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TEACHING MATHEMATICS IN ECONOMICAL INSTITUTIONS OF THE REPUBLIC OF UZBEKISTAN

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Abstract

I've heard the phrase math as a country without borders several times. Despite its prohibition, there are very good reasons for the math phrase. Mathematics has a special place in human life. Experts point out that a student who masters mathematics well will have a high level of analytical and logical thinking. It develops the ability to make quick decisions, discuss and negotiate, to do things step by step, not only in solving examples and problems, but also in different situations in life. Mathematical thinking also brings it to the level of predicting the course of events that will take place in the future, the course of events that will take place in the environment.

INTRODUCTION

Mathematics plays an important role in the development of human intellect, attention, fostering determination and will to achieve the desired goal, providing algorithmic discipline and broadening thinking. Mathematics is the basis of knowledge of the universe and plays an important role in the development of production, science and technology, revealing the specific laws of events and phenomena around us. That is why mathematical culture is an integral part of universal culture. Achieving the formation and development of the student's ability to apply mathematical knowledge in everyday life, abandoning the approach to teaching mathematics in theory, increasing the focus on demonstrating and activating students' independent thinking skills is the need of the hour.

A competent approach to mathematics education involves the formation and development of practical skills that allow students to act effectively in situations encountered in professional, personal and everyday life, as well as the strengthening of practical, applied areas of mathematics education. The integration of our country into the world community, the development of science and technology requires the young generation to be competitive in the changing world labor market, to master the sciences. This will be ensured through the introduction of standards in the education system, including the teaching of mathematics, based on best national and international practices. Taking into account the unique role of mathematics in our lives, this subject has been included in school textbooks since the first grade. Much attention is paid to the introduction of information and communication technologies. In particular, it is important to connect the subject of education with life, rather than academic knowledge, to solve practical examples and problems, to engage students in independent

research, learning. During the lesson, the student should not feel forced to sit on the desk, but should participate in the lessons with great enthusiasm and strong desire. It is important that he understands that mathematical knowledge is useful not only in questions and answers or exams, but also at home, in the work process, in sports and the arts, in trade, in trade - in every moment of life. . To do this, the teacher of the subject must connect the topics directly with life and teach to solve an example or problem, assignments using simple situations in life.

In the current era of rapid introduction of new technical means of teaching mathematics, including computer and other information technologies, the use of the achievements of computer science in order to ensure interdisciplinary integration is one of the most pressing issues.

Pedagogical, computer and information technologies are reflected in an integrated system consisting of the organization of the educational process, preparation, provision of scientific and methodological materials, implementation of the educational process, assessment of the quality of educational results.

The introduction of computer technology in educational institutions opens a wide way to optimize the learning process. In the last decade, the use of computers in the teaching of mathematics has been carried out in several main directi These include computer-assisted assessment of knowledge, development of various types of educational programs, development of cognitive mathematical games, etc.

Another aspect of the convenience of computers in teaching mathematics is the modeling of some learning situations. The purpose of using modeled programs is to ensure that materials that are difficult to visualize are understandable when other teaching methods are used. Using modeling, students can present information in graphical mode in the form of computer multimedia. Therefore, they tend to show significant independence in the in-depth study and learning process of mathematics.

In many cases, a professional mathematician is required to know a certain algorithmic language and programming at the same time as his or her profession in order to solve a mathematical problem quickly and accurately. [2] To this end, in the 90s of the twentieth century, mathematical systems were created that were much more convenient for mathematicians. With the help of these special systems it is possible to perform various numerical and analytical mathematical calculations, from simple arithmetic calculations to solving differential equations with special derivatives, as well as to create graphs.

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The need to express and transmit information is easily addressed with the help of computer technology in speech, writing, fine arts, book printing, postal communication, telegraph, telephone, radio, mirror world and other aspects of production management. The secret is that much of the information has so far been developed on methods of storing, processing and transmitting all text, drawings, images, sounds in the form of information on computers, mainly on paper, magnetic tapes, ie without being stored outside the computer. . In computer technology, the ability to perform text, images, sounds, shapes, and other similar work is solved very easily and quickly using special programming. Therefore, the use of computer technology in the teaching of mathematics, physics, chemistry, biology and other sciences is yielding positive results.

Today, the attention of our President to science has reached an all-time high. We are on the path to building a new Uzbekistan and a third Renaissance using the heritage of our ancestors. In particular, the Resolution of the President of the Republic of Uzbekistan dated May 3, 2019 "On measures to identify talented young people and establish a continuous system of training highly qualified personnel" is an example of this. Also, today, as a result of the attention and care paid to the science of mathematics, various results are obtained. Teaching math to students is becoming more and more important

One of the goals of teaching mathematics to students and improving the educational process at school is to develop students' independent thinking. S.L. Rubinstein was one of the first to call for research into general mental development. He introduced and substantiated the category of activity in psychology as the object and goal of spiritual research. Based on the theory of activity, Rubinstein introduces the concept of activity as the transition from subject to object. Rubinstein believes that the second stage of activity is the connection from object to subject. Rubinstein's focus is on the fact that in the process of human activity, a person not only manifests himself as a unique individual, but also that the formation of his psyche is defined as an object.

Modern education requires modern lessons to ignite the fire in the hearts of learners. The formation of the right skills in students, their comprehensive development and guidance from knowledge to knowledge is an important factor in today's pedagogy.

Phrases such as pedagogical technology, educational technology, and teaching technology are widely used in pedagogy today. Today, in the pedagogical literature, reports, we often come across statements that form the basis of modern pedagogy, such as educational problems,

official documents, the concept of "new pedagogical technology", "advanced pedagogical technology", "modern educational technology". . In modern pedagogy, their role in the teaching of mathematics is invaluable.

A.N. Leontev, who believed that activity is an interaction of the interconnected reality of the subject, said that the reflection of reality in the human mind is an interaction, not the result of "influence", that is, it is the result of interdependent processes.

According to the conclusions of A.N. Leontev and Rubinstein in teaching practice, the development and use of forms of activity in the development of independent thinking, as well as the sequential transfer of the principles of activity in education are the most useful and effective directions. BP Erdniev's dissertation is devoted to the study of different ways of developing the problem of thinking. The author has developed a methodology for developing students' independent thinking in the study of mathematics. When mathematical problems are used extensively, they can help students develop deeper thinking skills, such as coherence, independence, and critical thinking. Erdniev gives specific examples to teach students to make scientific hypotheses, to connect them, to generalize, and to use mathematical problems in the development of skills.

L.S. Vgodsky studies the problem of the development of thinking and promotes the phenomenon of "close field of development". At the same time, he emphasizes the need to create the most favorable conditions for the development of independent thinking in students. According to Vgodsky, a child's development does not take place without the process of acquiring knowledge, only a set of educational information (knowledge, cognition) stimulates thinking, develops children. in turn, the latter is a prerequisite for a high level of knowledge and acquisition of knowledge.

After LS Vgodsky, many psychologists and didactics believe that teaching is a source of development, and that students' knowledge is one of the most important conditions for their development. It is important to consider the "area of close development" in the teaching process, that is, to take into account the level of development of students and move them to the next easier area. L.S. Vgodsky recommends using two indicators to determine this area:

1) the child's acquisition of new knowledge with the help of adults;

2) the ability to apply the acquired knowledge to the child to solve problems independently.

Applying Vgodsky's suggestions in practice, the teacher:

a) Shows students how to solve a problem and gives them the same problem to solve;

b) Suggests that the student solve the problem he / she started;

c) c) Encourage students to solve more complex problems;

d) g) Explains the principle of problem solving, asks helpful questions, asks problems, divides the problem into parts, etc.

In addition, we believe that it would be appropriate to use the proposed methods to identify "areas for close development" in the problem-solving process. In their research, didactics see the process of learning and the development of thinking as an integral unit. The development of creative thinking is characterized by the fact that external conditions correspond to the internal capabilities of students. It is important to note that the problems of the development of creative thinking are associated with educational methods. B.S.Esenov, I.Ya.Lerner, M.N.Skatkin and others made a great contribution to the further development of theoretical and

practical methods of teaching. In our research, we rely on a series of styles developed by I.Ya. Lerner and M.N. Skatkin. The styles in this category are divided into:

1) Descriptive narrative or retelling information style
2) Reproductive (memory, recollection) method
3) Problem-solving style
4) Partial research method
5) Research method

This set of teaching methods allows you to memorize styles and share independent thinking activities. Thus, the method of descriptive narration involves the memorization (memorization) of readymade knowledge and methods of activity. Problem-based expression involves combining elements of independent thinking and memorizing specific knowledge. in part, the research style combines elements of creative thinking and memorization. The research style, on the other hand, predicts creative activity.

RESULTS AND DISCUSSIONS

Problem-based learning plays an important role in shaping independent thinking in today's learners.

Problem-based learning is a didactic system that involves students in solving problem-solving questions. Psychologists argue that thinking begins with a question in a problematic situation. Therefore, the problem situation is the basis of problem-based learning, creating the conditions for problem-solving. Situation is a process that calls for the need to regulate concepts through scientific debate.

A problem process is a perceived difficulty that requires research to solve. [1,62] If a question poses a difficulty and requires new knowledge and intellectual activity from the student to answer, then a problem situation is created. In a problem situation, students 'attention is focused on solving the questions, and students' thinking is inclined (corrected). In solving the problem, this tendency becomes a clear goal.

Let's take a closer look at the process. The term "problem solving" is used in various senses in the psychological and pedagogical literature. In different texts, problem solving is understood differently:

The result obtained when the goal of the problem is achieved; - a sequence of logically interconnected actions that lead to this result; the sequence is as “economical” as possible and is estimated without any guiding considerations, (logically incomplete solution): - is the process from the person’s acceptance of the problem to the full result. In this case, the result is the purpose of the problem (solution process). Thus, in the methodological literature, problemsolving refers to the whole activity related to the problem, from the acceptance of the problem to the transition to another problem or to the transition to another type of work in general. Only when the term "solution" is understood in this way does it make sense to divide the work on the problem into four known stages. Here is a brief description of these steps.

The first stage is represented in the reception of information, in understanding the conditions and goals of the issue. This stage is also called the problem analysis phase.

The second stage - finding a solution - involves a lot of complexity. This step involves finding a plan to solve the problem. Often, a solution-finding activity involves a group of forms that

take on a resolution process: situation analysis, the emergence of a solution plan, the pursuit of a plan, and the identification of the cause of failure

The process of finding a solution is complete only when the solution is complete or when there are a few specific steps left to complete and these actions do not cause the student to doubt. So finding a solution is not about finding a plan, it's about finding a plan that leads to the goal. This phase is involved when working on each issue. But in many cases, this stage is not understood by the problem solver, because this stage is hidden.

The third stage - the formation of the solution, the implementation of the plan - is the implementation of a sequence of actions that, in the opinion of the individual, is the most economical, leading to the goal from the conditions of the problem. This will reduce the risk of traffic congestion. These paths were important in the previous stage, but will be dropped at this stage.

Although the boundaries of the second and third, first and second stages are approximate, they will be clear when the problem is solved. This stage may be abbreviated; the last action is appropriate only when all the actions leading to the result have been performed in the previous stage, while the third stage in the learning practice is manifested by the student in the process of solving the problem orally or in writing. Thus, at this stage, the "complete", "final", "pure copy" objectified solution is formed in one way or another.

The fourth, final stage. This phase of the work was used to verify and estimate the correctness of the result (but verification is not an integral part of the solution), to find other solutions, to compare them, to determine the advantages and disadvantages of the solution, to solve the problem. and analyzes the separation of methods and techniques that can be used in the future and their identification by the reader, identifying the results of a mathematical nature that contribute to the result found.

In order to know what types of problems need to be solved more in the study of mathematics, it is necessary to know what types of problems occur. Problems can be categorized by three criteria: the problem is already expressed; the existence of a solution to this problem; how complete the idea of a solution is.

Problems can be divided into the following types, depending on whether the given characters are known (+) or unknown (-):

Type of problem	The problem has been identified	Problem solving method	Problem solving
1	+	-	+
2	+	-	-
3	-	+	+
4	+	-	-
5	-	+	+
6	-	+	-
7	+	-	+

The first four types of problems are specific. They have a pre-existing problem, and the difference is that they know how to solve the problem and have an idea of the solution. The other four types of problems are vague. The first type of problem is called the visual problem. The question, its answer, and the ways to find the answer are given, and the students master the process of solving such problems and develop the skills to apply them to other problems.

In the second type of problem, students find the answer to a given problem and how to solve it. These topics teach students to use formulas correctly, to be resourceful, and to think clearly and consistently. The third type of problem is commonly referred to as rhetorical problem. They are so named because they are rhetorical - the answer is obvious. Because they are similar to puzzles, they can sometimes be confusing. Such problems include crossword puzzles, rebuses, making shapes from given pieces, a taken game, and a Rubik's Cube. The fourth type of problem is called the classic problem. Solving such problems will lead to great changes in science and technology.

The purpose of problem-based learning - a problem proposed by the teacher, which serves to acquire special knowledge - is to solve the problem with students' own minds. MI Mahmutov describes problem-based learning as follows: [1,59] Problem-based learning The rules of application of teaching and learning methods, taking into account the measures of logical thinking (analysis, generalization) and the laws of research activities of students (problem situation, curiosity, demand, etc.) system. The essence of problem-based learning is that the teacher manages the students' learning activities by creating a problem situation in the learning process and learning new knowledge by solving learning tasks, problems and questions. This creates a scientific way of learning. The process of human cognitive activity is based on objective laws and didactic principle - problem-solving in solving logical cognitive contradictions. Psychologists and educators say that thinking begins with a problem, an unexpected surprise, and a fascination. The mental, emotional, and emotional state of a person in a learning environment serves as a unique stimulus for him to think and reason. The essence of a problem situation is the contradiction between the information that is familiar to the reader and the new facts and events (which lack previous knowledge to understand and explain them). This conflict is the driving force behind the creative acquisition of knowledge. Signs of a problem situation include:

- The presence of a fact unknown to the student;
- Instructions given to the student to complete the tasks, their personal interest in solving the learning difficulties.

In the organization of problem-based learning in mathematics, the teacher uses the following teaching materials: monologue; in a way of thinking and discussing; explains the dialog. Tasks: heuristic; research and programming methods.

Monologic narration

In a problem situation, the teacher explains new concepts, the essence of the facts, and tells the students the ready conclusions of the science. The method of reasoning. The first option is for the teacher to create a problem situation, analyze the available material, draw conclusions, and summarize the ideas. The second option is for the teacher to present the topic in the form of a conversation-lecture. In doing so, it creates an artificial logic of scientific research by thinking on the basis of the logical process of knowledge acquisition.

Dialog statement method

The teacher interacts with the students in the group. The teacher puts the problem in the problem situation he created and solves it with the help of the students. Students are actively involved in problem solving, hypotheses, and hypotheses. The course is conducted in the form

of a research conversation, a statement. There will be a set of reproductive and partial research methods of teaching.

CONCLUSION

When learners are in a difficult situation: it is important that they use external and internal capabilities to master a subject, study a specific topic, or solve a given example. Problem analysis uses analysis-synthesis, comparison, generalization, systematization and other operations of thinking. Simultaneously with the analysis process, various associations emerge (likening a science, topic, or example to a previously known science, topic, or example). In the process of solving the problem, various assumptions begin to emerge, and research on these assumptions leads to their substantiation, proof, or the conclusion that the assumption is wrong. So, it is clear from the above that didactic tools and problem-based learning technology are very important in teaching mathematics. This will increase the chances of students improving their knowledge and understanding the new topic. This will allow the educator to achieve the intended goal of the lesson.

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