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SPECIFIC PERCULARITIES OF THE PROCESS OF TEACHING MATHEMATICS TO SCHOOLCHILDREN

Introduction. In the article we examine the concept and features of mathematics as a science and as an academic subject are issues and problems of teaching mathematics at school, features of the process of teaching mathematics in the modern period.

Mathematics occupies one of the first places in the school education system both because of its specific features and because of the role that mathematics plays in modern science. Mathematics as an academic subject at school, which is studied from the 1st grade, includes elements of arithmetic, algebra, principles of mathematical analysis, Euclidean geometry of the surface and space, analytical geometry, trigonometry. For a school mathematics course the obligatory part of mathematical knowledge which gives a general idea of science, helps to master mathematical methods and contributes to the necessary development of mathematical thinking in schoolchildren should be chosen.

The content of mathematical material is changing due to the expansion of educational goals, the emergence of new requirements for school preparation, changes in educational standards.

Main part. Teaching mathematics is aimed at the mastery of the system of mathematical knowledge, skills and abilities necessary for further study of mathematics and related academic subjects, as well as solving practical problems, for the development of logical thinking, spatial imagination, oral and written mathematical speech, computing skills, solving equations and inequalities, instrumental and graphic skills. Mathematical knowledge includes knowledge of mathematical facts, definitions, procedures and the relationships between them; knowledge of mathematical ideas and knowledge of mathematics as a discipline, in particular, how mathematical knowledge is applied, the nature of discourse in mathematics, as well as norms and standards for presenting arguments and proofs.

Mathematics as an academic subject differs from mathematics as a science not only in the capacity, system and profundity of presentation, but also in the applied orientation of the issues studied. The course of mathematics is constantly facing the need to overcome the contradiction between mathematics — a developing science — and the stable core of mathematics — an academic subject. The development of science requires constant updating of the content of mathematical education, bringing the subject closer to science, matching its content to the social order of society [2].

Although the need to study mathematics in primary, secondary and higher education is well-known, the question of how to teach mathematics remains controversial. All over the world, there are increasingly high demands on schools and teachers regarding the use of effective methods. Teaching mathematics at the level of general secondary education is based on the theoretical basis of three approaches: knowledge-based, personality-oriented, competence-based.

The methodology of teaching mathematics is a pedagogical science of tasks, content and methods of teaching mathematics. The purpose of the mathematics teaching methodology is to study the main components of the mathematics teaching system at school (goals, content, methods, forms and means of mathematical teaching) and the connections between them. It studies and examines the process of teaching mathematics to improve its efficiency and quality.

In addition to general learning goals, there are also some goals, which are determined by the peculiarities of mathematical science. One of them is the formation and development of mathematical thinking, which contributes to the detection and more effective development of students' mathematical abilities and prepares them for mental activity in general as well as in mathematics with its numerous applications.

The content of the school mathematics course is reflected in a number of regulations, curricula and programs, textbooks, methodological manuals. The basic curriculum is mandatory for all secondary educational institutions. This is the main document for the development of educational and thematic planning and training programs. Math programs include a list of topics for studying, time recommendations for each topic, a list of necessary knowledge, skills and subject skills.

In programs focused on mathematical thinking of children, teachers learn to recognize and evaluate the mathematical significance of informal methods of solving problems, as these methods eventually turn into more abstract and more effective, and can serve as a basis for teaching students. After teachers have studied the development of children's mathematical thinking, they tend to pay more attention to solving problems, listen to their students more and learn more about their students' abilities, and also provide their students with more opportunities to use various methods of solving.

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Currently, there are the following problems in the methodology of teaching mathematics in secondary school:

– standardization of education;
– differentiation of the content of education;
– methodological support of the mathematics course within permanent updating of school education content;
– breaking of interdisciplinary relations;
– monitoring and evaluating students' knowledge in math lessons;
– staff support;
– regional peculiarities of teaching mathematics, etc.
– The disadvantages of traditional teaching are:
– the predominance of verbal teaching techniques that contribute to the distraction of attention and the inability to focus on the essence of the educational material;
– average rate of studying mathematical material;
– a large amount of material that requires study and memorization;
– lack of differentiated tasks in mathematics, etc.

The disadvantages of traditional teaching can be eliminated by improving the learning process itself. Traditional teaching methods have been criticized for a long time, but there are teachers who are constantly looking for new, advanced teaching methods, trying to improve old traditional ones. At the elementary school level, mathematical concepts can be motivated through properly designed practical exercises supported by manipulative materials. Recently, new teaching methods which are aimed at activating the cognitive activity of schoolchildren and wider use of their independent work in the classroom have become widespread. New forms of learning are used: programmed learning, distance learning, interactive learning, project method and others.

Conclusion. To improve the teaching of mathematics, it is reasonable to develop additional new methods of using non-standard tasks. It is important to use tasks that will take into account individual characteristics of students, contribute to the formation of students' cognitive interest and independence. Purposive teaching of schoolchildren to solve problems with the help of specially selected exercises will help teach them to observe, use analogy, induction, comparisons and draw appropriate conclusions. In the classroom, it is advisable to use intellectual tasks, joke tasks, mathematical puzzles, rebuses, sophisms. Stimulating questions, the use of technology and classical well-known problems are important motivating tools in the study of mathematics.

References

1. Методика обучения математике : учебник для академ. бакалавриата : в 2 ч. / Н. С. Подходова [и др.] ; под ред. : Н. С. Подходовой, В. И. Снегуровой. — М. : Изд-во Юрайт, 2019. — Ч. 1. — 274 с.

2. *Музрапова, Н. С.* Понятие и особенности обучения математике [Электронный ресурс] /Н. С. Музрапова // Актуальные проблемы гуманитарных и естественных наук, 2017. — № 11 (1). — Режим доступа: https://cyberleninka.ru/article/n/ponyatie-i-osobennosti-obucheniya-matematike-1 . — Дата доступа: 21.03.2022.

3. *Темербекова, А. А.* Методика обучения математике : учеб. пособие / А. А. Темербекова, И. В. Чугунова, Г. А. Байгонакова. — СПб. : Лань, 2015. — 512 с.

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SCHOOL VIOLENCE: PSYCHOLOGICAL AND PEDAGOGICAL ANALYSIS

Introduction. In recent years the entire world community has expressed concern about the growth of school violence in various forms. Students of modern educational institutions are increasingly using cold steel and firearms [1]. Smartphones and laptops serve to demonstrate inappropriate behavior towards their teachers and peers. At the same time modern domestic psychological and pedagogical research practically does not conciders this problem, despite its undoubted relevance. The search of ways for effectively solution this problem has attracted our attention.

Main part. Organization and execution of our experimental study on the problem of school violence was preceded by a critical analysis of literary sources during which we determined the interpretation of key terms and identified the main issues in the problem under study and ways of their solution proposed by various scientists.

We believe that the reason for increase of school violence is the deterioration of educational work quality of teachers and parents. The principle of "harmonious development of personality" has been violated [2], the values of patriotism and citizenship have been nearly lost. At the same time there happened a drop in the prestige of the teacher profession due to the sharp deterioration of the socio-economic situation in the country, a decrease in the level of salaries of representatives of the public sector and the outflow of the intellectual elite to the West. The society stopped respecting teachers. Parents, engaged in earning money, are increasingly removed from the upbringing of their children. And as a result, there is a sharp shift in violation of schoolchildren normative behavior towards illegality.

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