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Peer Tutoring as an Approach to Enhance Grade 7 Students' Skills in Solving Problems on Percentages and Discounts at Taysan San Jose Integrated National High School

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Abstract

Mathematics education plays a crucial role in developing learners' problem-solving and real-life application skills; however, many students struggle with concepts such as percentages and discounts. This study aimed to determine the effectiveness of peer tutoring in enhancing Grade 7 students' mathematical skills and engagement in solving problems related to percentages and discounts.

A mixed-method research design was employed involving 50 Grade 7 students from Taysan San Jose Integrated National High School. Data were collected through teacher-made pre-test and post-test, a validated questionnaire, and semi-structured interviews. Quantitative data were analyzed using weighted mean, frequency, percentage, and ranking, while qualitative data were analyzed through thematic analysis.

Results revealed that prior to the intervention, students demonstrated moderate proficiency in concept mastery (WM = 2.05), problem accuracy (WM = 1.88), and solution strategy (WM = 1.96). After the implementation of peer tutoring, students exhibited high engagement in motivation (WM = 3.63), active participation (WM = 3.62), and peer interaction (WM = 3.65). Peer tutoring was also found to be highly beneficial in computing discounts (WM = 3.65) and calculating percentages (WM = 3.66). However, challenges such as unclear explanations, fast-paced discussions, and classroom distractions were identified (WM = 3.83).

The study concludes that peer tutoring significantly enhances students' mathematical understanding, engagement, and confidence. Structured implementation and teacher supervision are recommended to maximize its effectiveness.

Keywords: *peer tutoring, mathematics, percentages, discounts, collaborative learning*

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1. INTRODUCTION

Mathematics plays an important role in developing learners' critical thinking, logical reasoning, and problem-solving skills. Concepts such as percentages and discounts are essential competencies that students use in real-life situations, including budgeting, shopping, and financial decision-making. However, many learners' experience difficulty in understanding and applying these concepts, often relying on memorization rather than true comprehension. These challenges result in errors in solving problems and low confidence in mathematics.

In many classrooms, traditional teaching approaches limit opportunities for individualized support, especially when students have varying levels of mathematical ability. As a result, learners struggle to connect mathematical concepts to real-life applications. There is a need for effective, practical, and learner-centered strategies that can help improve students' understanding and performance in mathematics.

This study investigates the effectiveness of peer tutoring as an instructional approach to enhance Grade 7 students' skills in solving problems on percentages and discounts at Taysan San Jose Integrated National High School. Specifically, the study sought to answer the following questions:

1. What is the level of students' mathematical skills before peer tutoring in terms of concept mastery, problem accuracy, and solution strategy?

2. How does peer tutoring improve students' engagement in terms of motivation, active participation, and peer interaction?

3. How beneficial is peer tutoring in enhancing students' performance in computing discounts, and calculating percentages?

4. What challenges do students encounter in learning mathematics through peer tutoring?

5. What enhancement of peer-tutoring activities may be proposed based on the findings?

2. MATERIALS AND METHODS

Research Design

This study utilized a mixed-method research design combining quantitative and qualitative approaches to assess the effectiveness of peer tutoring.

Participants

The participants were 50 Grade 7 students from Taysan San Jose Integrated National High School during the School Year 2025–2026. They were selected using purposive sampling to represent varying levels of mathematical ability.

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Research Instruments

Three research instruments were used in this study to gather both quantitative and qualitative data. First, a teacher-made test was developed and administered as both a pre-test and post-test to measure students' mathematical skills in terms of concept mastery, problem accuracy, and solution strategy. Second, a researcher-made questionnaire was utilized to assess students' engagement in peer tutoring, specifically focusing on motivation, participation, peer interaction, as well as the perceived benefits and challenges of the approach. Lastly, semi-structured interviews were conducted to provide in-depth insights into students' experiences, allowing the researcher to further explore their perceptions, difficulties, and suggestions regarding peer tutoring.

Procedure

Permission and consent were secured prior to data collection. A pre-test was administered to establish baseline skills. Peer tutoring sessions were then conducted, where students worked collaboratively in pairs or small groups under teacher supervision. After the intervention, a post-test and questionnaire were administered, followed by interviews.

Data Analysis

Quantitative data were analyzed using weighted mean, frequency, percentage, and ranking, while qualitative data were examined through thematic analysis. Ethical standards were strictly observed, including confidentiality and voluntary participation.

3. RESULTS

Section 1: Level of Mathematical Skills Before Peer Tutoring

The results showed that prior to the implementation of peer tutoring, students demonstrated a moderate level of mathematical proficiency in solving problems on percentages and discounts. The data revealed that concept mastery obtained a weighted mean of 2.05, indicating that students had partial understanding of the concepts. Similarly, problem accuracy yielded a weighted mean of 1.88, while solution strategy recorded a weighted mean of 1.96, both interpreted as moderate. These findings suggest that although students were able to recall formulas, they experienced difficulty in applying them accurately, particularly in solving contextual and real-life problems.

Section 2: Engagement in Mathematics Learning through Peer Tutoring

The findings revealed that peer tutoring significantly improved students' engagement in mathematics learning. Motivation obtained a weighted mean of 3.63, active participation recorded 3.62, and peer interaction reached 3.65, all interpreted as highly engaged. These results indicate that students became more motivated to learn, actively participated in discussions, and interacted more confidently with their peers. The collaborative nature of peer tutoring created a

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supportive learning environment that encouraged students to engage more meaningfully in problem-solving activities.

Section 3: Benefits of Peer Tutoring in Learning Percentages and Discounts

The results further indicated that students perceived peer tutoring as highly beneficial in enhancing their mathematical skills. In computing discounts, a weighted mean of 3.65 was obtained, while calculating percentages recorded a weighted mean of 3.66, both interpreted as highly beneficial. These findings suggest that peer tutoring improved students' understanding of mathematical concepts, increased their accuracy in solving problems, and strengthened their ability to apply these skills in real-life situations such as budgeting and financial decision-making.

Section 4: Challenges Encountered in Peer Tutoring

Despite the positive outcomes, students also encountered several challenges during the implementation of peer tutoring. The overall composite mean of 3.83 indicated that these challenges were highly experienced. Among the difficulties reported were fast-paced explanations from peer tutors, unclear instructions, and classroom distractions during sessions. These findings suggest that while peer tutoring is effective in enhancing learning, proper structuring, pacing, and teacher supervision are necessary to address these challenges and ensure more effective implementation.

4. DISCUSSION

The findings indicate that peer tutoring significantly enhances students' mathematical skills and engagement. The improvement in motivation, participation, and interaction supports the principles of social constructivism, which emphasize learning through collaboration. Students benefited from peer explanations that simplified complex concepts and encouraged active learning. This aligns with previous studies highlighting the effectiveness of peer-assisted learning in improving academic performance and engagement.

However, challenges such as inconsistent explanations and classroom distractions highlight the need for structured implementation. Teacher guidance remains essential to ensure accuracy and effective learning. Overall, peer tutoring fosters both cognitive and affective development, making it a valuable instructional strategy in mathematics education.

5. CONCLUSION

This study concludes that peer tutoring is an effective approach in enhancing Grade 7 students' skills in solving problems on percentages and discounts. It improves concept mastery, accuracy, problem-solving strategies, and engagement. While challenges exist, these can be addressed through proper structuring and teacher supervision. Peer tutoring provides a practical and sustainable strategy for improving mathematics learning.

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RECOMMENDATIONS

Based on the findings of the study, it is recommended that schools implement structured peer tutoring programs in mathematics classes to enhance students' learning outcomes. Teachers may provide training for peer tutors to ensure clear and effective facilitation of learning. The development of step-by-step problem-solving guides is also encouraged to support students in improving accuracy and understanding. Additionally, integrating collaborative learning activities can further strengthen engagement and participation. Continuous teacher supervision is necessary to monitor progress and address misconceptions, while improving classroom conditions can promote more effective peer interaction. Finally, further studies may be conducted to examine the long-term effects of peer tutoring and its application to other mathematical topics.

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