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Journal "World of Science". This journal aims to implement creative ideas, proposals and solutions for the implementation and design of innovative educational technologies in the process of developing the modern educational system, directions in the development of integrative education. The materials of this journal can be used by professors, teachers of academic lyceums and professional colleges and secondary schools, independent researchers, undergraduates, scientific workers, talented students and researchers working in this field.

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APPLICATIONS OF SCIENTIFIC RESEARCH METHODS IN TEACHING MATHEMATICS

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Annotation: *This article discusses the methods used to study mathematics during its emergence and development by classical and contemporary scholars. The interaction of these methods with modern methods in teaching mathematics today is also discussed. It is known that the emergence of the science of mathematics is associated with the intervention of humanity. Because people have a vital need for the concepts of quantity and measurement with their creation. Therefore, it is necessary to understand that this science is directly and inextricably linked with life.*

Key words: *algorithm, analysis, method, learner, practical training, working in small groups, skills, lesson format*

The word mathematics is derived from the ancient Greek word mathematic, which means "knowledge of sciences". The object of study of mathematics is the spatial forms of existing objects in matter and the quantitative relationships between them. At present, mathematics can be conditionally divided into two parts:

1) elementary mathematics;

2) higher mathematics.

Elementary mathematics is a science with an independent content, which is built on the basis of elementary data obtained from various branches of higher mathematics, namely theoretical arithmetic, number theory, higher algebra, mathematical analysis and the logical course of geometry. Higher mathematics is concerned with finding mathematical laws that fully and deeply reflect the spatial forms of the real world and the quantitative relationships between them.

Elementary mathematics forms the basis of the school mathematics course. The purpose of the school mathematics course is to provide students with a system of mathematical knowledge, taking into account their psychological characteristics. This system of mathematical knowledge is conveyed to students through certain methods (methodology) (the word methodology in Greek means "path"). Mathematical methodology is one of the main sections of pedagogy and didactics, an independent discipline that studies the laws of teaching and learning mathematics that correspond to the goals of education at the level of development of our society.

Mathematical methodology answers the following three questions related to the educational process:

1. Why should we study mathematics?

2. What should we learn from mathematics?

3. How should we study mathematics?

The concept of mathematical methodology was first described in the work “The Demonstrative Study of Numbers” written by the Swiss pedagogue and mathematician G.

Pestolazzi in 1803. Starting from the first half of the 18th century, issues related to the methodology of teaching mathematics were addressed by Russian scientists, such as academician S.Y. Gurev (1760-1813) and the outstanding methodologist-mathematician S.I. Shokhor-Trotsky (1853-1923), A.N. Ostrogratsky, and others. Later, N.A. Izvolsky, V.M. Bradis, A.I. Fetisov, and others worked on various areas of mathematics teaching methodology.

Mathematics teaching methodology is taught in the III-IV courses of pedagogical institutes. It is conditionally divided into three according to its structural features.

1. General methodology of mathematics teaching.

This section reveals the purpose, content, form, methods and methodological system of mathematics based on the laws of pedagogy, psychology and didactic principles.

2. Special methodology of mathematics teaching.

This section shows ways to apply the laws and rules of general mathematics teaching methodology to specific subject materials.

3. Specific methodology of mathematics teaching.

This section consists of two parts:

1. Specific issues of general methodology;

2. Specific issues of special methodology.

For example, if we talk about the methodology of planning and conducting a mathematics lesson in the 6th grade, this is a special issue of general methodology, if we talk about the methodology of introducing the concept of function and teaching it in the 6th grade, this is a special issue of special methodology. In the later period of the development of society, mathematics developed very rapidly, which can be seen from its division into the following stages: first stageis associated with practical calculations and measurements, and during this period, the emergence of the primary empirical laws and rules of arithmetic and geometry based on the formation of numbers and figures, in which the main principle was taught on the basis of "do as first stage do, so do you." This period covers the period from the 5th to the 6th centuries BC.

Second stage is the period of fixed quantities, which covers the period from the 6th century BC to the 17th century AD. During this period, mathematics was formed and developed as a scientific discipline, and its own scientific methods of investigation were created. As a result of the continuous increase in scientific innovations, the names of Al-Khwarizmi, Al-Biruni, Ibn Sina, Omar Khayyam, Yabklid, Archimedes, Apollonius, Thales, Muhammad Jamshid, Al-Koshi, Mirzo Ulugbek, Ali Kushchi and other scientists began to appear, and their work during this period was recognized as a great achievement in science of its time. During this period, the emergence of not only geometric language, but also algebraic language based on algebraic symbols indicated the development of mathematics.

Third stage - this is the period of variable quantities (XVII-XIX centuries) - the emergence of analytical geometry, the connection of geometry with algebra, the emergence of differential and integral calculus and its rapid development, the discovery of the axiomatic method, which led to the emergence of a deductive statement of geometry, as well as some sections of mathematics, as well as the initial elements of the topological language in

mathematics, and then its development it can also be considered together with the mathematical expression of the elements of formal logic by B. Russell.

Fourth stage - this is the period of the development of mathematics from the second half of the XIX century to the present day - this period is considered the period of "changing attitudes" to mathematics. During this period, as a result of a deeper study of the axiomatic method in mathematics, the concept of "mathematical structures" emerged, the sciences of probability theory and mathematical statistics, mathematical logic emerged, and in a word, the emergence and development of several mathematical disciplines, leaving mathematics behind, can be seen. The purpose of teaching mathematics in secondary schools. The purpose of teaching mathematics in secondary schools is determined by the following three aspects:

1. The general educational purpose of teaching mathematics.
2. The educational purpose of teaching mathematics.
3. The practical purpose of teaching mathematics.

The general educational purpose of teaching mathematics sets itself the following tasks:

a) To provide students with a system of mathematical knowledge based on a certain program. This system of knowledge should provide students with sufficient information about mathematics as a subject and prepare them for studying higher sections of mathematics.

b) To consolidate students' oral and written mathematical knowledge. The study of mathematics should help students develop the skills of speaking in their native language without errors, expressing their thoughts clearly, clearly and concisely.

c) To teach students to know real truths based on mathematical laws. Here it is intended to provide students with knowledge in a volume that allows them to understand the spatial forms and quantitative relationships between them, from the simplest to the most complex phenomena occurring in the real world.

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