

TEACHING METHODOLOGY OF ALGEBRAIC MATERIAL TO PRIMARY SCHOOL STUDENTS

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Abstract: This article examines the methodology of teaching algebraic materials to primary school students, emphasizing its importance in developing their logical and analytical thinking. The article analyzes the use of problem-based, visual, game-based, differentiated, and step-by-step teaching methods. Practical examples from classroom settings illustrate effective approaches to developing students' algebraic thinking skills.

Keywords: algebraic material, primary education, methodology, logical thinking, equation, didactic game, problem-based learning, expression.

Introduction. One of the main objectives of mathematics education in primary school is to develop students' logical, systematic, and analytical thinking. Algebraic materials constitute an important component of this process. Through algebraic elements, students learn to work with symbols, determine unknown numbers, analyze expressions, and generalize mathematical relationships.

Today, student-centered approaches, interactive methods, and lessons aimed at fostering independent thinking are among the priorities in the educational system. Therefore, when teaching algebraic material, the teacher acts not only as a knowledge provider but also as a guide who directs students' cognitive activity.

Main Part

1. The concept of algebraic material in primary grades

In primary school, algebraic material includes the relationships between arithmetic operations, equality and inequality, equations with unknowns, expressions, and symbolic notation.

Examples:

- $5 + x = 85$ — finding the unknown number;
- $a + b = b + a$ — commutative property of addition;
- $x - 2 = 6$ — forming a simple equation;
- $3a = 12$ — solving a multiplication-based equation.

Such exercises help develop students' mathematical thinking, symbolic reasoning, and logical analytical skills.

2. Main methods of teaching algebraic material

2.1. Visual method

Visualization is a key didactic principle in primary education. Since algebraic concepts are abstract, using visual aids greatly enhances understanding.

Example: For $\square + 3 = 7$, the teacher uses colored squares or circles to represent the unknown. The student identifies the hidden number: $\square = 4$.

The advantage of this method is that it helps students see the relationship between numbers and symbols, easing the transition to abstract thinking.

2.2. Problem-based teaching method

Creating a problem situation leads students to think independently.

Example:

“A number is increased three times, resulting in 15. What is the number?”

Students write $x + 3x = 15$ or $4x = 15$.

This method teaches students to formulate equations, find unknowns, and justify their reasoning.

2.3. Didactic games

Games are natural activities for children. Teaching algebraic elements through games increases students' interest and engagement.

Example: “Find the Unknown!”

The teacher writes several equations:

- $\square + 6 = 9$
- $10 - \square = 7$
- $11\square + 4 = 11$

Students collect symbols or points for correct answers, helping them quickly grasp symbolic meaning.

2.4. Step-by-step teaching method

Students progress from real objects to pictures and then to symbolic expressions.

1. Concrete stage: “5 apples + 3 apples = 8 apples”
2. Pictorial stage: “5 + 3 = 8”
3. Symbolic stage: “a + b = c”

This ensures a smooth transition from concrete to abstract thinking.

2.5. Differentiated instruction

Since students' abilities vary, differentiated tasks are effective.

Examples for teaching equations:

- Level I: $x + 3 = 7$
- Level II: $2x - 4 = 8$
- Level III: “If 5 is subtracted from twice a number, the result is 11. Find the number.”

This method supports individual growth and ensures student success.

3. Methods of developing algebraic thinking

3.1. Understanding equality and inequality

A “balance scale model” is effective for teaching equality. Students learn that both sides must contain equal amounts, reinforcing the concept visually.

Example:

One side has 3 apples, the other has 1 apple and 2 oranges → similar to $3 = 1 + 2$.

3.2. Forming equation-writing skills

Teachers use verbal problems to teach students how to write equations.

Example:

“When a number is multiplied by 4, the result is 20.”

Equation: $4x = 20$.

3.3. Generalization and analysis exercises

Students are given examples and asked to find a pattern:

$$3 + 2 = 5,$$

$$4 + 3 = 7,$$

$$5 + 4 = 9 \rightarrow \text{“The result increases as the second number increases.”}$$

This method fosters independent discovery of mathematical relationships.

3.4. Group work

Small group tasks help students exchange ideas, analyze solutions, and defend their reasoning.

4. Use of modern pedagogical technologies

Today, several innovative technologies enhance the teaching of algebraic material:

1. Brainstorming — students propose different approaches to solving an equation.
2. Cluster method — visual mapping of interconnected algebraic concepts.
3. Information technologies — using interactive boards, online calculators, and digital games.

Example: Using an interactive game “Solve the Equation,” students solve $x + 5 = 12$ and check the result instantly.

5. Developing independent thinking

The main goal is to teach students to make independent conclusions, justify solutions, and analyze problems.

Teachers should apply:

- a) interactive question-and-answer discussions;
- b) solution analysis;
- c) learning from mistakes;
- d) creative mini-tasks for generalization.

Example: “Create Your Own Equation” Given a picture (3 apples and 2 oranges = 5 fruits), students write: $3 + 2 = 5$ or $a + b = c$.

Conclusion

Teaching algebraic material in primary school plays a decisive role in shaping mathematical thinking. Teachers should effectively combine game-based, problem-based, visual, and step-by-step methods. Through algebraic elements, students learn abstract concepts, work with symbolic expressions, and develop logical reasoning skills.

Consequently, they become psychologically and intellectually prepared for more advanced algebra courses.

References

1. Resolution No. PQ–3775 of the President of the Republic of Uzbekistan. *On improving the quality of education and developing science*. Tashkent, 2018.
2. Yo‘ldoshev, J., Mavlonova, R. *Methods of Teaching Mathematics in Primary Education*. Tashkent: Fan, 2020.
3. Nizomov, Q. *Methods for Developing Mathematical Thinking*. Tashkent, 2021.
4. Polat, E.S. *Innovative Teaching Technologies*. Moscow: Akademiya, 2017.
5. Mavlonova, R. *Fundamentals of Pedagogy*. Tashkent: O‘qituvchi, 2019.
6. G‘ulomov, A. *Interactive Teaching Methods in Primary Classes*. Samarkand, 2022.