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Developing Students' Thinking Through Problem Solving In Mathematics

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Abstract: This article extensively covers the role and importance of mathematical problems in the development of independent thinking of students in the process of teaching mathematics in the primary education system. During the study, the educational, educational and developmental aspects of mathematical problems were analyzed, and special attention was paid to the issues of forming students' logical, creative and critical thinking through the use of real-life problems. Also, ways of developing students' independent decision-making skills by solving problems in various ways are revealed. The article is of practical importance for primary school teachers and students of the pedagogical direction.
Keywords: Primary education, mathematics, mathematical problem, independent thinking, logical thinking, life problems, creative thinking, teaching methods, educational effectiveness

Introduction

Today, the reforms being implemented in the education system determine the improvement of the quality of primary education as one of the main tasks. Primary education serves as the foundation for the student's subsequent stages of education. It is during this period that students develop an attitude towards learning, independent thinking, logical thinking, and problem-solving skills.

Mathematics is one of the leading subjects in primary education, which plays an important role in the mental development of students. Mathematics teaches not only to calculate, but also to think, analyze, compare, and draw conclusions. Therefore, the effective use of mathematical problems in teaching mathematics in primary grades is an urgent pedagogical problem. Mathematical problems occupy a central place in the process of teaching mathematics in primary grades. Because through problems, not only mathematical knowledge of students, but also mental activity develop. A mathematical problem is an important didactic tool that encourages students to think, reason and draw independent conclusions. It is at the primary education stage that working with problems lays the foundation for students' subsequent educational stages.

The process of solving a problem is a complex mental activity for the student. First of all, the student must fully and correctly understand the condition of the problem. This requires concentration, comprehension of the text, and extraction of key information. At the next stage, the student determines the relationship between the given and unknown quantities. This process forms the skills of analytical thinking in students.

Mathematical problems, along with developing logical thinking in primary school students, also strengthen their memory and thinking. While working on the problem, the student remembers previous knowledge, applies it in a new situation, and summarizes it. This leads to a conscious and solid assimilation of knowledge. Mathematical problems also have educational value. During problem solving, students learn to be patient, complete the work they have started,

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and overcome difficulties. By working on mistakes, students develop the skills of self-improvement and self-control. These qualities play an important role in personal development.

Let's look at a problem on this topic:

Problem: Students of a class participated in a book collection campaign to enrich the school library. The first group of students brought 15 books, the second group of students brought 12 books, and the third group brought 8 books.

Question:

How many books did the students bring to the library in total?

Solution:

$15 + 12 + 8 = 35$

Answer:

The students brought a total of 35 books to the library.

Educational significance of the problem

This problem helps students consolidate the addition operation. Students expand their mathematical knowledge and develop their counting skills by performing operations on numbers. Through the content of the problem, students develop respect for books, interest in knowledge, and teamwork skills. Also, students are educated in positive qualities such as caring for school property and doing useful work together.

Developmental significance of the problem

Such problems develop students' logical thinking, analytical skills, and independent problem-solving skills. Students activate their thinking in the process of understanding the problem's conditions, separating information, and finding a solution.

Developing independent and logical thinking through real-life mathematical problems

The use of real-life mathematical problems is important in increasing the effectiveness of mathematics lessons in elementary grades. Real-life problems are based on students' everyday life experience and increase their interest in mathematics. Through such problems, students begin to understand the importance of mathematical knowledge in real life.

Real-life problems are an important tool in developing students' independent thinking. Because these types of problems require them to imagine a real situation. The student reads the problem statement, visualizes the situation in his mind, compares the available information, and independently determines which action to take. This process develops students' decision-making skills.

Through real-life problems, students develop the ability to identify logical connections. For example, problems related to concepts such as time, money, distance, and quantity are close to students' daily experience, so they are easier to understand and solve. As a result, the student deeply understands the content of the problem and consciously implements the solution. In addition, real-life problems also serve to develop students' speech. In the process of explaining the problem, explaining the solution, and justifying the result, students learn to express their thoughts clearly and fluently. This helps develop their communication culture.

Let's look at a problem on this topic:

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Problem: Tree planting was carried out in the school garden in the spring. On the first day, students planted 18 tree seedlings. On the second day, they planted 12 more seedlings than on the first day. On the third day, the students managed to plant another 25 seedlings.

Question: How many tree seedlings did the students plant in total during the three days?

Educational significance of the problem

This problem helps students to strengthen their addition and subtraction skills. In the process of solving the problem, students learn to analyze the given data, construct mathematical expressions, and perform calculations correctly. They also expand their mathematical knowledge and develop their calculation skills by performing sequential operations on numbers. Through the content of the problem, students are aroused in love for nature, interest in environmental protection and greening. The process of planting trees forms positive qualities in students such as teamwork, hard work and caring for nature. At the same time, students understand that preserving nature is an important task for every person.

Developmental significance of the problem

Such problems develop students' logical thinking, analytical skills and independent problem-solving skills. In the process of understanding the condition of the problem, extracting the necessary information and finding the result, students' thinking is actively working. In addition, they also develop the skills of justifying their thoughts, drawing conclusions and checking the solution.

Developing creative and critical thinking by solving mathematical problems in different ways

Teaching students to solve mathematical problems in different ways in primary education is important in developing students' creative and critical thinking. Solving a problem in only one way limits students' thinking. On the contrary, looking for different solutions encourages students to research, analyze, and come up with new ideas.

In the process of solving problems in different ways, students learn to express their thoughts independently. Each student approaches the problem from his own point of view and chooses a solution that is convenient for him. This increases students' confidence in their own ideas and increases their interest in mathematical activities.

Discussing different solutions to problems during the lesson develops students' critical thinking. Students compare each other's solutions and determine whether they are right or wrong. determine their aspects. This process forms the skills of analysis, evaluation and conclusion in students. Also, solving problems in different ways allows students to demonstrate their creative abilities. Students show their creativity by offering new and unusual solutions. As a result, the mathematics lesson is not limited to calculations, but becomes a creative and interesting process.

Let's look at a problem on this topic:

Problem: 48 loaves of bread were brought to the school cafeteria during lunch. During the break, the students ate 29 loaves of bread. After a while, 15 more loaves of bread were brought to the cafeteria.

Question: How many loaves of bread were left in the cafeteria in total?

Note: This problem can be solved in several ways. For example:
Method 1: First subtract 29 from 48, then add 15.
Method 2: First add 15 to 48, then subtract 29.

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This way, students understand that one problem can be solved in different ways.

Educational significance of the problem

This problem helps students strengthen their addition and subtraction skills. By solving the problem in different ways, students understand the relationship between mathematical operations. They also develop the skills of analyzing the problem's condition, constructing mathematical expressions, and performing the calculation process correctly. This process serves to deepen students' mathematical knowledge. Through the content of the problem, students develop such qualities as discipline, thrift, and respect for community life. Students learn to analyze situations encountered in everyday life from a mathematical perspective. At the same time, they develop the skills of freely expressing their thoughts, listening to others' opinions, and discussing different solutions.

The developmental significance of the problem

Such problems develop students' creative and critical thinking skills. In the process of solving a problem in different ways, students look for several solutions, compare them, and try to choose the most convenient method. This forms the skills of independent thinking, analysis, comprehensive consideration of the problem, and drawing conclusions in students.

Conclusion

In conclusion, the use of mathematical problems in the process of teaching mathematics in primary grades is important in developing students' independent and logical thinking. By solving a problem, students acquire the skills of analyzing a given condition, determining a solution, and checking the result, which contributes to the conscious and solid assimilation of knowledge. Also, the use of real-life problems increases students' interest in mathematics and helps them understand the importance of mathematical knowledge in everyday life. Teaching students to solve problems in various ways develops students' creative and critical thinking and further increases the effectiveness of the teaching process.

List of used literature:

1. Primary school mathematics textbook. - Tashkent: O'qituvchi Publishing House, 2022.
2. Primary education methodology. - Tashkent: O'qituvchi Publishing House, 2021.
3. Theory and practice of pedagogy. - Tashkent: Fan va texnologiyalar publishing house, 2020.
4. Modern pedagogical technologies. — Tashkent: Innovatsiya Publishing House, 2019.
5. Innovative approaches in education. — Tashkent: Ma'naviyat Publishing House, 2021.
6. Mathematics teaching methodology in primary education. — Tashkent: O'qituvchi Publishing House, 2022.
7. Developing logical thinking in students. — Tashkent: Fan Publishing House, 2018.
8. Interactive teaching methods. — Tashkent: Ta'lim Publishing House, 2019.
9. Ways to increase educational efficiency. — Tashkent: Innovatsion rivojlanish Publishing House, 2020.
10. General principles of pedagogy. — Tashkent: O'qituvchi Publishing House, 2018.
11. Mathematics and its teaching methodology. E.Mardanov. E.O'rinboyev