O‘ZBEKISTON MILLIY UNIVERSITETI XABARLARI, 2024, [1/5/2]
ISSN 2181-7324

FALSAFA
http://journals.nuu.uz
Social sciences

UDK: 371.26:371.264(575.1)

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MATEMATIKA DARSLARIDA O‘QUVCHILARNING KREATIV YONDOSHUVLAR ASOSIDA MANTIQIY FIKRLASH QOBILYATINI RIVOJLANTIRISH

Annotation

Ushbu maqolada bugungi kunda matematika darslarida o‘quvchilarning kreativ yondoshuvlar asosida mantiqiy fikirlash qobilyatini rivojlantirish o‘quv mashg‘ulotlarini yoritilib ayni vaqtda ta’limning zamonaviy tendentsiyalar jarayonida matematika darslarida o‘quvchilarini muammoli o‘qitishning nazariy asoslari mazmuni bayon etlgan hamda tajriba sinov asosida olingan natijalarning samaradorlik darajasi anqlangan.

Kalit so‘zlar: muammoli oo‘qitish ko‘nikma, mantiqiy tafakkur, iste’dod, innovatsiya, ijodkorlik, tanqidiy fikrlash, muammolarni hal qilish.

РАЗВИТИЕ СПОСОБНОСТИ ЛОГИЧЕСКОГО МЫШЛЕНИЯ ОБУЧАЮЩИХСЯ НА ОСНОВЕ ТВОРЧЕСКИХ ПОДХОДОВ НА УРОКАХ МАТЕМАТИКИ

Аннотация

В этой статье сегодняразвитие умения учащихся логически мыслить на основе творческих подходов на уроках математикипри освещении учебной деятельности разъяснено содержание теоретических основ проблемного обучения учащихся на уроках математики в процессе современных тенденций образования и определен уровень эффективности результатов, полученных на основе экспериментальных испытаний.

Ключевые слова: навыки проблемного обучения, логическое мышление, талант, новаторство, креативность, критическое мышление, решение проблем.

DEVELOPMENT OF LOGICAL THINKING ABILITY OF STUDENTS BASED ON CREATIVE APPROACHES IN MATHEMATICS LESSONS

Annotation

In this article todaydeveloping students’ ability to think logically based on creative approaches in mathematics lessonsWhen covering educational activities, the content of the theoretical foundations of problem-based learning for students in mathematics lessons in the process of modern educational trends is explained and the level of effectiveness of the results obtained on the basis of experimental tests is determined.

Key words: problem-based learning skills, logical thinking, talent, innovation, creativity, critical thinking, problem solving.

Introduction. Today, fundamental changes are taking place in the educational process, including the identification of educational goals from problems in the process of teaching mathematics, the definition of the content of education, the implementation of educational goals, the description of a new topic, the determination of the level of mastery of the previous topic, the necessary knowledge, skills and abilities of students, the formation and development of skills, repetition, generalization and consolidation of the studied topic, the formation of independent creative mental activity of students, the development of creative abilities and, finally, is used to determine the level and volume of general knowledge, skills and abilities acquired by students[1]. The most important thing is that the targeted use of non-standard, applied, natural science problems is the most important tool for the formation of logical thinking, the scientific worldview of students and the development of their personal qualities.

Literature review. As the famous mathematician and teacher D. Polya noted, “solving the problem

- this means solving not only standard problems, but also tasks that require independent thinking, healthy, original thinking, and resourcefulness. Therefore, the main task of a school mathematics course is to pay attention to the methodological aspects of the problem solving process.

Today, the idea of a problem-based approach has become widespread due to the fact that the main task of teaching mathematics is aimed at the formation and development of students’ learning skills.

Problem solving is an important form of learning activity, and in the process of solving problems, students master the subject, in particular, the theoretical foundations of mathematics, practical skills, and methods of creative and independent thinking[2].

Research methodology. The results obtained from the study indicate that due to the fact that the above-mentioned functions of problem use are not fully utilized in mathematics teaching practice, it is determined that more research and study is needed to improve the use of problems. Problems. It has been determined that they are mainly: the dissertation shows depth, flexibility, stability, awareness-reflection, independence of the student’s mental activity, as well as the possibilities of developing such skills[3]. The necessity of using a certain number of target complexes of basic tasks in solving the above problems is substantiated. The features and

requirements for the implementation of the problem-based approach are formulated.

During the study, students developed common approaches to solving problems, where it was shown that the problem should be investigated as an object of analysis. It has been determined that a student’s ability to independently design a solution and find a solution is the most important indicator of quality.

The possibilities of using the problem-based approach in various sections of the school mathematics course are described. For example, the following four aspects of successful geometry problem solving:

- the ability to correctly and quickly make a drawing related to the task;
- ability to perform operations using solution methods (mainly analytical);
- a kind of transition from theoretical material to tasks *support*availability of a reserve of issues;
- it is emphasized that it is necessary to develop and improve skills in justifying a solution to a problem[4].

In short, it has been shown that standard and non-standard, practical and applied problems fulfill all the main didactic functions in mathematics education. In addition, purposeful use of various problems develops students' productive approach to problem solving. Their dynamism (mobility) of mental activity affects the development of flexibility of thinking. All this serves to foster creative activity and develop students’ creative abilities, and develop movement skills in unfamiliar situations.

A problem situation primarily characterizes the creative, heuristic thinking of a student. It serves as a pedagogical condition for acquiring new knowledge that appears in the process of solving non-standard problems.

The inclusion of problematic situations of practical content in the process of teaching mathematics increases the educational motivation of students, directs them to independently search and solve the problem. This situation is a mechanism for enhancing the educational and creative activity of students[5].

Solving practical problems (problems) using mathematical modeling should correspond to the interests of students, and their content should be selected on the basis of cooperation between the student and the teacher in all possible cases. Therefore, the methodology for teaching mathematics at school should take into account the following stages of organizing students’ educational and creative activities: under the guidance of the teacher, students identify, analyze, select problem situations of practical content, and model mathematically. and structure a problem situation based on the use of a mathematical apparatus that is familiar and understandable to them, and solve non-standard problems based on the model.

When teaching students mathematical modeling, methods for organizing their educational and creative activities were theoretically substantiated, a structural-functional model for organizing students' educational and creative activities and developing students' creative abilities was developed[6].

Analysis and results. In the process of teaching mathematics, when developing a structural model for the development of students' creative abilities, components such as targeted, content, methodological and control-analytical changes were used.

In this case, it is necessary to follow the following principles: ensuring the integrity of the processes of teaching mathematics and developing the creative abilities of students; ensuring awareness and activity in the process of forming creative activity; consistent increase in the level of complexity of non-standard tasks of practical content; an ever-changing plot of practical and problematic issues; compliance of the content of practical questions with the age characteristics, cognitive needs and abilities of students; in accordance with the above, ensuring the transition from simple performing activity to active performing activity, and from it to independent and independent creative activity in the process of developing the educational and creative activity of students[7].

Solving problematic issues of practical content serves to enhance students' thinking and deep understanding of the idea of functional connections. In the process of solving such problems, students develop the skills and abilities of mathematical modeling of real objects, events and processes. This, in turn, shapes the creative activity of students and develops creative abilities.

Some methods for teaching practical problem solving include:

-Methods for developing the ability to read the text of a task based on practical content;

-Formation of skills to distinguish between conditions and questions;

-Methodology for teaching formalization of the state of a task based on abbreviated records;

-Methodology for teaching drawings (pictures) based on the text of a problem.

When solving practical problems based on mathematical modeling, methods such as equation, inequality and construction of functions are mainly used. To describe the stages listed in Table 1 and the possibilities of using relevant knowledge, skills and abilities, let us consider solving the following practical-applied problem[8].

We will show 3 ways to create an equation for a given problem, that is, create its equation (model) using the method of mathematical modeling. The first way to solve the problem is as follows.

*Solution:*Let the width of the sports field be a (m), the length b (~~m),~~ and the surface of the field be S (m2). It is known that they have a relationship of the form ab=S. If we express the field width in terms of x, then it is selected taking into account the above relationshipconstructed equation for the unknown: Here we have translated this real situation into the language of mathematics. In this case, the mathematical model of this process consists of equation (1). This requires the knowledge, skills and abilities listed in Table 1.

At the second stage of solving the problem, the equation (model) is solved using the necessary knowledge, skills and abilities. This step is called solving the problem in the model.

We call the third stage of solving a practical problem the stage of interpretation. At this stage, the solution to the problem is analyzed from the point of view of the initial situation. Here, the knowledge, skills and abilities required at the 3rd stage of solving the above practical problems are used[9].

The second way to solve the problem is given in the practical content. Students are now asked to create a new equation based on comparing other quantities using a different parameter in the problem statement. This choice can be formalized as follows.Equation This equation shows that you can plot graphs with respect to surfaces. The set of knowledge, skills and competencies presented in the first table was also used here.

3 way to solve the problem: By asking students target questions, by creating a problem situation, a system of equations is visually created.

When solving such problems, it is shown that it is possible to use several different methods for modeling problem situations of practical, applied, natural science content.

Solving a problem in multiple ways gives students the opportunity to develop a range of creative techniques such as analysis, comparison and generalization.

Conclusion. Methods of teaching problem solving, stages of its application, methods of developing knowledge, skills and competencies required at each stage are described in detail.

It has been proven that to develop a methodology for teaching mathematics based on mathematical modeling of problem situations, one can use problem-based, correct brainstorming, reverse brainstorming, heuristic and research methods.

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