

**COMPUTER SCIENCE, COMPUTER ENGINEERING AND MANAGEMENT****TECHNICAL MEANS AND FORMS OF DISTANCE LEARNING IN THE SYSTEM  
OF VOCATIONAL EDUCATION: SYNCHRONOUS  
AND ASYNCHRONOUS DISTANCE LEARNING****Lola Yadgarova**

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**ТЕХНИЧЕСКИЕ СРЕДСТВА И ФОРМЫ ДИСТАНЦИОННОГО ОБУЧЕНИЯ  
В СИСТЕМЕ ПРОФЕССИОНАЛЬНОГО ОБРАЗОВАНИЯ: СИНХРОННОЕ  
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**ABSTRACT**

This article discusses the features of distance learning and online learning as the most modern and most popular variety. A number of examples describe the organizational forms of the modern computerized learning process. This is also an overview of the roles and places of modern information and communication technologies in the education system.

**АННОТАЦИЯ**

В данной статье рассматриваются особенности дистанционного обучения и онлайн-обучение как его современная и самая популярная разновидность. На ряде примеров описаны организационные формы современного компьютеризированного процесса обучения. Это также обзоры роли и места современных информационных и коммуникационных технологий в системе образования.

**Keywords:** technical means, online learning, online courses, video lectures, distance learning, student-oriented learning, innovation.

**Ключевые слова:** технические средства, онлайн-обучение, онлайн-курсы, видеолекции, дистанционное обучение, обучение, ориентированное на студентов, инновации.

Distance learning in conditions of restrictive measures to ensure the sanitary and epidemiological well-being of the population in 2021 has become a challenge to the

modern education system. The mass transfer of the educational process by educational organizations to the remote mode allowed almost every participant to gain

new experience, give their own assessment of the possibilities of e-learning and distance learning technologies, compare with traditional learning.

At the level of academic disciplines, when studying specific material, general didactic teaching methods in the pre-(distance learning) system are implemented through a variety of teaching methods, each of which represents a specific action aimed at achieving a specific goal and performed using various didactic teaching tools. It can be assumed that in the DO system, when using IT tools, no matter what method a teacher invents during training, or a student (during training), it will always be an integral part of one or more general teaching classes. methods.

From the well-known set of teaching methods used in traditional didactics, the following can be recommended for distance learning: demonstration, illustration, explanation, story, conversation, exercise, problem solving, memorization of educational material, written work, repetition.

The analysis of the activities of educational institutions of distance education has shown that at present, information-receptive and reproductive teaching methods are most widely used in distance learning, along with problematic ones. Distance learning technology – this is a set of teaching methods and tools that ensure the conduct of the educational process at a distance based on the use of modern information and telecommunication technologies. Teaching methods and the organization of distance learning can be completely different depending on the choice of students. Materials for study can be transferred to students on disks, on various electronic media by regular or e-mail. It is also possible to study through telecommunications, when it becomes possible to watch and listen to lectures and study other video materials [1, pp. 370-372].

To be more precise, all types of training (both online and offline) can be divided into two large groups: synchronous and asynchronous. This division is based, as the name implies, on the synchronization of receiving and transmitting information between subjects and objects of interaction [2, pp. 1371-1373].

Synchronous learning is any type of learning that takes place in real time when a group of people are learning at the same time. Although the training takes place at the same time, students do not have to be there in person or even in the same place. Synchronous learning allows students to ask questions and get answers on the spot, as well as freely collaborate with their peers.

Here are some examples of synchronous learning:

- a) **Webinars**
- b) **Video conference**
- c) **Virtual classes**
- d) **Instant message**

Asynchronous learning is when students have the opportunity to complete course assignments at any convenient time. Educational materials are recorded video lectures, presentations, notes, textbooks, diagrams, tests and much more. All materials are prepared by the teacher in advance, and students independently develop an individual schedule. Communication between students and teachers is carried out via e-mail, messengers or thanks to the tools built into the platform: through chats

and forums. The teacher can also set the time of individual online consultations with each student.

- a) **Examples of asynchronous learning:**
- b) **Online courses**
- c) **Educational electronic news writing**
- d) **Blogs**
- e) **Pre-recorded video tutorials or webinars**
- f) **Internet forums and discussion clubs**

The synchronous e-learning system allows students to instantly ask questions to a teacher or classmates through instant messaging. It is also an online research that is conducted using chats. Such training is only possible online. Although an asynchronous e-learning system can be provided both online and offline, it also includes coursework delivered via the Internet, email, and bulletin boards that are posted on online forums. However, asynchronous and synchronous DL complement each other. The combination of these two types of DO supports several ways of exchanging information between students and teachers, working together and getting to know each other [2, pp. 1371-1373].

Distance learning technologies are designed to simplify the educational process and improve its quality. With their help, tutors convey the necessary information to students, test their knowledge, collect feedback, answer questions, exchange photos, videos and audio materials. The choice of tools often depends on the goals, capabilities, interests and preferences of all participants in the educational process. Conditionally, the following groups of distance learning technologies can be distinguished:

**LMS (Learning Management Systems).** These are server and cloud platforms that allow you to create and manage training courses. LMS helps not only to teach students, but also to interact with them, monitor the learning process, and issue certificates. Cloud systems are particularly popular because they do not require installation and are easy to use. An example of such an LMS for creating online courses is the EDU platform from **Send Pulse**.

**Means of communication.** These include technologies that help the tutor and students interact with each other. For example, ask questions, share materials, leave feedback, send completed tasks, and so on. The means of communication of distance learning include email services, messengers, social networks, websites, as well as services like **Google Classroom** or **Zoom**. *(По требованию Роскомнадзора информируем, что иностранное лицо, владеющее информационными ресурсами Google является нарушителем законодательства Российской Федерации – прим. ред.)*

**Gamification tools.** To make the educational process more interesting and memorable, game elements are often used. These can be quizzes in a chat bot, quizzes, specially designed applications, and so on. Gamification tools increase student engagement, as well as help diversify learning and knowledge testing.

**Online platforms for the placement of educational materials.** These include a variety of services on which educational information can be placed. For example, the company's website, video hosting sites like **YouTube**, podcast platforms and much more.

Freedom in choosing the place, time of study and even learning technologies makes distance education more and more popular. A special demand for it arose with the spread of Covid-19, when most students around the world lost the opportunity to study full-time. Nevertheless, despite the huge and rapidly growing popularity of distance learning, in addition to its advantages, it also has disadvantages, which you will learn more about in the next section.

#### Advantages and disadvantages of distance learning

The main advantage of distance learning is the convenience of this format for all participants of the educational process. A tutor can simultaneously teach hundreds of people while at home, and a student can independently choose the time and place of classes. Distance learning, in comparison with traditional, significantly reduces the daily labor required for fees and travel.

It is also worth noting that the cost of remote education is often lower, since there is no need to pay rent, utilities, take into account the costs of organizing classes and buying educational materials like books, manuals, workbooks, and so on. Distance learning helps to continuously improve their skills, combine work and study, work with a variety of information sources [4, pp. 456–471].

Of course, there are much fewer minuses for such a format of education than there are pluses, but for some they can become an almost insurmountable obstacle. Distance learning requires a high level of self-organization and regular self-motivation. Without these qualities, it is impossible to move forward and achieve your goals.

Another significant drawback is the minimal direct interaction between the student and the tutor, which can become an obstacle for both during the educational process. Also, there are difficulties in testing knowledge. Without video surveillance, it is difficult to check how well the student has mastered the material and whether he performed the tasks independently.

According to research, technologies related to synchronous and asynchronous learning can improve the quality of interaction between students and teachers, increase student engagement and improve learning outcomes. In addition, synchronous and asynchronous e-learning is classroom learning and dynamic learning, as well as the depth of learning in which you can regularly and frequently interact with your teachers [4].

Ultimately, the learning method you choose for your students will depend on a number of factors: learning objectives, the type of course content you create, how you conduct training, and accessibility for your students. However, if you have the resources, using both synchronous and asynchronous learning is a winning option. For example, creating a course that is mostly asynchronous, with additional webinars scheduled for different days and times, ensures that students get an additional benefit from interacting with each other and teachers. In addition, blended learning is another option that supports both synchronous and asynchronous learning capabilities. Diversity is the best solution. Especially if you want to involve students in the learning process as much as possible, combine different forms and types of content. The combination of elements such as video, text and images will surely interest your students.

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