Online education: steps into the future

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Abstract. This article reveals the essence, perspectives and role of online education. Such a concept as EdTech (Educational Technologies) is considered. The stages of development of education built by means of information technologies are presented. The concepts of VR, AR, MR and their possibilities in online learning are also discussed. The problems of traditional education, the advantages and disadvantages of online education and its possibilities are revealed.

1. Introduction
The emergence and development of information technology has influenced all spheres of society. They allow you to optimize and automate many processes, providing a person with comfort and convenience. The field of education has also undergone some changes today, this area continues to develop and seek new approaches to optimize the learning process. Information and information and communication technologies provide more opportunities in education.

The development of training using information technology in general can be represented as follows:
1. Courses using CD-ROM
2. Distance learning
3. Online training
4. Online training using virtual reality technologies

All this includes the concept of EdTech (Educational Technologies - Educational Technologies). It is the use of both physical hardware, software and educational theory material to facilitate learning and increase productivity by creating, using and managing appropriate workflows and resources. In other words, EdTech is the effective implementation of technology into the learning process.

2. Terminology
CD-ROM courses are courses organized through the use of special CD-ROMs, the data of which is available "only for reading" (CD-ROM - Compact Disc Read-Only Memory), teaching in a specific direction or subject.

Distance learning (DL) (distance learning, abbreviated as d-learning) is a form of education, along with full-time, part-time or part-time, which is based on the use of information and information and communication technologies (IT and ICT). DL is based on the student's independent work according to a specific program developed by the educational institution. From time to time, the teacher should be given reports on the work done. The development of distance learning can be described as follows: before the advent of communication, the interaction of the teacher with the student took place through traditional mail, later television, radio, satellite communications began to be used and, finally, the
Internet appeared, which made this process much more convenient and faster [1]. BO has spread and gained popularity, mainly due to the fact that the need to bind to a specific place or a specific schedule has simply disappeared.

Online learning (electronic learning, abbreviated as e-learning) is a form of education in which the learning itself takes place using a laptop, computer or other gadgets that have access to the Internet. Those. it is online learning. This form appeared in the field of DL and, with the development of the global network and various digital technologies, became its logical continuation. E-learning allows students to fully immerse themselves in the educational process - listen to lectures, do homework, consult with teachers and communicate with other participants in the educational environment through the network.

The similarity between e-learning and d-learning lie in the fact that outside the classroom and in the absence of direct contact with the teacher, this process requires more independence and understanding of the student. Distance learning refers to the distance between students and teachers. Online learning means using the Internet to study a topic; in other words, teachers and students are also remote from each other. That is, these concepts differ only in the current stage and frequency of use. Otherwise, they are almost identical and have the following characteristics:

- One-to-One Learning - Regardless of the group and plan, you can learn at your own pace.
- Flexible working hours - materials can be available at any time to address high employment or backlog issues.
- Mobility - effective feedback from the teacher throughout the training.

Online learning can be both synchronous and asynchronous.

Synchronous learning is learning in which communication between students and teacher takes place in real time. This method can be compared to traditional classes with differences in that, firstly, the lesson is held on some online platform, in various online classrooms or classrooms, and secondly, the teacher cannot fully assess the student's attitude to a particular discipline. Examples of such education are various webinars or online trainings [2].

Asynchronous learning can be called distance learning, in which the student does not interact directly with the teacher. It can happen, for example, through all possible online courses and tests, multimedia training and blogs.

A less common tool at the moment in Russian education, but more practical for conducting laboratory studies, is the use of virtual reality technologies.

Virtual reality is a three-dimensional environment generated by information technology, with which the user can interact while immersing himself in it. Today there are the following options for virtual reality systems:

- ordinary virtual reality (Virtual Reality, abbreviated VR), where the user interacts with the virtual world that exists only inside the computer;
- augmented reality (Augmented Reality, abbreviated AR), where information generated by a computer is superimposed over images of the real world;
- mixed reality (Mixed Reality, abbreviated MR), where the virtual world is connected with the real one and includes it.

Such technologies allow to optimize the learning process and are the most effective means of engaging in the process. The main advantage of using virtual reality technologies is that they ensure the application of the acquired knowledge in practice, which is often lacking even in an educational institution with full-time attendance of classes.

When talking about online schools and universities, you should pay attention to the following possibilities:
- Instant exchange of information of any volume at a distance.
- Interactive features and fast feedback.
- Access to any information sources regardless of time.
- Successful organization of telecommunication projects.
- Organization of video conferences with an unlimited number of participants.

The introduction of virtual reality technologies into the online education system allows:

- provide the most accurate model of the object of study and make it available for further research;
- introduction of practical and laboratory classes, which helps to improve the quality of the received online education, and also makes it possible to obtain such specialties for which practical support is needed;
- creating the effect of presence, which is likely to have a positive effect on the discipline of the participants in the process, which is difficult to control in the e-learning system. The advantage of this effect is also the creation of an educational/work atmosphere that promotes involvement in the process of acquiring and assimilating knowledge.

3. Methodology

The 21st century, called the informational one, is characterized by the widespread use of information technologies in the daily life of society and the increasing role of knowledge and information. The large amount of information available today can be viewed from two sides:

So we have free access to a large amount of information and, if necessary, can use it, but on the other hand, in order to become a competent employee, a professional in his field, you need to be able to process this information, be able to use it correctly and know its content. And it is much more difficult to stick to it when new knowledge and information is constantly emerging.

Universities today are not keeping pace with social change. Higher education institutions are faced with rethinking and redefining the role they play in our society, setting new rules and accepting with distrust the values that traditional universities have championed. Obviously, universities have to fit in with society and meet social needs. This is an analysis of the trend towards an inclusive approach to higher education as the leading direction in our century, new forms of communication due to the mobility of participants in the educational process; it is also a perennial problem of the relationship between theoretical and practical knowledge, dictated by the market, which requires useful knowledge at the expense of theory; this is the definition of the content of the message of the university in modern conditions, a description of the meaning of education as such; and the problem of determining the most effective organizational model of the university.

In his article "Can online education become an alternative to the traditional university?" Gottlieb A.S. notes that as a result of his survey, three positions of experts were identified, which he called "balanced, optimistic and pessimistic positions", on whether online education can replace traditional.

The “optimistic” position is justified by the fact that online education with a higher quality will undoubtedly replace traditional education in the future. Since well-organized distance learning with training workshops with a limited number of participants, with timely answers to questions, with well-designed testing programs, is an excellent opportunity for both first and second higher education, especially for those who cannot sit every day in the offices at 9 am. However, this position is also considered from the point of view of the impossibility of organizing practice for some areas via the Internet, for example, in preparation for the activity of a surgeon or oil worker.

In this case, virtual reality technologies can act as a solution to this problem, as already noted above, such technologies are excellent for practical work. We can say that virtual reality is one of the tools for modifying traditional education into the education of the future.

The “pessimistic” position is the rarest opinion, which consists in the point of view that no significant changes will take place in the near future. Our environment is large enough to introduce new distance learning systems in a short time to replace old systems. Many people cannot take this seriously because
they do not think that quality knowledge can be obtained remotely. In addition, there are many technical problems with the organization of e-learning [6].

The most widespread opinion, oddly enough, turned out to be that the future education for the most part will be a kind of hybrid of online and offline teaching methods ("balanced" position). This principle allows online education to complement traditional education. Using it as a tool for interactive learning, additional education or a way for personal growth. In other words, online learning is a tool through which the current education system can evolve.

4. Study

Despite the constraints on the active adoption of online universities, there are many online schools of various specializations. At the moment, the Russian market of EdTech has reached 30 billion rubles, in year. Examples of successful online educational projects include companies such as Skyeng - an online English language school; Foxford - online school, teaching digital professions; City Business School - online MBA: School of Management and others.

Also, e-learning is one of the promising areas for the implementation of VR and AR.

Massachusetts Institute of Technology (MIT) and Stanford use Internet classrooms with virtual environments. This technology facilitates close communication between students living on different continents.

The Russian project MEL Science, which entered the international market, allows you to study the structure of a substance from the inside online.

EDX

Few people know about such large universities as Harvard or Massachusetts (MIT). These two universities have created something unusual - the unique EDX platform, which provides access to courses and lectures from the world's best educational institutions for free. Here you will find many online courses covering a wide variety of topics: marketing, information security, scientific writing in different languages, an introduction to steel, cloud technology and much more. Universities around the world are joining the platform. The catalog contains materials from the Higher School of Economics and other popular domestic universities [7].

Some programs involve the issuance of certificates upon completion. There are thousands of free materials in the public domain. The training itself includes real-time testing, web-labs, video tutorials and feedback from teachers. The student will even receive real grades. Most of the materials are presented in English, but there are some in Russian. Main advantages: course teachers - scientists from the best universities in the world, free training, convenient and understandable course of work (video lectures, practical assignments), a huge selection of topics, high-quality materials, interesting presentation [8].

University "Synergy"

Synergy Online University is perhaps the most famous in its field. He was the first in Russia to open the faculty of the Internet. his employees realized the importance of this phenomenon in the life of a modern person. It does not offer classic courses like other resources. Synergy is an excellent alternative to a real university. Studying in it allows you to save time, money, but at the same time receive the same theoretical and practical knowledge. In addition, upon graduation, students are issued a state diploma. There are bachelor's, master's, second higher, postgraduate programs, etc.

The university regularly signs contracts with the largest companies in need of quality personnel. After preparation, students can expect good employment. The university provides many online programs: banking, organizational psychology, criminal law, primary school teacher, and others. The application and documents for admission are submitted through the official website. A state diploma is issued with an application in English, full-fledged online training at the university, a good selection of specialties, programs for different levels of education.
5. Output
In addition to solving its main task - learning over the Internet - e-learning is also an excellent addition to full-time education and can be a good support for improving the quality and effectiveness of traditional learning.

Among the main advantages of this system are:

- Freedom of access - the student through the Internet has the ability to access e-courses from any place where there is a global network.
- Quality and competence of education
- Flexibility of training
- Dividing course content into modules - dividing the overall course into small blocks simplifies the learning process, making it more flexible and efficient.
- Determination of the criterion for assessing knowledge - in the e-learning system there are certain clear criteria by which the knowledge acquired by the student is assessed during training.
- Low cost of delivery of training - online training includes only the exchange of information using the Internet and, since there is access to any information resources, does not require additional educational methodological literature.

It should be noted that, despite a number of advantages of such a system, online education has disadvantages and problems. The most significant problems of organizing online education include:

- Large financial costs for the preparation of online courses and sites.
- Training of teachers who will be able to work in such a system and constantly update courses.

The most significant disadvantages of online education for a teacher are: firstly, a negative effect on a person's physical health, for example, visual impairment or stress on the spine, and secondly, asocialization (social maladjustment) of a person [9].

6. Conclusion
Online training is the most effective in the system of advanced training of employees or as additional education: the possibility of combining "work and study", "study and study", "family and study" provides comfort and convenience in obtaining education for the most diverse segments of the population. Also, online universities are an excellent solution to education for people with disabilities and those who live and work in remote regions of the country.

The use of virtual reality technologies makes it possible to study online not only disciplines in which theoretical knowledge prevails, but also those that include laboratory classes as a mandatory element, involving experimental study of the subject, usually accompanied by the use of complex equipment and devices ...

The EdTech system is developing dynamically. Already today there are many online schools and universities that are successfully implementing their activities. In the future, such educational institutions will definitely become more popular and most in demand by society, since it is they and the knowledge gained through them that are the most effective in our time, and we can say with confidence that its capabilities will continue to expand and improve.

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