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Designing and shaping lessons that develop students' mathematical abilities

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Abstract. *Designing and shaping lessons that develop students' mathematical abilities is a complex and multifaceted process that requires a deep understanding of both the theoretical foundations of pedagogy and the specifics of mathematical thinking. In the conditions of modern educational space, where the emphasis is shifting towards the development of critical thinking, creativity and the ability to solve problems independently, the creation of such training programmers that not only impart knowledge, but also stimulate the intellectual growth of students is of particular importance.*

Key words: *Mathematics, organization, modern training, further study*

Introduction

Mathematical abilities, which include logical thinking, spatial imagination, the ability to analyses and synthesize information, and the ability to think abstractly, are key to the successful mastery of not only exact sciences, but also many other disciplines. However, their development requires a special approach that takes into account individual characteristics of students, their level of preparation and motivation.

In this context, the design of training sessions should be based on the principles of differentiation and individualization of learning, the use of interactive methods and modern technologies, as well as the integration of interdisciplinary links. An important aspect is to create conditions for the active involvement of students in the learning process, where they are not passive recipients of information, but active participants, capable of independently setting goals, searching for solutions and evaluating the results of their activities.

The formation of training sessions aimed at the development of mathematical abilities requires not only a deep knowledge of the subject, but also a creative approach to the organization of the educational process. This allows not only to increase the level of students' mathematical training, but also contributes to their all-round development, forming the skills necessary for successful professional activity in the future.

Modern training sessions aimed at developing students' mathematical abilities are a complex and multifaceted process that requires not only a deep understanding of the subject, but also the application of innovative teaching methods. In a rapidly changing world where technology and science play a key role, it is important not only to impart knowledge, but also to develop students' ability to think analytically, solve non-standard problems and adapt to new challenges.

One of the key elements of such lessons is the integration of an interdisciplinary approach. Mathematics ceases to be an isolated discipline and becomes a tool for solving problems in physics, economics, biology and even the humanities. This allows students to see the practical relevance of mathematical concepts and motivates them to study the subject in greater depth.

The use of modern technology such as interactive platforms, virtual labs and data visualization software also plays an important role. These tools not only make the learning process more engaging, but also help students better understand abstract concepts such as functions, limits or multidimensional spaces.

In addition, the emphasis on the development of critical thinking and creative problem solving is becoming an integral part of the learning process. Teachers increasingly use problem-based learning methods, where students independently formulate hypotheses, conduct research and look for solutions. This not only develops their mathematical abilities, but also builds skills necessary for a successful career in any field.

Individualization of learning is also an important aspect. Each student has unique abilities and pace of learning, so modern learning sessions should be flexible and adaptive. The use of diagnostic tests, personalized tasks and feedback makes it possible to take into account the individual needs of each student, which significantly increases the effectiveness of learning.

Thus, modern training sessions aimed at developing students' mathematical abilities are a synthesis of

traditional and innovative approaches. They not only provide knowledge, but also shape students' skills that will be in demand in the future, making them ready to solve complex problems and achieve high results in professional activity.

Designing and shaping learning activities that develop students' mathematical abilities requires a deep understanding of both the theoretical foundations of mathematics and pedagogical approaches aimed at developing cognitive skills. It is important to take into account that mathematical abilities are not limited to problem-solving skills, but include logical thinking, spatial imagination, analytical skills and the ability to think abstractly.

To achieve these goals, teaching sessions should be structured so that students can not only assimilate ready-made knowledge, but also actively participate in the process of discovery. This implies the use of problem-oriented teaching methods, where tasks are formulated in such a way as to stimulate independent research and search for solutions.

Special attention should be paid to the integration of interdisciplinary links, as mathematics is the basis for many scientific and engineering disciplines. For example, incorporating elements of physics, computer science or economics into mathematical problems allows students to see the practical application of theoretical knowledge, which promotes deeper understanding and motivation.

The methodological basis of the research is the system approach, activity approach and personality-oriented approach in education. The following methods were used in the work:

- theoretical analysis of scientific literature on the problem of development of mathematical abilities;
- pedagogical experiment, including the development and approbation of training sessions;
- methods of mathematical statistics for processing and analysing the results of the study;
- questionnaires and testing of students in order to assess the level of their mathematical training and motivation.

The scientific novelty of the study lies in the development of a methodology for designing training sessions, which takes into account not only the content of mathematical material, but also individual characteristics of students, their cognitive abilities and level of motivation. The proposed system of classes is based on the integration of traditional and innovative teaching methods, which allows creating conditions for the effective development of mathematical abilities.

Theoretical significance of the work consists in the expansion of scientific ideas about the methods of development of mathematical abilities in the conditions of higher education. The results of the research can be used for further study of the problems of mathematics education and development of new pedagogical technologies.

The practical significance of the study lies in the possibility of applying the developed methodology in the educational process of higher educational institutions. The implementation of the proposed training sessions will improve the quality of students' mathematical training, develop their analytical thinking and ability to solve non-standard problems, which is an important condition for their professional development.

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