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ADVANCED PEDAGOGICAL TECHNOLOGY IN MATHEMATICS TEACHING TECHNIQUE

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Abstract

The purpose of this article is to discuss several approaches to using information technology in mathematics classes. The author advises using software for various areas of mathematics, especially universal mathematical sets of packages, as computer support at the lecture.

Introduction

The basis of educational technologies is not only the deep knowledge of the subject by the teacher, but also his ability to convey them to the class. To help teachers, teaching methods in the classroom have been formed, which have become the basis for developing communication techniques with students. Thanks to this teacher, it became easier to find contact with students and interest her in the subject.

For the formation of these skills, it is necessary to ensure the maximum activity of the student himself, since skills are formed only in the experience of their own activities. In this case, the problem of studying and understanding in the learning process is of particular relevance not only by the system of knowledge, skills and abilities in mathematics, but also by universal educational actions for their acquisition and application.

The question arises: how to maintain students' interest in the material being studied and engage them throughout the lesson, so that the teacher not only could present the material brighter and more colorful than in textbooks, but also become the organizer of cognitive activity, where the main person is the student. All this leads to the search for adequate pedagogical technologies and the ability to use them in practice.

Students learn to reason, prove, find rational solutions to finish assignments, and make suitable conclusions in mathematics classes.

What is the definition of educational technology?

A types of methods is a body of pedagogical knowledge that reflects the characteristics of profound pedagogical processes, the characteristics of their interaction, and the management of which provides the educational process's required efficiency.

A set of ways to organize the educational and cognitive process or a sequence of certain actions,

operations related to the specific activities of the teacher and aimed at achieving the goals.

Main part

The main pedagogical tasks of teaching mathematics determined the following:

- to provide students with a high-quality mathematical education;
- develop mathematical abilities, intellectual and moral potential of each student;
- to promote the creative development and personal initiative of each student both in the classroom and outside the classroom through the subject;
- to instill skills of independent work with a focus on further education in various educational institutions;
- improve the forms of organization of educational activities, develop and strengthen interest in mathematics;
- Use new educational technologies, effective teaching methods.

To solve these problems, I use various pedagogical technologies and, as a rule, it depends on the type and topic of the lesson or extracurricular activities.

According to the level of application, for solving pedagogical problems in mathematics, general pedagogical and particular methodological (mathematical) technologies can be distinguished.

Materialistic, metaphysical, scientific, and humanistic technologies are applied from a philosophical standpoint. Biogenic and sociogenic are the two most important factors in development. Teacher-student interactions are cyclic (with control, self-control, and mutual control), directed (individual), and automated, depending on the kind of organization and administration of cognitive activity (with the help of teaching aids). Explanatory and illustrative, productive, reproductive, dialogue, communicative, gaming, creative, problem-based, developing and self-evolving learning, design, and research technologies are applied if we examine the "Method-Means."

When it comes to the first pedagogical task, which is to provide pupils with a high-quality mathematics education, the following pedagogical technologies can be used: communicative, general pedagogical, and mathematical.

The use of information technology in teaching contributes to the formation of unique pedagogical techniques, smoothes the formation of the transition from old to new forms of education, and allows expanding the variety of mathematical problems and examples to be solved. In the field of innovative and educational technologies, it was revealed that the introduction of computer technologies in the educational process makes it possible to increase the efficiency and level of education, to attract more students to the educational process, causing them to be interested.

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Thanks to the use of information technology, the teacher has a huge number of opportunities, such as multimedia presentations containing educational material, formulas, animations, graphs and diagrams. Also, thanks to technology, the teacher and student will have more frequent dialogues, which contribute to creating a more comfortable environment for students who, over time, will learn to express their thoughts more clearly and will be able to become more confident and therefore more active in the classroom. All these components help to organize the learning process in the best possible way,

increase the visibility of the material, intensify learning and cognitive activities, and involve as many students as possible in the learning process. Therefore, the learning process becomes exciting, creative and directed directly at the student.

Multimedia presentations are of great value in educational computer programs, effective demonstration of drawings, diagrams, drawings, saving study time, memorization and assimilation of educational material by the trainees.

Innovative educational technologies that are used in teaching mathematics contribute to creating a connection between the teacher and students, and also help to develop the individual abilities of students: the ability to reason correctly, clearly articulate their thoughts, work individually and cooperate friendly with others and adapt in any environment.

In recent years, a large number of computer mathematical packages have been created, such as MatLab, Mathcad, Maple, etc. This allows us to speak about the emergence of a new branch in mathematics. Recently, its name has stabilized in the Russian language as "computer algebra" - a branch of modern mathematics, lying at the intersection of mathematics and computer science and based on the use of new information technologies.

Computer support in teaching with the help of mathematical packages is designed to free the student from routine work, allow him to focus on the essence of the material being studied at the moment and stimulate the student's cognitive activity.

The experience of using mathematical packages as new technologies in education indicates the achievement of the following goals:

- ✓ the number of tasks for independent solution increases (due to the reduction of routine transformations);
- ✓ more complex mathematical models are studied, since cumbersome calculations are transferred to the corresponding systems of computer mathematics;
- ✓ training material is being improved, as more attention is paid to qualitative aspects;

At the same time, I would like to emphasize the special role of the symbolic component of mathematical packages. Integrated systems of symbolic mathematics are one of the important modern trends in the use of computers. As a rule, working with programs consists in entering data, performing the necessary calculations and obtaining results. The programs can be used for numerical and analytical calculations [5].

When performing numerical calculations, it is possible:

- ➢ solve systems of equations;
- ➢ find maxima and minima of functions;
- ➢ solve non-linear equations;
- ➢ calculate definite integrals;
- ➢ solve differential equations;
- ➢ Perform basic operations on polynomials.

For analytical calculations:

- ✓ define derivatives;
- ✓ find indefinite integrals;
- ✓ Perform symbolic operations with mathematical expressions.

Thus, the introduction of innovative technologies in the educational process provides benefits not only to students, but also to teachers. With the help of information technology, the teacher can use the latest pedagogical ideas, thereby arousing the interest and involvement of students.

In conclusion, modern mathematical programs contribute to the creative development of students, expanding the possibilities of the lesson, and most importantly, instilling a cognitive interest in the subject "Mathematics".

References

1. Роберт И. В. Современные информационные технологии в образовании: дидактические проблемы, перспективы использования. М.: Школа-Пресс, 1994.
2. Лесничая И. Г., Миссинг И. В. Информатика и информационные технологии. М.: Экспо, 2005.
3. Шеховцова Д. Н. Использование компьютерных технологий для визуализации математического знания // Вестн. Томского гос. пед. ун-та (Tomsk State Pedagogical University Bulletin). 2010. Вып. 10 (100). С. 99-103.
4. Тюгаева О. В. Об использовании компьютерных технологий на уроках математики в школе //Вестник Томского государственного педагогического университета. – 2012. – №. 4 (119). – С. 46-48.