ISSN: 2350-0328
International Journal of Advanced Research in Science, Engineering and Technology
Vol. 7, Issue 11 , November 2020

Methods and Techniques of Teaching Mathematics

Safarbayeva Nigora Mustafayevna TIIAME

ABSTRACT: Mathematical methods and techniques of its study. The study of this science is carried out using the methods developed by scientists. The effectiveness of the lessons and methods of teaching, developed on the basis of these methods, are given.

KEYWORDS: Mathematics, methodology, pedagogy, algorithm, programming, theoretical research.

I. INTRODUCTION

Over the past 10 years, the teaching of mathematics in our country, especially in secondary school, especially in the primary education system, has undergone significant changes in terms of scale and importance. Especially after the independence of our republic, the adoption of the Law on Education and other decrees is a clear proof of this.

History is the true educator of the nation. The deeds and courage of our great ancestors will revive historical memories, form a new worldview, and become a source of historical and moral education and lessons. In the history of Central Asia, there have been many great figures who embodied political consciousness, moral courage, religious worldview and encyclopedic knowledge.

II. MATERIALS AND METHODS

Didactics is a branch of pedagogy that develops the theory of teaching. Didactics is derived from the Greek word "didacticos", which means teaching, learning. In the Near and Middle East, such thinkers as Al-Khwarizmi, Al-Farabi, Abu Rayhan Beruni, Ibn Sina, Umar Khayyam, Tusi are the founders of scientific didactics. An important feature of the views of their followers was that these scientists have always focused on the process of abstraction of the image of the object in the human mind, understanding, occurrence and formation of the essence and specificity of the object. They are interested in the subject and sources of knowledge, the stages of the cognitive process, and the relationship between cognitive activity and practical activity.

Al-Khwarizmi played an important role in the development of the theory of continuous development of the individual, defined the principle of unity of individuality and generality in inductive and deductive thinking.

Al-Farabi developed a classification of teaching methods. He divided them into practical and theoretical methods, thus asking for ideas about the practical direction of teaching and how it relates to people's lives and daily activities. The scientist pays special attention to experimental and demonstrative, inductive and deductive, practical methods of teaching. Combines all methods based on the student's life experience and logical thinking.

Prefer the deductive method in the development of requirements for the organization of the learning process, highlighting what to pay special attention to when explaining the material to students, the most important things with convincing and unquestioning evidence.

Al-Farabi develops the principles of scientific, visual, comprehensible and coherent teaching based on the examples of mathematics. Explains the essence of the cognitive process and forms of knowledge in science. According to him, these processes are formed as laws, and their observance improves thinking and prevents gross errors in the process of complex cognition. The process of learning must go through the logic of thinking. The object of logic is to determine the correctness of the thought process in which the object of comprehension and reasoning are analyzed. Logic is a weapon and it helps to know things clearly.

Al-Farobi also develops quite detailed recommendations on the organization of cognitive activities. He writes that in order to be a good theorist, regardless of the science to which the theory belongs, the following three conditions must be met:

1. Full knowledge of all science-based principles;
2. To be able to draw appropriate conclusions from these principles and information on the subject;

ISSN: 2350-0328
International Journal of Advanced Research in Science, Engineering and Technology
Vol. 7, Issue 11 , November 2020

3. To be able to reject a false theory and to distinguish truth from falsehood, to analyze the opinions of other authors in order to correct a mistake;

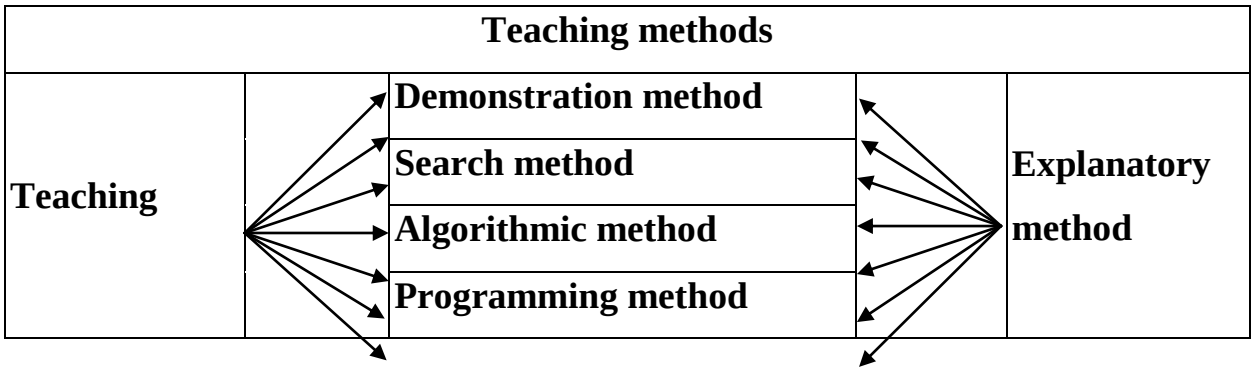
Ibn Sina's teaching about the results achieved through knowledge has a special place in the theory of teaching. According to him, true knowledge of things is achieved by analyzing their appearance and determining their causes. Ibn Sina develops the stages of development of the mind. The first stage of perception with observation is to explain the mental categories. The second stage is to perceive two different ideas. The third stage of mental development is achieved through the perception of learned ideas. Then it is called true intelligence.

Organizing the use of historical materials in the teaching of mathematics, according to its own system, serves two purposes in parallel. When mathematical laws, proofs, formulas, and mathematical interpretations are implemented, these laws, proofs, and formulas are demonstrated not only in mathematics but also in other disciplines, resulting in deeper students' knowledge in the field. Therefore, the interdependence of the methods used in the teaching process, as well as the pedagogical and psychological aspects of teaching mathematics in high school, especially in the primary grades, combined with historical materials. also differs in the didactic sequence. It is known that in pedagogy, along with teaching methods, there are teaching methods.

Especially since teaching methods are structured as a sum of an effective sequence of teaching or learning methods in terms of their structure, it is formed and applied to each teacher individually. Therefore, because each teacher's teaching method is unique, there are two ways to use the same methods, for example, teachers who teach in a problem-based way, and those who use teaching methods in between lessons. in particular, they differ slightly from each other. However, the diversity of the results obtained also confirms this idea.

It serves to achieve the set goal and bring it to the required level. There are methods of teaching mathematics that can be the basis of each of the above methods in terms of their epistemology, namely: observation and experiment, analysis and synthesis, induction and deduction, comparison, analogy, generalization, there are methods of abstraction and concretization. These techniques not only help to achieve the goal of the structure, but also to achieve it.

The data show that the correct use of a set of methods in the teaching of historical materials in the primary grades can be an important factor in the mastery of students. It is well known that the process of teaching historical materials in the primary grades is a link between the problem-based method and the explanatory method, which, by their very nature, are linked to teaching methods in the following order.



The use of this type of teaching method has its own characteristics, which depend on the structure of the content of the teaching material. For example, in a class that introduces students to units of measurement such as "time," "calendar," "mass," and "fraction," the process of teaching history is a little different than other classes. As you know, the types of lessons are divided into learning new learning material, improving students 'knowledge and skills, generalizing systems, and combining, controlling, and correcting knowledge, skills, and competencies. Each of these general divisions, according to its function, has its own structure, and in the process of pedagogical development, the types and forms of lessons are interpreted differently by scholars.

We have described the didactic and methodological structure of teaching in the appendix.One student understands the cognitive task, the other comprehends and understands the material being studied, and the third develops skills and competencies. The teaching of historical materials in mathematics is based on practical experience in relation to life experiences:

ISSN: 2350-0328
International Journal of Advanced Research in Science, Engineering and Technology
Vol. 7, Issue 11 , November 2020

1. Forming students' consciousness based on demonstration in the process of teaching mathematics;
2. Methods, rules, factors, interconnectedness, complementarity and o rganization used in teaching historical materials while helping to develop students' abstract thinking. Developing students' thinking skills;
3. Each lesson has its own methodological structure and technology, as well as to help students develop their talents;
4. The application of historical materials used in the lesson in accordance with the laws and rules of didactics in terms of their purpose and content, not only contributes to the formation and development of mathematical logic, skills and abilities, but also contributes to the education of students. should also be affected.

The success of a student's learning depends on the following factors:

1. Theoretical studies have shown that the teacher plays a leading role in enhancing the active learning activity of students in the process of using historical materials in mathematics lessons.
2. The process of cognitive activity when using historical materials in mathematics lessons in order to increase the effectiveness of the lesson is based on the formation of knowledge, skills and competencies.
3. In the early stages of primary education, the general characteristics of all activities are modeled. Therefore, the formation of cognitive activity is considered in the unity of its components, as well as the didactic basis of this process. The developed theory of activity is an activity in which the learning process is organized by studying the methods of obtaining, processing and applying knowledge (problematic and reproductive).

Research methods used in teaching mathematics

1. Information on research and observation methods. It is impossible to develop pedagogy without studying and generalizing the experience of pedagogical education and without in-depth study of the pedagogical process. Modern education equips pedagogy with a general method of scientific knowledge, but like any other discipline, pedagogy has its own research methods.
2. Study of experiments and school documents. Experiments are also observations, which are conducted in a specially organized, supervised and systematically modified environment by the researcher. Pedagogical Experience is used to study the effectiveness of a particular method of teaching and education, instruction manuals.
3. Interview and questionnaire method. Interview method is also used in pedagogical research. The use of this method allows to obtain materials that complement and clarify the data obtained from the observation, to perform assignments. The key to the success of this method is the ability to communicate with children, to communicate freely with them.

III.CONCLUSION

The conclusion of the article is that the study of mathematics and its methods and techniques is important for every future generation. Relying on the methods of our scientists and modern technology in the study of its methods, the study will ensure that the ways of comprehensive study will be less tedious and boring. If every educator learns these methods perfectly, he will make a great contribution to the development of the next generation.

REFERENCES.

1.Jumayev M.E, Tadjiyeva Z.G`. (Methods of teaching mathematics in primary school) Tashkent. Science and Technology 2005.
2. Tadjiyeva ZG and others. Use of historical materials in improving the effectiveness of mathematics lessons / Tashkent. TDPU 2008.
3. www.nature.uz
4. www.Pedagog.uz
5.www.yandex.ru