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OPPORTUNITIES FOR STUDENTS IN MATHEMATICS TO MOTIVATE THEIR SCIENCE

*Murod Barakaev¹, Abduvali Shamshiev², Ahmadjon Axlimirzaev³,
Sherzodbek Ermatov⁴, Dilmurod Hojiev⁵*

¹Associate Professor of Tashkent State Pedagogical University, PhD.,

²Associate Professor of Jizzakh State Pedagogical Institute, PhD.,

³Andijan State University Associate Professor, PhD.,

⁴Andijan State University, teacher,

⁵Andijan State University, teacher.

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ABSTRACT.

The article is devoted to the opportunities to motivate students to learn mathematics in mathematics lessons, the role of students' thinking skills in the development of mathematics, and the ways to achieve it. It also outlines the role of the math teacher in achieving the intended goal through the formation of student learning activities.

Introduction

In modern education, one of the main tasks of the education system is to develop students' ability to correctly analyze information and choose the right ones. That is why the modern education system is for students:

- ✓ *thinking and comparing different perspectives and processes that occur in this process;*
- ✓ *various facts, laws of science;*
- ✓ *own observations;*
- ✓ *should be based on the ability to express one's point of view based on one's own or others' experience and to prove it when necessary.*

Because the achievement of the above in the educational process leads to the full development of students, including adequate intellectual and spiritual potential, the ability to work with conscious information, the formation of critical and creative thinking skills.

It is well known that every graduate with such skills strives to acquire a profession that will be able to withstand future competition in the labor and services market, and will achieve this in the future.

The main results and findings

We know from the course of psychology that ability is a feature of the human psyche, which consists of the sum of all mental processes and states. However, even if a person has ability, if he does not have knowledge, then he cannot fully express himself.

The Russian scientist BM Teplov, who conducted the research, concluded that "abilities are an individual psychological feature of a person, which depends on the completeness, speed, ease, depth of acquisition of knowledge, skills and abilities, as well as mastering and successful performance of various activities." According to him, the concept of "abilities" includes the following 3 ideas:

1. *Abilities are individual psychological characteristics that distinguish people from each other.*

2. *Ability is a trait that ensures the successful completion of an activity, not any individual psychological trait.*

3. *Abilities do not consist of a person's knowledge, skills, and abilities. Therefore, they should not equate a person's knowledge, skills and abilities [1].*

From the above, it can be seen that if skills are not constantly developed and applied in daily practice, over time they will begin to fade.

Mathematician and psychologist VA Krutetsky, who conducted research in this area, in his monograph "Psychology of Mathematical Skills" identified individual features of mental processes such as cognition, thinking, memory and their manifestation in human mathematical activity. In doing so, he demonstrates the importance of cognition in mastering mathematical material:

"internal" analytical-synthetic analysis of specific material in gifted students; processing feature;

They understand the system of issues "on the spot" and open it to the main relationship [2].

Students with special abilities in mathematics are characterized by a unique "mathematical mind" in which they are able to find the logical and mathematical meaning of a material being. They are also able to identify logical and mathematical categories by perceiving events in terms of mathematical relationships. Conversely, students who do not have a special talent for mathematics will be able to develop thinking skills only by activating cognitive activities.

We know that people are always thinking, imagining and thinking. It is a process of thinking, which is aimed at solving various problems and tasks, is an activity carried out by the human instinct and arises on the basis of perceptions and concepts about the environment that surrounds a person.

The formation of this process in students is one of the main tasks of the educational process, and to achieve this it is necessary to create the following conditions in the classroom:

- ✓ *allowing students to express themselves freely;*
- ✓ *reassuring them that their personal opinions will not be laughed at;*
- ✓ *encourage them to always be critical of the information provided;*
- ✓ *to achieve active participation of students in the educational process;*
- ✓ *to accept whether the opinion expressed by the reader is true or false, and so on.*

In order to achieve the above, it is important to form and further develop critical thinking skills in their students.

Critical thinking, by its very nature, is independent thinking and is characterized by the following features:

- ✓ *any knowledge will be goal-oriented, it is clear that man cannot think critically without a clear goal;*

- ✓ *any critical thinking begins with a clear definition of the problem that needs to be solved;*
- ✓ *critical thinking always strives for convincing and clear evidence and proof.*

The process of forming and further developing critical thinking in students is reflected in the following:

aspiration to learn:

aspirations to expand the scope of knowledge and develop intellectual skills;

development of reflex-based thinking;

formation of generalizations, etc.

Today, the main goal of improving the process of developing critical thinking through the use of modern educational technologies is to provide students with sufficient knowledge and thinking skills that are necessary in everyday life, ie: to be able to make well-thought-out decisions on every aspect of life;

working with information:

accurate and timely analysis of it;

is to develop a review of the various aspects of the decisions made.

If critical thinking is developed through the practical application of modern educational technologies:

equips the education system with methods and techniques of independent activity;

Allows conscious management of the educational process in the "teacher-student" system;

allows to influence the results and goals of the educational process;

as a result, school graduates acquire a sufficiently comprehensible knowledge and develop independent, logical, and critical thinking skills.

To achieve this, it is important to follow the following rules:

1. Assignments used in the process of learning new theoretical material or in lessons to reinforce learned theoretical material should be structured in such a way that it encourages conscious learning of new learning materials and reinforces previously learned learning materials and helps reflex-based thinking.

2. Ideas, hypotheses and texts on the topic studied in the course of the lesson should be analyzed in collaboration with students.

Note. Habit analysis: "I know this beforehand", "I've heard about it before", "I don't know this" (or "I know this before and I can explain it to someone else", "I know this before but I can't explain it to someone else", "I I don't understand it").

3. Evidence and hypotheses identified during the training should be examined.

4. Assumptions, thoughts, ideas identified by each student or small group together should be expressed by them personally and lessons should be organized taking into account their other opinions.

In the process of developing abstract and logical thinking in students, they develop critical thinking.

It should be noted that mathematics is important in the development of students' logical thinking. This is because the science of mathematics cannot be reconciled with false claims and is one of the rare sciences that prefers to reject false ideas rather than pretend to be true.

Of course, not all students develop thinking skills equally. This is because the individual characteristics of each student are determined by the development of other mental processes, i.e., memory, imagination, speech, attention, will, and so on. These characteristics will depend on the interests of the students, the educational and practical activities, as well as their independence.

The results of psychological, pedagogical, methodological research show that the formation and development of thinking skills in students plays an important role in the process of teaching mathematics. Because in the process of problem solving it is necessary to consider the general and specific features of mathematical concepts and methods, to identify different aspects of the concepts studied. This process requires increased student activity. As a result, students' interest in learning increases. In particular, the solution of practical problems by students in mathematics lessons leads them not only to master the basic concepts, ideas and methods of mathematics, but also to develop their thinking skills.

The potential of mathematics in the development of students' logical thinking skills is high.

- planning activities that are basic skills for the person's future activities;
- analysis of the achieved results;
- increase the accuracy of the required calculations;
- forms mathematical models, construction and research, etc., and also plays an important role in determining its professional qualities.

The effectiveness of mathematical problems in the practical context depends mainly on the level of creative activity of students, one of their main goals is to increase the mental activity of students in the classroom.

Issues of practical content should, first of all, encourage students to think, serve to acquire knowledge in a conscious way. Therefore, the knowledge acquired by students in mathematics lessons should also teach them to think correctly, to analyze facts correctly, to compare, and to find commonalities and non-commonalities.

Therefore, it is important to determine how the process of teaching mathematics contributes to the solution of the problem of forming scientific and theoretical thinking, and what the content of mathematics education should be and how the lessons should be organized.

For example. It is advisable to use the technology of "Problem-based learning" in the organization of lessons to develop thinking skills. This is because most of the theoretical knowledge in problem-based learning is not given to students in a ready-made way, but is acquired by students in the process of independent problem-solving activities.

This leads to the development of students' thinking skills. At the same time, it is important to accelerate the acquisition of knowledge in them, and it is important to pay attention to the following:

- 1) Formation and further development of independent thinking skills in the acquisition of new knowledge and teaching to apply it in practice;
- 2) To develop the ability to acquire new knowledge, that is, to equip them with the skills of mathematical research methods and their application to problem solving, etc.

In this process, the main task of the teacher is not only to skillfully present the teaching material, but also to ensure the active creative work of students in the classroom and extracurricular activities.

In this regard, Uzbek Methodist scholars N.R. In their research, Gaybullaev and II Dirchenko examined the abilities of students and developed 5 types of issues that develop them:

- 1) Issues that develop logical thinking;
- 2) Issues that develop spatial imagination and spatial assumptions;
- 3) Problems that develop computational algorithmic skills;
- 4) Problems developing geometric intuition;
- 5) Issues aimed at developing the ability to generalize [5].

From the above, it is clear that in order to increase the activity of students in the classroom, it is important to pay attention to the following:

methods of generating mathematical truth;

compare different ways of solving problems;

should be aimed at identifying and applying opportunities to apply the acquired theoretical knowledge in practice.

Psychologists approach this process as follows: The interest in reading in adolescents arises in the desire to make a direct "discovery". Ready-made knowledge, ready-made conclusions do not satisfy a young person, he only memorizes them superficially. That's why sometimes active, smart young people study on average and it's very annoying for a teacher. ”

Observations and scientific-methodical research show that there is not enough coherence between new theoretical knowledge and previously learned theoretical knowledge (topics) studied in mathematics classes at school, that is, when learning a new topic, students often do not remember the mathematical rules. There is also a lack of emphasis on linking to topics covered in the review process. This leads to students not developing their logical thinking sufficiently. In fact:

1. In reinforcing the previous topic, students should focus on the features that prepare them to learn new material. This work can consist of questions or problematic questions, practical assignments, i.e. various measurements, constructions and calculations. For example. Daily repetition, that is, repetition of new theoretical material learned, should be chosen in such a way as to allow students to use what they have already learned in the process of solving these problems. Even let the resolution of these issues compel it to some extent.

2. It is known that if different concepts and properties are significantly contradictory, then the interrelationship between these concepts and properties is more fully manifested. That is why it is necessary to take the same approach to comments, definitions, concepts, because the human mind also notices the difference faster than the similarity. In order to achieve this, the appropriate and effective use of scientific research and inference methods plays an important role in achieving the intended goal.

3. When students approach learning in a conscious way, they will have a desire to memorize and master the new topic material being studied. As a result, understands the theoretical and practical materials studied. Knowledge acquired in this way is stored in memory for a long time and leads to the development of students' thinking skills. It is known from the course of psychology that memory storage does not depend on a person's will, his will. In this case, how to find ways to memorize and provide attention to the learning materials that students voluntarily study during the lesson will depend on the professionalism of each teacher.

So, it is important to be able to form students' interest in learning. Because interesting things are absorbed faster than boring, unpleasant, uninteresting things for everyone, and they are fully remembered for a long time. That is why the teacher for each lesson:

selection of interesting materials;

not always provide the same size of training material:

to work constantly on themselves and thus to keep abreast of educational news; have the skills to choose effective and convenient methods and techniques in the organization of training sessions, etc.

The main purpose of following the above is to ensure that mathematical theory is adequately reflected in students' learning activities. In this case, if the training consists of various practical work, exercises and solving problems of practical content, then it is necessary to memorize the training materials.

Because these types of training are a way to strengthen the acquired theoretical knowledge, mental activity in this process leads to the development of thinking.

4. The ability of the teacher to create problem situations in the process of describing the teaching materials is very important for education today, because in the process of striving to solve problems independently by students: they think actively;

repeats previously learned knowledge.

As a result, their thinking develops and mental work skills are formed.

5. The method of solving problems in mathematics lessons, the solution of many similar problems, also hinders the development of students' thinking skills. Nor does it stimulate their interest in learning mathematics.

Conclusion

From a pedagogical and methodological point of view, solving problems of different content, with different levels of difficulty and having one or more solutions is important in increasing the effectiveness of education. In short, each lesson should be organized in strict accordance with the principles of didactics, in particular, "simple to complex", "systematic", "connection between theory and practice", "interdisciplinary connection", "scientific". plays an important role in ensuring the achievement of educational goals in advance.

In short, if each teacher is professional in the organization of lessons in mathematics, it is ensured that each student acquires knowledge, skills and abilities in mathematics at the level of their needs.

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