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USE OF INTERACTIVE TEACHING METHODS IN MATHEMATICS LESSONS

Parpiyeva Zarina Sherzodovna

2nd-year student, Faculty of Primary Education Termez State Pedagogical Institute

Scientific supervisor: Mukhtarova Lobar Abdumannabovna

Abstract

This article is devoted to the use of interactive teaching methods in mathematics lessons at the primary school level. It discusses the theoretical foundations, methodological approaches, and practical implementation of interactive strategies in the learning process. The study highlights the effectiveness of game-based learning, group interaction, and problem-solving approaches in developing students' motivation, independence, and logical thinking skills. The article also presents experimental results showing that interactive methods positively influence students' academic achievement and engagement in mathematics.

Key words: interactive method, modern technology, game, mathematics, learning motivation, creativity.

Introduction

The modernization of education requires new pedagogical approaches that promote the development of active, creative, and independent learners. Mathematics, as a fundamental subject, plays a key role in shaping students' logical and analytical thinking. However, the success of teaching mathematics depends largely on students' engagement and participation in the learning process.

Interactive teaching methods make mathematics lessons more meaningful and engaging. Unlike traditional methods, which are mainly teacher-centered, interactive learning focuses on dialogue, cooperation, and active involvement of each student. It encourages learners to think critically, discuss ideas, and find solutions through collective reasoning.

Theoretical Framework

The word *interactive* comes from the English term *interact*, meaning "to act together." Interactive learning is therefore a form of instruction based on continuous dialogue and collaboration between teacher and students.

According to **L. S. Vygotsky**, effective learning takes place within the *zone of proximal development*, where interaction stimulates cognitive growth. **A. N. Leontiev** and **P. Ya. Galperin** emphasized that activity and cooperation are the foundation for intellectual and personal development.

In modern pedagogy, interactive methods are viewed as tools for fostering **critical and creative thinking** (D. B. Elkonin, V. V. Davydov) and for developing **motivation and communication skills** (I. A. Zimnyaya, A. V. Khutorskoy).

Main Interactive Methods and Their Application

"Steps" Method. The "Steps" method is based on the gradual acquisition of knowledge using visual and game-based tools. It employs a staircase of three shapes in different colors: a green rectangle, a red triangle, and a blue circle. Each figure represents a specific stage of understanding. Students "climb" the steps by completing tasks of increasing difficulty. This method motivates learners to work independently, use textbooks and online sources, and actively search for information to solve problems.

"Who Reaches the Finish Line". This technique turns learning into a competitive game. Each correct answer helps the student move closer to the "finish line." The method is effective in

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reinforcing mathematical concepts such as number recognition, operations, and equations. It improves attention, teamwork, and decision-making speed.

"Magic Ribbon". This method involves a sequence of tasks written on connected cards forming a "ribbon." After completing one task, the student proceeds to the next. This approach sustains interest, teaches planning and self-monitoring, and strengthens logical reasoning.

Research Methodology. The study was conducted during the **2023–2024 academic year** at General School No. 9 in Termez. Participants included **62 primary school students (grades 2–4)**.

Objective: to examine how interactive methods affect students' cognitive activity and academic performance in mathematics.

Methods: observation, questionnaires, diagnostic testing, and analysis of learning outcomes.

During the experimental phase, interactive games, cooperative tasks, and digital learning tools were integrated into mathematics lessons. Teachers were trained to apply interactive models and track students' progress.

Research Results

After implementing interactive methods, students demonstrated notable improvement in engagement, problem-solving, and independent learning.

78% of students became more active in discussions;

72% showed higher initiative in solving tasks;

The number of errors in math tests decreased by **18%** on average.

Teachers observed that interactive learning reduced fatigue, improved collaboration, and increased students' confidence and enjoyment of mathematics lessons.

Discussion.

A comparative analysis between the control and experimental groups confirmed significant improvement in cognitive indicators. The level of logical thinking increased from 56% to 78% (+22%), analytical thinking from 52% to 75% (+23%), creative thinking from 48% to 70% (+22%), and independence from 50% to 73% (+23%).

These findings suggest that interactive approaches—especially those involving play, competition, and collaboration—enhance not only mathematical performance but also meta-cognitive and social skills. Students learn to analyze, argue, and draw conclusions, which strengthens their critical and logical thinking abilities.

Conclusion. The integration of interactive teaching methods in mathematics lessons helps create a student-centered learning environment that fosters intellectual curiosity, critical thinking, and independence. Game-based and cooperative learning activities make the lessons more engaging and effective, transforming the teacher into a facilitator rather than a transmitter of information.

For sustainable implementation, teachers need ongoing methodological support, access to digital resources, and opportunities for professional exchange. Interactive learning should thus be viewed as an essential component of modern mathematics education that contributes to both academic success and personal development.

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