

Thus, the teaching staff says that it is more attractive for them to work at home than staying in a university building. In the next line the position of the opportunity to upgrade qualifications or to obtain one more education in parallel with professional activity is in the lead. Indeed, professional development is a very strict moment in the career of a teacher, so it is so important to find a way that this process does not distract from the main work activity. The increase in free time (due to the absence of lecture hours at the university) is the next positive factor chosen by the majority of respondents. In the presence of video lectures which the student can view at any time convenient to him, the teacher saves a lot of time, because you do not need to lead each group a separate lesson. Thus, the teacher has temporary resources for doing more work or any other occupation.

At the penultimate level, according to respondents, the factor of absence of excess waste paper was placed. Of course, carrying and storing the work of students who need to be checked is not an attractive factor of work. Online education does not allow this form. All tasks exist in electronic form, a large number of test questions make work easier, because the evaluation is calculated by an intelligent system. In the last line there was such a positive phenomenon of distance course, as the absence of direct contact with students. The interviewed do not consider that this is an important factor of the system, but nevertheless, the lack of a flow of students who do not always faithfully treat the teacher's work has a beneficial effect both on the activity and the state of the teacher.

Question 4. What disadvantages do you see in the distance education system?

No system exists without negative factors, but it is important to distinguish which are, first and foremost, acute and need to be worked out and eliminated, and which are all only significant shortcomings that are eliminated in the course of work. The main drawback of the system, according to the teaching staff of the department - is the poor learning of the material by the student.

Table 3: Distribution of Respondents' Answers to Question 4

Possible answer	Significance
Poor student learning	5
The cost of more time to develop a course	4.4
The cost of a large amount of time to check the knowledge of students	2.9
Irresponsible attitude to learning activities among students	4.4
Lack of professional suitability	2.7
Technical illiteracy, as well as the student, and the teacher	1.6

The second line is shared by two negative features, such as: the expenditure of more time for the development of the course and irresponsible attitude to the educational activity among students. These components significantly exacerbate the work of the course. At first glance, the course needs to be properly developed, since the work in the audience differs from the distance one. It is impossible to adjust the educational process to any situation. The course should be logical, correctly and competently constructed. As for the second negative factor, the irresponsible attitude to educational activity among students, it will be more difficult to cope with it, because there is no guarantee of conscientious work among students. The cost of a large amount of time for testing students' knowledge was placed on the third position. If the teacher is free of time due to the absence of lecture hours, then the presence of a large stream of students on the online course requires a timely check of the homework. The penultimate line is occupied by the question of the lack of professional suitability. Indeed, in order to develop a course you need to have some knowledge. Often, developers of this kind of educational resource do not have this quality, because of which the student has the opportunity to get incompetent information. The last negative factor was the technical illiteracy chosen by the respondents, as well as the student and the teacher. The teaching staff does not believe that this is a significant drawback, since today most people have knowledge in the technical field. Obviously, younger generation is developing faster and it is easier for him to master a new technology product, but the employees of the educational institution are not lagging behind innovations. It is not necessary to consider that long-term experience of educational activity hampers the development of new knowledge.

Thus, we can draw the following conclusions. In general, the majority of respondents are positive about the development of the online course. Teachers see all those positive aspects that are in the system. Also, most people intend to develop their own course and begin to train their students in this method.

At the beginning of the experiment, we checked the basic level of training for students of the 3.4 course without the use of information technology. Participants were only 55% of students who agreed to the experiment, the remaining 45% refused. The tasks of this stage were to identify the initial level of quality of students' training in the discipline "Service Activities". For this, the students were offered to study the discipline with the help of the educational environment of the EUMK. The students were also offered a questionnaire with the proposal to study the discipline in the form of an online course.

Creating online courses is a big and serious work that requires basic concepts, content criteria and expert judgment.
The essence of such a questionnaire was to test the effectiveness and necessity of creating online courses, the complexity of processing and filling these courses in a certain electronic educational environment.
For the analysis of this survey, the main criteria were chosen - the need for online courses in the university, the problems encountered by teachers in the compilation and operation of online courses.
At the same time, it was necessary to read each statement and express its attitude to the discipline under study, putting the answer to the number of the statement on the proposed set of possible answers: "true", "probably true", "perhaps wrong", "wrong". The answers were recorded by the students in the table. For each match with the key, one point was accrued. At the same time, the higher the total score, the higher was the indicator of the internal motivation for studying the discipline through the online course. Thus, the results of the questionnaire indicate that students do not show much interest in teaching the discipline through the online course, the usual EUMK they are more interested in. In addition, students show low activity in educational information. Questioning and conversations with students allowed establishing the level of educational motivation prior to the beginning of the formative stage of the study. Also, students were tested on service activities and analyzed the practical tasks performed by students, and the correlation of the data obtained with the above-mentioned levels of education quality.
The development of eLearning in European universities according to the results of the European University Association (EUA, 2016-2017) study in 47 European countries with the participation of 449 universities.
The use of online courses in foreign and domestic universities cannot yet be unequivocally assessed.
Data from surveys carried out by the European Association of Universities indicate that European institutions of higher education currently lack empirical data on the use of online courses, their effectiveness and development prospects. This shortcoming entails discussions around this issue not only in the academic community, but also at the level of the national educational authorities [30].
For example, L. Yuan and S. Powell note that "the rapid spread of distance learning has aroused the commercial interest of venture companies and large corporations that want to enter the higher education market using approaches based on online courses [31].
Diagram 1 shows the main objectives of the development of online learning in the educational process of European universities.
The main objectives of the development of online learning are:

- Increase the variability of content and formats of education;
- increase the effectiveness of training time;
- more opportunities for training students outside the campus;
- more opportunities for training students on campus;
- Internationalization.

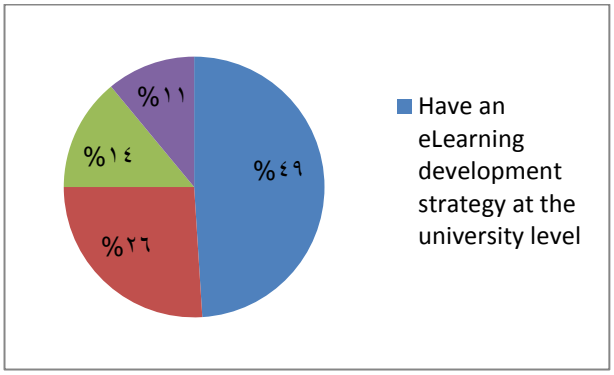

Fig. 1: Development of E Learning in Universities in Europe.

We see that most of the universities have a strategy of developing the use of online courses on the electronic site e-learning.

To assess the quality of educational services for students of Minin Nizhny Novgorod State Pedagogical University, an online course was developed, as information technology in the educational process. Further, to test the effectiveness of using the online course in the educational process in the discipline "Service Activities", the groups were divided into experimental and control groups. In the control group, the training sessions were conducted using a standard electronic educational and methodical complex. The experimental group actively used the developed online course. During the experiment, the instructors performed various practical, design tasks developed in the proposed courses and assignments had a different level of complexity.

3. Results and discussion

As a result of the analysis of literature and existing online courses used in the learning process we developed an online course using information technology in the discipline "Service Activities". The purpose of the course is to improve the quality of the learning process of students at the present stage. Information technology enables learners to learn knowledge, skills and skills without leaving home, which is relevant in our lives. At the same time, the quality of education should not be different from standard practice. Solving the problem of the quality of education requires modern approaches to the management of the quality of education in all disciplines of the educational cycle. In the modern system of ensuring the quality of education, the maintenance of the quality of the process of studying discipline is the content of discipline. The structure of online courses should meet all the requirements of quality education. Within the framework of the new educational paradigm, the use of information technologies in the educational process involves the consideration of: 1) the information environment from the point of view of free access to information of its own choice and the subject's initiative; 2) information technologies as a means of creating conditions for personal growth of students and stimulating it to demonstrate their uniqueness. This indicates a qualitative shift in approaches to the use of information technologies in education from machine-oriented (technocratic) to personal-oriented (humanistic).
In conditions of informatization of education, new opportunities appear for the development of social and cognitive activity of students; their competence, manifested in information literacy, responsibility, cognitive independence; ability to self-realization, reflecting the ratio of practical and verbal intelligence; emotional stability, the balance of humanitarian interests; and information needs of subjects of training. The application of information technology expands the learning opportunities. Since information technologies are interactive, it becomes much easier to create an environment in which students can actively participate in the learning process, receive information through feedback channels and continuously improve their knowledge. In addition, new technologies provide them with access to a wide range of information sources, including electronic libraries and databases.
All this expands the opportunity to acquire new knowledge, both students and teachers. The use of information technology changes the structure of the educational process in favor of its individualization and partner interaction of its participants, as well as the functions of the teacher in this process, assigning it the role of coordinator and intermediary in the information educational space.
The online course has its own specific structure:

1) Course ID;
2) Course version;
3) Name of the course;
4) The total complexity of the course in credit units, the number of weeks of training, the average load per week;
5) Name of the university-developer;
a. Full name;
b. The abbreviated name;
6) Course authors;
7) The main illustration of the course;

8) Promotional video;
9) Brief annotation of the course;
10) Full annotation of the course;
11) Map of the results of education;
12) Information on the certificates issued, the rules for forming the evaluation, the description of the assessment system (including the terms of the work audit), the specification of the assessment system, reflecting the relationship of assignments with the course content, including description of indicators and evaluation criteria, scales and evaluation procedures.

When developing online courses, you need to pay attention to students with a low level of academic achievement.

In the course of the research, we conducted the final testing on the discipline "Service Activities", the knowledge the trainers received while studying the online course. The testing was carried out in the control and experimental groups Table 4.

Table 4: The Level of Knowledge of the Students of the Experimental and Control Groups

Level of knowledge in points	Experimental group		Control group	
	Entrance testing	Final testing	Entrance testing	Final testing
92 – 100 (excellent)	13%	54%	17%	22%
76 – 91 (good)	73%	36%	69%	26%
61 – 75 (satisfactory)	14%	14%	18%	60%
Less than 61 points	0	0	0	0

According to the conducted testing, we see that the result of qualitative training of students using information technologies of the experimental group is higher than in the control group trained in the usual environment.

Thus, the use of information technology, development of online courses makes it possible to improve the quality of learning material in certain learning environments.

The present study is devoted to the consideration of the development and application of an online course for students of the Minin Nizhny Novgorod State Pedagogical University in the field of training Service disciplines "Service activities". Trainees fully study the discipline remotely, developing independence and self-education, while the level of training and quality remains positive. The developed online courses with application of information technologies solve the problems of improving the teaching activity. The teacher of the future must constantly improve his activities.

The level of development of information technology in the country at the moment is becoming more popular, the study of the development of online courses only become a stage of development in educational activities. There are certain difficulties in the development, structure and content of courses. In the study, we also touched on the issues related to the readiness of teachers to create online courses. The information technology industry is one of the most dynamically developing industries both in the world and in Russia. The volume of the world information technology market is estimated at 1.7 trillion US dollars. According to forecasts, until 2016 the market will continue to grow by an average of at least 5 percent per year. Thus, the information technology market is in 25 percent of the fastest growing major markets in the global economy. The average growth rate of the Russian market over the past 10 years exceeds the world average, while the Russian IT industry in the next 5 to 7 years has the potential for a much faster growth - by 10 percent or more per year.

4. Conclusion

The educational environment, as well as other areas of service, should modernize its product. This not only affects the increase in demand and attraction of funds to the enterprise but also makes our country developed and its citizens erudite and qualified members of society. The use of information technology in educational activities is an urgent, important and modern issue. The development of such global system as education which activity affects every person depends on IT.

When considering the problem of information technology in the modern educational system. It was revealed that information technologies directly affect the marketing activities of the educational services enterprise, which should go in several directions simultaneously: the analysis of the market opportunities and proposals; analysis of actual preferences; development of its own current product; use of modern technologies.

The specificity of the use of information technology products in the distance course was studied which showed a wide range of its capabilities, favorably affecting its activities. Analysis of the relevance and shortcomings revealed the vulnerabilities of online courses, which are worth working on in the near future.

The prevailing positive qualities indicate that the system has a great contribution to the development of the educational system, is workable and eliminates all the disadvantages of the classical form of education.

In the course of the research, an online course on the discipline "Service Activities" was developed. The course is the first in the educational program of training specialists in service activities. Basic educational program includes 68 disciplines. The developed online course has allowed to increase interest to the subject, to independent work, gave the opportunity to conduct self-evaluation and self-examination of knowledge, skills and practical skills in service activities.

In order to improve the use of information technology in the discipline "Service Activities" it is recommended to develop other programs of the basic educational program for training specialists in the field of training "Service".

The proposed structure, the content of the course is complete and meets all the development requirements. In the process of the research conducted on the basis of the identified stages and design requirements, an online course of the discipline "Service Activities" used as a real training tool was implemented.

ATTACHMENT

Test questions

1) What is your work experience at the university?
   a) less than 10 years
   b) 10 to 15 years
   c) 15 - 25 years
   d) more than 25 years

2) Do you think that modern education needs any changes?
   a) Yes, I think that modern education needs reforms
   b) No, I believe that the education system does not require change

3) Do you need online courses in the system of student education?
   a) yes
   b) no
   c) I do not know

4) What are the positive aspects of online learning? Distribute the answers in descending order of importance.
   a) lack of direct contact with students
   b) the ability for the student to build the work schedule himself
   c) the possibility of further training or obtaining another education in parallel with professional activities
   d) the opportunity to work at home
   e) absence of excess waste paper
   f) increase in free time (due to the lack of lecture hours in the university)

5) What disadvantages do you see in the distance education system? Distribute the answers in descending order of importance.
   a) Poor student learning

b) More time to develop a course
c) A large amount of time spent testing students' knowledge
d) Irresponsible attitude towards educational activity among students
e) Lack of professional suitability
f) Technical illiteracy, as well as the student, and the teacher

6) Do you know the structure of developing an online course?
a) Yes, I know
b) No
c) Partly

7) Are you familiar with the project of the position of the University of Minin on the creation and placement of online courses on the platform of open education?
a) yes
b) no
c) partly

8) Have you developed or are developing a remote open course now?
a) yes, it was developing
b) Yes, I am developing now
c) No, but I'm going to
d) no, I'm not going to

9) What difficulties did you encounter when developing the course, or do you think what problems you might encounter?
a) insufficient material and technical equipment
b) Teacher's shortage of time
c) you must first learn how to create courses
d) bureaucratic red tape
e) other

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