

# Pedagogical Methods Of Teaching Mathematics In Distance Learning

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**Abstract:** During the global pandemic, humanity has once again proved that many actions are convenient to perform remotely, and not directly. At a time when it was unclear how long the pandemic process would continue around the world, it was certainly necessary that other social processes in our daily lives continue. At such a moment, the education system should not have stopped either. The concept of distance learning has once again proved its relevance at the present time. The article provides feedback that it is through distance learning that the most difficult subject among subjects is taught mathematics. The relevance and degree of study of the topic of the article are revealed using scientific developments of foreign scientists.

**Keywords:** mathematics, e-learning, distance education, distance learning methods and abilities, quality of education, teaching mathematics, higher education.

## Introduction.

The concept of distance learning appears at the end of the XVIII century in the processes associated with the development of postal communication in Western Europe as a "correspondent education". All didactic materials were delivered to students by mail with instructions for independent work. At that time, such education was intended for students who were unable to study in the traditional way due to physical health or remoteness. Today, in the era of modern high-tech technologies, the format of distance learning has changed dramatically. In the XXI century, distance education is being actively introduced in universities around the world. In fact, given the teacher's written recommendations, it was completely self-directed learning. The concept of distance education will start spreading in Uzbekistan in 2019.

Distance learning is a modern technology that allows you to make learning more accessible and fun, and as we saw during the pandemic, distance learning turned out to be the only salvation of education in this period. This is the most accessible education for a person in the twenty-first century, closely connected with the use of a computer, modern technologies and the Internet [8].

## Literature review.

Numerous studies on this topic, conducted by foreign scientists, have allowed A. A. to Andreev, M. B. Lebedeva, E. S. Polatov, V. I. Soldatkina, B. E. As an example, we can cite Starichenko and others.

Distance learning technologies help to organize the learning process in the current unfavorable epidemiological situation, build an educational system in which the student will not be a passive, but an active participant in the educational process, they simplify the student's access to information and open up new opportunities for individualization of educational activities.

A unified system of terms and concepts in the field of distance education technologies has not been developed, but it is still being formed. In various sources of information, we can find such terms as Online learning, distance education, distance learning format, distance learning, distance learning, these concepts are used to describe the features of distance learning using modern information technologies. Distance learning is an important concept for us.

In distance learning, teachers and students interact with each other "at a distance" using electronic means. At the same time, it is possible to use case technology, in which at the beginning of training the student receives a "portfolio" with a set of materials for the course, these can be e-books, disks (electronic textbooks), test tasks, etc.

Components of distance learning: distance teaching and distance learning (cognitive activity of students). There is no consensus on the definitions of "distance learning". For example, A. A. Andreev gives the following definition: "Distance learning can be defined as a purposeful, organized process of interactive interaction of students with each other and with learning tools, invariant (indifferent) to their location in space and time, which is implemented in a specific didactic system."

In the pedagogical encyclopedia, distance learning is understood as a technology of purposeful and methodically organized management of educational and cognitive activities of students (regardless of the level of education they receive) living at a distance from the educational center, which it can be used for any form of training.

We define distance learning as a purposeful, systematic process of independent acquisition of students' knowledge, skills and competencies in the subject under study, organized and controlled at a distance by teachers.

Summary of the main article material. In the last decade, distance learning has become more and more popular in our country every year, and most Russian universities now have faculties of distance education. It would seem that the problems of distance learning are sufficiently studied, and recommendations are given on them in dozens of works by foreign scientists. However, if you look at it, the main part of the research is of a general, overview nature or considers the field of teaching humanities or special technical disciplines. The issues of teaching higher mathematics at the university are studied to a small extent, and mathematics is quite difficult for some students to perceive, even with ordinary, traditional teaching. And with the distance learning format, the perception of the material for individual students can be even more difficult. At the same time, this discipline is extremely important in the educational process of the university, as it is fundamental for studying other technical disciplines.

We offer the following methods and tools of distance learning for use in teaching higher mathematics online.

Methods of "environmental" learning, they are a set of joint actions of the teacher and students to organize the exchange of educational information and its perception, understanding and application using distance learning technologies that are part of a specific information educational environment (Personal Learning Environments – PLE, Personal Teaching Environment – PTE). B. E. Starichenko believes that educational environments PLE, PTE are defined as follows: personal learning environment of a student PLE-created by him in virtual space, supported and developed own educational information resource (personal page in a social network, blog, Twitter, or website); personal learning environment PTE – a set of components of the educational process created, hosted, and maintained by the teacher himself in virtual space (content, forms, methods, and means of teaching, communication tools) that provides individual and collaborative learning activities. educational activity of students in the percentage of mastering the discipline. Distance learning methods-are focused on the individuality of each student, on their practical skills in applying the methods in practice. We actively use a project-based approach in our work on distance learning for students, and we have discussed this in detail in earlier articles. We will classify DOT funds on several grounds.

According to the nature of execution, all means of distance learning technologies can be divided into groups:

- electronic learning tools (all computer-generated programs that are necessary for the educational process, software pedagogical tools (programs executed by the EUS);
- electronic learning materials (documents submitted by a program that provides the creation of materials by design).

According to the method of organizing educational activities in the process of studying mathematics, you can apply the following classification:

- 1) programs used by students (reference systems, computer simulators; research modeling programs; computer control programs);
- 2) a group of teacher's programs (demonstration modeling programs; individual task verification programs).

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Distance learning tools are very diverse, we use electronic training books and reference books, electronic laboratory workshops; computer training systems; audio and video training materials; Internet simulators, email; chat; video conferences; websites; bulletin boards, tests, and others.

Studying mathematics at a university remotely has its own "pros" and "cons", let's look at them. Among the advantages of any distance education, the most important one is probably its accessibility. Students can listen to the teacher's lectures from home, thousands of kilometers away from the lecturer. All you need is a desire, some free time and a laptop with Internet. Distance learning is equally possible for all students, regardless of their physical health or place of residence.

Distance learning is also very convenient, psychologically comfortable and less expensive. You do not need to spend time and money on the road to your place of study, live in a hostel, eat in a canteen, you can study without leaving home in a comfortable environment.

The pandemic period has shown us that this type of education may be the only one possible in this period of time.

But there are also a number of negative characteristics of distance learning. For a math teacher, much more time will have to be spent preparing for classes. This specialist in the humanities can usually read his usual lecture online. For a high-quality online lecture in mathematics, you must have a good online whiteboard or other additional technical means. Many teachers do not have sufficient experience and technical means for such distance learning.

During distance learning, there is a long sitting at the computer, which causes a large visual load. There is no live communication between teachers and students, students among themselves, there is isolated learning, for some people it is psychologically difficult. Students are deprived of the charms of student life, distance learning makes it impossible to exchange emotions, give birth to collective new ideas. According to psychological surveys, more than 75 percent of students suffer from lack of personal communication. The process of obtaining higher education is the process of obtaining professional knowledge, skills, formation of professional competencies, as well as an important stage in the formation of a student's personality: developing a sense of duty and patriotism, building an individual value scale, fostering aesthetic tastes, creating a social circle, etc. All this is impossible to form and develop with distance learning.

Inevitably, with this type of training, the amount of homework increases, because the teacher identifies the main thing in it when explaining new material in person, and when studying independently, the student has to spend more time understanding the material.

Lack of control discourages students, only very responsible and conscientious students diligently study at a distance.

With this form of training, it is impossible to conduct high-quality practical exercises. Great difficulties also arise with the objectivity of evaluating students' work, since it is not clear whether the work was performed independently.

One of the urgent problems of the distance learning process in mathematics is the organization of assessment of the quality of education. Assessment of the quality of education, in addition to the quality of the educational program, the conditions for the implementation of the educational process, implies an assessment of students' educational achievements, that is, the development of students' mathematical competence. Criteria and indicators that allow us to determine the level of development of mathematical competence of students in higher education institutions were developed and described by us earlier. Currently, there are no generally accepted documents regulating the organization of quality assessment of distance learning. Based on the goals of distance learning, we have developed the parameters of such training and defined the criteria for evaluating its quality.

The forms of control for distance learning are diverse. We use the final semester exams, control tests, online interviews, practical, course work, laboratory work, project work, etc. Students, starting to study a new topic, should clearly understand what is being done.

what kind of control of knowledge and competencies they will have on this topic. At the moment, each teacher in distance learning develops control tasks independently, and I would like to have a unified system of state testing of students on various topics, of various levels of complexity.

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### Conclusion.

The accumulated experience has proved the effectiveness of using distance learning technologies for a short time with methodically competent organization. In our opinion, it is impractical to completely switch to the distance learning format in mathematics or other technical disciplines, since there are quite a lot of disadvantages and controversial points in such training. You can not do without full-time practical classes and laboratory work under the guidance of a teacher. Mastering educational programs online (independently) is possible only for conscious students with high skills of self-organization and control, as well as with modern technical training tools. Distance education today is a very promising area, but not all specialties at the university can be studied in this way. Online technologies are only an effective tool for the usual full-time format of training in technical disciplines, including mathematics. Although, for advanced training or as an additional education, the distance learning format may be an ideal option.

### References.

1. Sergeeva, E.V. Distance learning in the study of mathematics / E.V. Sergeeva // Problems of modern pedagogical education. – 2019. – No. 62-1. – pp. 266-268.
2. Sergeeva, E.V. Criteria determining the level of development of mathematical competence of students. –
3. [Electronic resource] / E.V. Sergeeva // The world of science: Online journal. – 2016. – Vol.4. – No. 1.– Access mode: <http://mirnauki.com/PDF/37PDMN116.pd>
4. Lebedeva, M.B. Distance learning technologies: design and implementation of training courses /
5. Lebedeva M.B., Agaponov S.V., Goryunova M.A., Kostikov A.N., Kostikova N.A., Nikitina L.N., Sokolova I.I.,
6. 5.Stepanenko E.B., Fradkin V.E., Shilova O.N. / Under the general editorship of M.B. Lebedeva. – St. Petersburg: BHV-Petersburg, 2010. -336 p.
7. Goncharova, Z.G. Distance learning as an innovative model of teaching mathematics in higher school / Z.G. Goncharova // Pedagogy and psychology of education. – 2019. – No. 4. – pp. 95-103. – DOI 10.31862/2500-297X-2019-4-95-103.