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DIDACTICAL AND PRACTICAL FUNCTIONS OF MATH CLASS

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ANOTATION

This article contains scientific points of view on the didactic and practical functions of the mathematics class, as well as on the didactic spheres and development of mathematical science.

Keywords; mathematical statistics, element, line, algebra elements, integral, differential equations,

The implementation of the connection between theory and practice is especially important in the process of teaching mathematics. The abstract nature of mathematics makes the task of strengthening the connection between mathematical concepts and reality, with the needs of people's practical activities, especially relevant. This is important so that students, based on the study of real objects, deeply comprehend the essence of abstract concepts, independently, creatively able to move from concrete objects to abstract ones, and vice versa. Thus, through the involvement of real objects, it becomes possible to subordinate education to vital interests, socially necessary areas, to prepare students for independent working life. In addition, the introduction into school mathematics of various aspects of the applications of modern mathematics, such as elements of mathematical statistics, elements of linear algebra, such concepts as derivative, integral, differential equations, etc., which are used in the national economy, requires the improvement of the content and methods of conducting practical classes. A fundamental feature of mathematical science, and even school mathematics, is the use of multilevel abstractions in it.

There is no pure "abstract" thinking in logical thinking. In thinking there are always material or ideal images of objective reality. When we think logically, we always resort to images of objects, phenomena that we have in memory, or to the objects themselves, phenomena of objective reality. Moreover, the laws of logic themselves express repeatedly repeated causal patterns of the real world.

The power of abstraction is that it makes it possible to penetrate into the depths of objective reality, facilitating our work and saving time. Formalization is actually a record of the results of practical activity in a systematic abstract description. Only in mathematics is this done efficiently, rationally, more economically than in verbal expression by the letters of the alphabet. Therefore, any mathematical expression - numerical, analytical, geometric or structural - is a record of a certain content that reflects objective reality. At the same time, we are so distracted that we often do not think about the meaningful meaning of the expression. Therefore, with an abstract, formalized construction of teaching mathematics, science breaks away from life, from objective reality. Then efforts and years are spent in order to teach how to connect mathematics with life. More natural and simpler is the direct path, on which the transition from objective reality to its mathematical formalization was meaningfully made by the students themselves. Then they will relatively easily find meaningful interpretations of the solution of mathematical problems, which are usually called the application of mathematics.

According to didactic functions, practical classes in mathematics can be divided into testing, teaching and cognitive.

At practical lessons in mathematics of a verification nature, the application of one or another mathematical concept is shown. For example, after studying the topic "Polyhedra ", students divided into groups are invited to make models of a parallelepiped, prism, cone and cylinder and characterize the properties of these figures using them. After that, students name objects that have the appropriate form, compose and solve problems of practical content.

So that students can creatively master mathematical concepts, preparation for their introduction begins with practical exercises of a teaching nature. Students do not yet know about the new concept, they are only asked to complete a few practical tasks. Based on the results obtained, they independently make generalizations and conclusions, which then lead them to the definition of a new concept. For example, before studying the topic "Length of a circle", it is useful to conduct such educational practical work. Students cut out circles of various diameters from paper, tracing cylindrical objects along the contour: tin cans, models of cylinders, etc. Then, using a thread and a scale ruler, measure the length of the diameter of the circles. The data obtained is recorded in workbooks and the length ratio is calculated with an accuracy of 0.01. With this approach, students are convinced in practice that the ratio of the circumference to the length of the diameter is approximately 3.14. Summarizing the practical results obtained, the teacher proceeds to theoretical conclusions.

Teaching practice contributes to the development of independent creative activity of students. Generalization of the results of several practical tasks and obtaining theoretical conclusions on their basis represent the initial stage in the construction of an abstract theory.

When studying the topic " Area of a Right Triangle", you can conduct a training practical lesson, the purpose of which is to guide students to a way to determine the area of any triangle. To do this, three areas are allocated on the school site, having the shape of a triangle of arbitrary type. Students are divided into three groups, each group is instructed to measure the area of one triangle in any way. How to find the area of a right triangle, they know from the previous lesson. After several unsuccessful attempts, students guess that this triangle needs to be divided into two right-angled triangles.

At home, it is proposed to build an arbitrary triangle in notebooks, make the necessary measurements, find its area, and formulate a theorem.

In the described example, students get acquainted with new theoretical material in the process of completing a practical task. With this approach to the organization of the lesson, favorable conditions are created for the cognitive activity of students - they themselves make generalizations, formulate theorems. If necessary, the proof of a difficult theorem is carried out by the teacher himself. But students already perceive the progress of the proof deeper, more meaningful, because the whole process of assimilation of new material takes place naturally.

In practical classes of a cognitive nature, the study of a new topic or concept is carried out on the basis of practical tasks related to the branch of industrial or agricultural production that forms the basis of the economy of this region.

When developing a methodology for conducting classes related to the use of mathematics in solving practical problems, it is necessary to take into account the following didactic requirements:

1) the mathematical content of practical problems should be available to students;
2) the content of practical classes should , if possible, cover various types of human activity;
3) the implementation of practical classes should be feasible for the student, both in the sense of understanding the theoretical foundations of the problem being solved, and mastering the special practical skills and physical efforts required to solve it;
4) pedagogical teaching aids used in practical classes should be varied and have a cognitive and testing character;
5) practical classes in mathematics should be carried out systematically in accordance with the linear and concentric principles of the formation of the concepts of the course of school mathematics;
6) in practical classes in mathematics, interdisciplinary communications should be carried out;
7) in practical classes in mathematics, the principle of visibility acquires special significance;
In many cases, in practical classes, students themselves construct mathematical models of real life situations. To comprehend the abstractness of mathematical concepts, it is necessary to systematically and purposefully develop the skills and abilities of students in formalizing real situations, in creating adequate mathematical models. Formalization and modeling develop in children such elements of mathematical culture as the ability to highlight the essential aspects of the problem under study, the ability to analyze the completeness of the available data, mastering the languages of various mathematical fields, the ability to identify the original concepts with the selected mathematical concepts, the ability to transform the aspects of the original phenomenon that are of interest to us into a strict formulation mathematical problem, understanding the abstractness of mathematical concepts.
The transition from real situations to mathematical models develops abstraction skills in students , which serve as the basis for mental activity in the study of mathematical theories. Practical classes reveal to students the objective basis of mathematical concepts, form their worldview.

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