THE IMPORTANCE OF IN-DEPTH STUDY OF MATHEMATICS IN SECONDARY SCHOOLS

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Annotation: The article discusses the problems of improving the quality of mathematical knowledge when teaching in schools, the use of various methods in solving problems, solutions and prospects, including improving curricula, designing training in accordance with the requirements of the time, the use and development of logical thinking operations, etc.

Keywords: efficiency of science, digital economy, interests and abilities, quantitative mathematics, mathematical models, objective characteristics, modeling, mathematical methods.

In the modern era of rapid development of science and technology, the formation of modern knowledge is of great importance. In addition, modern teaching technologies and related methodological approaches create favorable conditions for the deep and long-term formation of important fundamental concepts. Teaching mathematics requires the rational use of innovative educational technologies, the effectiveness of organized lessons, ensuring teaching using pedagogical and information technologies for better assimilation by students.

One of the urgent tasks is the introduction of education based on a competence-based approach to learning, the ability of students to apply their knowledge in life, career choice, independent learning and the development of educational competencies. In order for the quality of teaching mathematics in a comprehensive school to meet modern requirements, it is necessary to pay special attention to teaching methods.

Today, it is important for secondary schools to have deep mathematical knowledge when teaching in order to achieve high results when enrolling high school students in higher education institutions.

The role of mathematics is to construct and analyze quantitative mathematical models, as well as to study structures that obey formal laws. The level of development of mathematical methods serves as an objective characteristic of the depth of knowledge about this discipline.

The knowledge and methods of action acquired in the course of mathematics are necessary not only for further successful study of mathematics and other school disciplines in high school. The mathematical activity that a student should master is

complex, consisting of many components. It is this multicomponence that is the main reason for the difficulties experienced by schoolchildren. Focusing on teaching individual components makes the material more accessible. To implement the principle, it is necessary to choose the components for training correctly and consistently. If some mathematical activity contains a creative and technical component, then, according to the principle of separation of difficulties, they are studied separately and then integrated. [1]

Today, teachers of secondary schools should set the following goals for themselves - the development of a student's personality by means of mathematics, preparing him for continuing education and for self-realization in modern society. Achieving these goals involves solving the following tasks - formation of motivation for studying mathematics, readiness and ability of students for self-development, personal self-determination, building an individual trajectory in the study of the subject.

The system-activity approach assumes orientation towards achieving the goal and the main result of education - the development of the student's personality based on the development of universal educational actions, cognition and development of the world, active educational and cognitive activity, the formation of his readiness for self-development and continuing education, a variety of individual educational trajectories and individual development of each student.

The mathematical activity that a student should master is complex, consisting of many components. It is this multicomponence that is the main reason for the difficulties experienced by schoolchildren. Each next task in the system is based on the result of the previous one, the formed skill, new knowledge is applied. So the whole path of action is gradually formed. [2]

This makes it necessary to form intellectual tolerance within the framework of school education. The leading role in this should be played by mathematics, the traditional "natural polygon" of the intellectual development of the younger generation. The basis for such work is the use of methods of scientific cognition in teaching mathematics: analogies, comparisons, generalizations, oppositions, systematization, classification, which involve students in search activities, promote the emergence of new associations, thereby developing their creative potential. It should be noted that in mass school, the focus on the formation of flexible and alternative thinking of schoolchildren, as indicated in numerous psychological, pedagogical and methodological literature, remains outside both mass school education and the most well-known pedagogical innovations. As a result, the majority of students have a poorly formed orientation to alternative thinking, they hardly switch to new, unusual ways of acting for them, and the various methods and

techniques of mathematical activity they have studied are often presented in their minds in an isolated, isolated form without sufficient correlation with each other.

This is evidenced by literary data, conversations with teachers, the results of written works and oral surveys conducted by us during the ascertaining experiment, as well as personal observations of the course of teaching in a number of educational institutions. The possibility of forming intellectual tolerance of schoolchildren This fact carries the danger that the actual forms and norms of building the subject and "movement in the subject" remain closed to students. To overcome this danger, first of all, we need teachers who themselves possess the necessary completeness of thinking and are able to clearly present to students the limitations of their current perception in order to form a stable desire for overcoming it. In addition, the development of adequate pedagogical "formats" is also required, within which both students and teachers will be able to jointly come to the need for a different perception of the fact, phenomenon, problem under study.

Such formats include the destruction of habitual stereotypes of thinking, the development of the ability to adequately vary their actions when the situation changes, the focus on finding the simplest, unexpected and "beautiful" solution, the joint construction of alternative structures. Considering the possibility of destroying habitual stereotypes of thinking, it is advisable to turn to the experience of one of the predecessors of humanistic psychology F. Perls, who in one of his works suggests as other thought experiments aimed at the personal growth of the patient, such as "the feeling of opposite forces" (the representation of a situation opposite to the original one, the compilation and comprehension of both situations, changing situations in one or another perspective and predicting the results of such a change); "attention and concentration" (focusing attention on some visual object, leading to its isolation from the surrounding background and further changing this background).

These exercises can also be implemented when studying school math material. Thus, the "feeling of opposite forces" can be formed during the "development of the topic of the task", when students, with the participation of the teacher, change the condition of a certain task in one way or another (compilation and solution of the inverse problem, generalization and specialization of tasks, addition and exclusion of data and requirements of the task, etc.) [3]

In short, the level of development of mathematical methods is an objective characteristic of the depth of knowledge about this discipline. Mathematical models describing phenomena in physics, biology and chemistry are very complete, as a result of which these sciences reach a high level of theoretical generalization. Although simple processes of physiological and mathematical modeling are currently common, their solution is easily achieved using arithmetic operations, equations, percentages and proportions. [4]

Based on the implementation of these tasks, it is necessary to develop new approaches to the organization of training in educational institutions. Since the educational process is the main sphere of pedagogical creativity, it needs to be organized and managed, an innovative approach allows you to acquire knowledge, independence, creativity, initiative, cooperation, deepening professional competencies, pays attention to the quality of education, overcoming existing shortcomings and problems in improving the quality of education, clearly defining goals and objectives in this direction, using world experience, the use of information technologies in combination with pedagogical technologies to improve the quality of professional training of future specialists. specialists serve for improvement, which increases the efficiency of the process.

Clarification of educational goals, the use of various technologies and methods used in the process of teaching and assimilation of knowledge, attention to content leads to the development and improvement of the activities of educational institutions.

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