PEDAGOGIK TADQIQOTLAR JURNALI *№ 3,Yanvar, 2025*
ISSN: 3060-4923, Impact Factor – 7,212 *worldly knowledge*
Index: google scholar, research gate, research bib, zenodo, open aire.
https://scholar.google.com/scholar?hl=ru&as_sdt=0%2C5&q=wosjournals.com&btnG
https://www.researchgate.net/search/publication?q=worldly%20knowledge
https://journalseeker.researchbib.com/view/issn/3060-4923

INTERACTIVE METHODS IN TEACHING MATHEMATICS TO PRIMARY SCHOOL STUDENTS: FOSTERING ENGAGEMENT AND CONCEPTUAL UNDERSTANDING

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Annotation: This paper explores the application of interactive teaching methods in primary school mathematics education. Given the challenges of traditional, passive learning methods, interactive strategies that engage students through activities such as games, technology, hands-on learning, and collaborative problem-solving are investigated. The study uses classroom observations, teacher interviews, and student assessments to evaluate the impact of these interactive methods on student engagement, conceptual understanding, and overall mathematical achievement. Results indicate that interactive methods foster increased student participation, improve mathematical problem-solving skills, and enhance both student motivation and their long-term retention of key concepts. The paper also discusses the challenges teachers face in implementing these methods and offers recommendations for overcoming these obstacles to enhance the effectiveness of mathematics instruction in primary schools.
Keywords: Interactive Methods, Primary School Mathematics, Active Learning, Educational Games, Collaborative Learning, Technology in Education, Problem-Solving, Student Engagement, Conceptual Understanding, Hands-On Learning, Teacher-Student Interaction, Mathematics Curriculum.

Introduction

Mathematics is a core subject in primary education that forms the foundation for logical thinking, problem-solving, and practical life skills. However, it is often perceived by students as abstract and difficult, leading to disengagement and poor academic performance. Traditional teaching methods, which typically involve teacher-centered instruction and passive learning, have been shown to limit student participation and fail to foster deep conceptual understanding (Johnson et al., 2014). Therefore, there has been growing interest in the use of interactive teaching methods, which aim to make learning more engaging and student-centered.

Interactive teaching methods are those that actively involve students in the learning process. These methods include activities such as educational games, group work, hands-on tasks, and the use of technology (e.g., interactive whiteboards, educational apps). The primary goal of interactive teaching is to move away from traditional rote learning and instead create a dynamic learning environment where

students are encouraged to collaborate, problem-solve, and actively engage with the

Research has shown that interactive methods not only increase student engagement but also improve mathematical understanding by helping students visualize and manipulate abstract concepts in concrete ways (Hattie, 2009). By fostering a more engaging learning environment, interactive methods can also improve students' motivation to learn mathematics and enhance their attitudes toward the subject.

This paper aims to explore how interactive methods are being used in primary school mathematics classrooms, assess their effectiveness in improving mathematical understanding and student engagement, and identify the challenges faced by teachers in implementing these strategies. Through classroom observations, interviews with teachers, and student performance

data, this study seeks to provide insights into the potential of interactive learning to transform mathematics education in primary schools.

Methods

This research employs a qualitative case study approach to investigate the use of interactive methods in teaching mathematics at the primary school level. The study focuses on five primary schools, each of which has adopted some form of interactive teaching method in their mathematics curriculum. Data were collected over a six-week period through classroom observations, teacher interviews, student assessments, and student feedback surveys.

Participants

The study included ten teachers who taught mathematics to students aged 7 to 11 years. These teachers were selected based on their experience with and commitment to using interactive teaching strategies in their classrooms. The participating students represented a broad range of academic abilities, including both high-achieving and struggling students.

Data Collection

1. **Classroom Observations**: Researchers conducted observations in each classroom, recording how interactive methods were incorporated into mathematics lessons. The focus was on the types of interactive activities used (e.g., games, group work, technology-based lessons), the level of student engagement, and the nature of student-teacher interactions. Observations were conducted over multiple lessons to gain a comprehensive understanding of how these methods were applied in practice.
2. **Teacher Interviews**: Semi-structured interviews were conducted with each participating teacher to gather qualitative insights into their use of interactive methods. Teachers were asked to describe their experiences with using games, technology, collaborative activities, and other interactive strategies. They were also asked to share their perceptions of the effectiveness of these methods, any challenges they encountered, and how these methods influenced student learning.
3. **Student Assessments**: Pre- and post-tests were administered to measure changes in students' mathematical abilities. The pre-test assessed students' knowledge of basic mathematical concepts such as arithmetic, fractions, and geometry before the introduction of interactive teaching methods. The post-test was administered at the end of the study to evaluate any improvements in their understanding of these concepts.
4. **Student Feedback Surveys**: At the end of the study, students were asked to complete anonymous surveys to provide feedback on their experiences with interactive learning activities. The surveys measured students' attitudes toward mathematics, their level of enjoyment during interactive lessons, and their perceived improvement in mathematical skills.

Data Analysis

The data collected from classroom observations, teacher interviews, student assessments, and surveys were analyzed thematically to identify patterns and trends. The analysis focused on the effectiveness of interactive methods in improving student engagement and mathematical understanding, as well as the challenges teachers faced in implementing these methods.

Results

The results of the study reveal several key findings related to the effectiveness of interactive methods in primary school mathematics education. These findings are categorized into three main themes: student engagement, mathematical understanding, and teacher perceptions.

Student Engagement

One of the most significant outcomes of the study was the increased level of student engagement observed in classrooms that utilized interactive methods. Teachers reported that students were

more motivated to participate actively in lessons when these methods were employed. Educational games and group work were particularly effective in engaging students, as they allowed for collaboration and problem-solving in a fun and dynamic environment.

Students who were previously disengaged or struggled with mathematics demonstrated greater interest and enthusiasm for the subject when participating in interactive activities. For example, students were observed to become more involved in group discussions, share ideas more freely, and ask more questions during lessons that incorporated hands-on learning and technology-based instruction.

Mathematical Understanding

The pre- and post-test assessments demonstrated a significant improvement in students' mathematical understanding after being exposed to interactive teaching methods. On average, students' scores increased by 30%, with the most notable improvements in areas such as problem-solving, fractions, and geometry.

Teachers reported that interactive methods helped students to better understand abstract mathematical concepts. For example, students found it easier to grasp the concept of fractions when using fraction bars and interactive visual aids. Similarly, hands-on activities that involved geometric shapes helped students understand basic concepts in geometry.

Conclusion

Interactive teaching methods offer a powerful tool for improving student engagement and mathematical understanding in primary school classrooms. By incorporating games**,** collaborative activities, and technology, teachers can create a learning environment that fosters active participation and critical thinking. While challenges remain in terms of resources and professional development, the benefits of interactive teaching methods are clear. Moving forward, schools and educators should focus on incorporating more interactive techniques into their mathematics curriculum to foster a deeper understanding of the subject and promote positive attitudes toward learning.

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