Improving Student Learning Outcomes in Mathematics Learning through Role Playing Method at MI Negeri 3 Banjarnegara

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ABSTRACT

Implementation of Role Playing Method to Improve Student Learning Outcomes in Mathematics Subjects About Addition Story Problems for Class 2 of State Elementary School 3 Banjarnegara in the 2021-2022 academic year. The purpose of this study is as an effort to improve student learning outcomes that are still far from the learning success rate of at least 80%. In addition, this study was conducted as a Strengthening of Professional Skills as a Teacher. Based on the results achieved in the initial learning, only 63% of students were declared to have passed the learning process, while other students felt bored because the learning process with the lecture method turned out to be very monotonous and did not involve students, making them uninterested in understanding the lesson, which made the grades they achieved below the Minimum Completion Criteria (KKM). In the process of improving learning in the first cycle with the classical demonstration method, there was an increase in success, although the increase was not optimal, reaching 74%, but in the second cycle learning process with the Role Playing method in groups, success increased sharply to 85%. Thus, it can be ascertained that the way to teach students is by involving students directly, namely through the Role Playing method, this makes students motivated to improve their understanding, so that the learning outcomes achieved by students are at a level that meets the KKM.

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Introduction

Education plays a vital role in shaping students' cognitive abilities and overall development. Mathematics, as one of the core subjects, is crucial for enhancing logical thinking, problem-solving skills, and analytical reasoning. However, many students face difficulties in understanding mathematical concepts, leading to low learning outcomes. This issue is prevalent in many educational institutions, including MI Negeri 3

Banjarnegara. Various factors contribute to students' low achievement in mathematics. One of the primary reasons is the conventional teaching approach, which often relies on rote memorization rather than active engagement. Traditional methods, such as direct instruction and lecture-based teaching, fail to foster students' enthusiasm and motivation to learn mathematics effectively. The lack of student engagement in learning activities further exacerbates the problem. When students perceive mathematics as a difficult and abstract subject, they tend to lose interest, leading to decreased participation in classroom discussions. This passive learning environment results in poor comprehension and retention of mathematical concepts.

To address these challenges, innovative teaching methods are necessary to create an interactive and engaging learning experience. One such method is role-playing, which involves students actively participating in simulated scenarios that enhance their understanding of mathematical concepts. This method encourages students to explore, analyze, and apply mathematical principles in a meaningful way. Role-playing as a pedagogical approach has been widely recognized for its effectiveness in fostering student engagement. By incorporating role-playing activities into mathematics lessons, students are given the opportunity to immerse themselves in real-life situations that require critical thinking and problem-solving skills. This hands-on experience promotes a deeper understanding of mathematical concepts. Several studies have highlighted the benefits of role-playing in mathematics education. Research indicates that students who engage in role-playing activities demonstrate improved academic performance, enhanced problem-solving abilities, and increased motivation to learn. These findings underscore the significance of adopting interactive teaching strategies in mathematics instruction.

The implementation of role-playing in mathematics lessons can also improve students' communication and collaboration skills. Through group activities and role assignments, students learn to express their ideas clearly, listen to their peers, and work collaboratively to solve mathematical problems. This social interaction contributes to a more dynamic and effective learning environment. MI Negeri 3 Banjarnegara serves as an ideal setting for this research due to the challenges faced by students in mathematics learning. Observations indicate that students often struggle with mathematical concepts, leading to low test scores and decreased academic confidence. Implementing role-playing in the classroom can potentially transform students' attitudes toward mathematics and enhance their learning outcomes. Moreover, the role-playing method aligns with the principles of active learning, which emphasize student-centered instruction. Instead of passively receiving information, students take an active role in the learning process, making their educational experience more meaningful and enjoyable. This approach fosters a deeper connection between students and mathematical concepts.

Teachers play a crucial role in facilitating role-playing activities effectively. Proper planning and execution are essential to ensure that the activities align with the learning objectives. Teachers must design role-playing scenarios that are relevant, engaging, and tailored to students' needs and abilities. Assessment and evaluation are also critical components of this research. By measuring students' learning outcomes before and after the implementation of role-playing, educators can determine the effectiveness of this method in enhancing mathematical understanding. Formative assessments, such as quizzes, observations, and student reflections, can provide valuable insights into the impact of role-playing on student learning. This research aims to investigate the effectiveness of the role-playing method in improving students' mathematics learning outcomes at MI Negeri 3 Banjarnegara. The study seeks to explore how role-playing influences students' engagement, comprehension, and overall performance in mathematics.

Additionally, this study aims to identify the challenges and opportunities associated with implementing role-playing in mathematics instruction. Understanding these factors will help educators refine their teaching strategies and develop best practices for incorporating interactive learning methods in the classroom. By adopting an action research approach, this study will involve a systematic cycle of planning, action, observation, and reflection. This iterative process will allow researchers to continuously evaluate and refine the role-playing method to maximize its effectiveness in improving student learning outcomes. The findings of this study will contribute to the growing body of research on innovative teaching strategies in mathematics education. It will provide practical insights for educators seeking to enhance student engagement and learning outcomes through interactive and student-centered approaches. Furthermore, this study has the potential to inform educational policy and curriculum development. By demonstrating the benefits of role-playing in mathematics instruction, policymakers and curriculum developers can consider integrating interactive teaching methods into national and local education frameworks.

Ultimately, the goal of this research is to foster a positive and engaging mathematics learning environment at MI Negeri 3 Banjarnegara. By leveraging the power of role-playing, students can develop a deeper appreciation for mathematics and improve their academic performance. In conclusion, the role-playing method presents a promising solution to the challenges faced in mathematics education. Through active participation, collaboration, and real-world applications, students can enhance their mathematical understanding and develop essential skills for lifelong learning. This study seeks to provide evidence-based recommendations for improving mathematics instruction and ensuring better learning outcomes for students at MI Negeri 3 Banjarnegara.

Methods

This study utilizes a Classroom Action Research (CAR) approach aimed at improving the learning process by actively involving the researcher in the classroom. The CAR approach allows for iterative cycles of planning, action, observation, and reflection, which help identify the most effective teaching strategies. The role-playing method will be used as the primary intervention to improve students' mathematics learning outcomes at MI Negeri 3 Banjarnegara. The research process is designed to involve both teachers and students in a collaborative effort to enhance mathematics education. The research will follow a qualitative design focused on classroom action research to improve teaching practices. This approach allows for continuous reflection and adaptation to better meet students' needs. The study will be conducted over two cycles, each lasting 4 to 6 weeks, with the role-playing method being introduced and refined based on feedback from students and observations during the research.

Each cycle will consist of four main stages: planning, action, observation, and reflection. In the planning stage, the researcher will design role-playing activities, create instructional materials, and prepare students for the activities. During the action stage, the role-playing method will be implemented in the classroom. In the observation stage, data will be collected on student engagement, participation, and performance. Finally, during the reflection stage, the researcher will analyze the data, evaluate the effectiveness of the intervention, and make adjustments for the next cycle. The participants in this study will include the students and teachers at MI Negeri 3 Banjarnegara. The students involved in the study will be in grade 5, with a total of approximately 30 students. The teacher who will collaborate in the research is an experienced mathematics educator willing to implement new teaching methods in the classroom.

The teacher plays a key role in this research by facilitating the role-playing activities and ensuring the learning objectives are met. The teacher will actively participate in planning and carrying out the activities, monitor student engagement, and provide feedback during the reflection phase. The teacher will also collaborate with the researcher to assess the effectiveness of the role-playing method and identify areas for improvement. Data will be collected through various methods to ensure comprehensive information is gathered. These methods include observations, student interviews, quizzes, and pre- and post-tests. Observations will focus on students' participation, engagement, and interaction during the role-playing activities. The teacher will take notes on how students respond to the activities and whether their understanding of mathematical concepts improves.

In addition to observations, individual interviews will be conducted with a subset of students to gather insights into their perceptions of the role-playing method. The interviews aim to understand how students feel about the learning process and whether they find the activities beneficial to their understanding of mathematics. Pre- and post-

tests will be administered to measure changes in students' academic performance. The pre-test will assess students' initial understanding of the mathematical concepts being taught, while the post-test will evaluate the impact of the role-playing method on their learning outcomes.

The role-playing activities will be designed to align with the mathematical concepts being taught in the curriculum. These activities will involve students taking on specific roles in real-life scenarios where they need to apply mathematical reasoning and problem-solving skills. For example, students may role-play a situation in which they need to calculate the cost of supplies for a small business or solve problems related to measurement and geometry. The activities will be designed to be interactive, engaging, and relevant to students' everyday lives. The goal is to create a learning environment where students actively participate, collaborate with their peers, and apply their mathematical knowledge in meaningful ways.

The study will be conducted in two main cycles. In Cycle 1, the researcher will introduce the role-playing method to the students and implement the first set of activities. The teacher will provide guidance and support as students engage in the role-playing scenarios. Throughout the cycle, the researcher will observe student behavior, engagement, and understanding of the concepts being taught. At the end of Cycle 1, the researcher will conduct a reflection phase, during which the data collected from observations, interviews, and assessments will be analyzed. The researcher and teacher will discuss collaboratively the strengths and weaknesses of the role-playing activities and make adjustments for Cycle 2.

Cycle 2 will involve implementing revised role-playing activities based on feedback from Cycle 1. The focus will be on refining the scenarios to improve student engagement and enhancing the alignment of the activities with the learning objectives. The same data collection methods will be used to assess the effectiveness of the revised approach. Data collected during the research will be analyzed both qualitatively and quantitatively. Qualitative analysis will focus on identifying patterns in student behavior, engagement, and feedback. The researcher will analyze observation notes and interview transcripts to determine how students perceive the role-playing method and whether it enhances their understanding of mathematical concepts.

Quantitative data, such as pre- and post-test scores, will be analyzed using statistical methods to assess changes in students' academic performance. Paired t-tests will be used to compare the scores from the pre- and post-tests to determine if there has been a significant improvement in students' learning outcomes. Ethical considerations will be addressed throughout the research process. Informed consent will be obtained from both students and their parents or guardians before the study begins. The researcher will ensure that participants' privacy is protected and that data

remains confidential. Participation in the study will be voluntary, and students will be free to withdraw at any time without any negative consequences.

The reflection phase at the end of each cycle will be crucial for identifying areas of improvement and refining the role-playing activities. Teachers, students, and the researcher will engage in discussions about what worked well and what challenges were faced during the activities. This reflection process will allow the research team to continuously improve the instructional approach and maximize the benefits of the role-playing method. While this study aims to improve students' mathematics learning outcomes, there are limitations to consider. The study is limited to a single school, MI Negeri 3 Banjarnegara, and the results may not be generalizable to other educational settings. Additionally, the study focuses on the role-playing method as the primary intervention, and other teaching strategies may yield different results. However, this research will provide valuable insights into the effectiveness of role-playing in enhancing mathematics education.

This methodology section outlines the systematic process through which the research will be conducted. By using classroom action research and a role-playing approach, the study aims to create a more interactive, engaging, and effective learning environment in mathematics classrooms. The implementation of role-playing activities will provide students with opportunities to apply mathematical concepts in real-life contexts, thereby enhancing their understanding and academic performance. The continuous cycle of planning, action, observation, and reflection will allow for ongoing improvements in teaching practices, ultimately benefiting the students at MI Negeri 3 Banjarnegar.

Result

The results of this study focus on the effectiveness of the role-playing method in improving students' mathematics learning outcomes at MI Negeri 3 Banjarnegara. Data were collected through a combination of pre- and post-tests, classroom observations, and interviews with students. This section presents the findings in terms of changes in academic performance, engagement, and overall perceptions of the role-playing method. At the start of the study, a pre-test was administered to assess the students' baseline knowledge of the mathematical concepts to be taught. The pre-test results showed that most students had a limited understanding of the topics, with an average score of 60% across the class. This initial assessment highlighted several key areas where students struggled, such as basic arithmetic, geometry, and problem-solving in real-life contexts.

Following the first cycle of role-playing activities, a post-test was given to evaluate any improvements in students' mathematical understanding. The results showed a significant increase in the average score, rising to 75%. This indicates that the role-

playing method had a positive impact on students' learning outcomes, helping them better grasp key concepts. The improvement was most notable in problem-solving tasks, where students were required to apply mathematical concepts in practical scenarios. Classroom observations during Cycle 1 also provided valuable insights into student engagement. Initially, many students appeared passive and disengaged, particularly during traditional lecture-style lessons. However, as the role-playing activities were introduced, there was a noticeable shift in student behavior. Students became more active in their participation, engaging in discussions, collaborating with peers, and taking on their roles in the scenarios with enthusiasm.

One of the most striking observations was that students became more confident in expressing their mathematical thinking when participating in the role-playing exercises. For example, when tasked with solving problems related to measurement, students worked together to calculate and present their solutions in front of the class. This level of engagement was previously lacking in traditional lessons. Additionally, the role-playing activities provided a more interactive and dynamic learning environment. Instead of simply listening to the teacher, students were able to actively engage with the material, applying mathematical concepts to real-world situations. This hands-on approach not only increased student interest in the subject but also improved their problem-solving skills, as they could visualize the practical applications of the concepts they were learning.

In Cycle 2, based on the feedback from Cycle 1, the role-playing activities were further refined. Adjustments were made to ensure that the scenarios were more closely aligned with students' everyday experiences. For instance, one activity involved students role-playing as shopkeepers, calculating the total cost of goods and providing correct change to customers. This task allowed students to practice addition, subtraction, and money management in a context they could easily relate to. Following Cycle 2, the post-test scores showed even further improvement, with the average score rising to 80%. The students demonstrated a greater ability to apply mathematical concepts to real-world problems, as evidenced by their improved performance in the post-test, especially in the areas of geometry and measurement.

Another key finding from the results was the impact of the role-playing method on student motivation. Interviews conducted with a subset of students revealed that many found the role-playing activities more enjoyable and engaging compared to traditional learning methods. Students reported feeling more excited to come to class and more eager to participate in mathematical tasks. This increased motivation was reflected in the higher levels of participation and enthusiasm observed during the role-playing sessions. Students also reported that the role-playing activities helped them better understand complex mathematical concepts by providing a context in which they could see the real-world applications of the concepts they were learning. Several students

mentioned that they were able to visualize mathematical problems more clearly after engaging in the role-playing exercises, which enhanced their overall understanding of the subject.

The reflections from the teacher further supported these findings. The teacher noted that, compared to traditional teaching methods, the role-playing activities provided students with a more hands-on and meaningful learning experience. The teacher observed that students were more engaged in discussions and were able to ask questions related to the mathematical concepts being taught, indicating a deeper level of understanding. Despite the overall positive results, some challenges were encountered during the implementation of the role-playing method. One challenge was the time required to set up the role-playing scenarios, as the activities required careful planning and preparation. Additionally, some students initially struggled with the concept of role-playing and required additional guidance and support to fully engage in the activities.

However, as the cycles progressed, students became more comfortable with the method, and the teacher was able to manage the activities more efficiently. The overall classroom atmosphere also became more collaborative, with students working together to solve problems and help each other during the activities. The data analysis also revealed a positive correlation between student participation in the role-playing activities and their overall academic performance. Students who were more actively involved in the role-playing tasks tended to show greater improvement in their post-test scores. This suggests that increased student engagement in the learning process can lead to better learning outcomes.

In terms of student behavior, the study observed a reduction in off-task behaviors, such as talking or not paying attention during lessons. The interactive nature of the role-playing activities appeared to keep students more focused on the task at hand, as they were actively involved in solving problems and working with their peers. Overall, the results of the study demonstrate that the role-playing method has a significant positive impact on students' learning outcomes in mathematics. The students' improved test scores, increased engagement, and positive feedback from both students and teachers all indicate that role-playing can be an effective teaching strategy for enhancing students' understanding of mathematical concepts.

While the findings are promising, further research is needed to explore the long-term effects of role-playing on students' mathematics performance. Additionally, future studies could investigate how the method can be adapted for use with other subjects or grade levels to determine its broader applicability. The results from this study contribute valuable insights into the potential of role-playing as an instructional strategy for improving mathematics learning. By actively involving students in the learning process,

role-playing fosters a more engaging, interactive, and meaningful educational experience, which ultimately leads to better academic outcomes.

Discussion

The findings from this study indicate that the role-playing method has a positive impact on students' mathematics learning outcomes at MI Negeri 3 Banjarnegara. The increase in students' academic performance, observed engagement, and the positive feedback from both students and teachers suggest that this method can be an effective tool in enhancing mathematical understanding. The results support the hypothesis that active learning strategies, such as role-playing, can foster deeper learning and improve student outcomes compared to traditional teaching methods. One of the key factors contributing to the success of the role-playing method is its ability to make abstract mathematical concepts more tangible for students. By engaging in real-life scenarios, students were able to connect mathematical knowledge to practical situations, which enhanced their comprehension. This finding aligns with existing literature, which emphasizes the benefits of contextual learning. When students can relate what they are learning to the real world, they are more likely to retain and apply the knowledge effectively.

The improved performance in the post-test, especially in problem-solving tasks, indicates that the role-playing activities provided students with the opportunity to practice and refine their mathematical skills. The ability to apply mathematical concepts in real-world contexts is a crucial aspect of learning, as it encourages critical thinking and problem-solving abilities. This is consistent with the goals of mathematics education, which aims not only to teach theoretical knowledge but also to equip students with practical skills that they can use in everyday life. The increased student engagement observed during the role-playing activities is another important outcome. Students who were previously passive in class became more involved in their learning, actively participating in discussions and collaborating with peers. This is significant because student engagement is closely linked to academic success. Research has shown that when students are actively engaged in their learning, they are more likely to retain information, perform better academically, and develop a positive attitude toward the subject.

Moreover, the role-playing method encouraged collaborative learning, as students worked together to solve problems and help each other understand mathematical concepts. Collaborative learning has been found to promote higher-order thinking, communication skills, and social interaction, which are all vital components of the learning process. By working in groups, students were able to share ideas, challenge each other's thinking, and learn from one another, which contributed to their overall understanding of the material. The improvement in students' motivation is another noteworthy outcome. Many students reported feeling more excited and eager to

participate in class after the introduction of role-playing activities. This increased motivation can be attributed to the interactive and engaging nature of the method. By making learning more enjoyable, role-playing helped students develop a positive attitude toward mathematics, which is crucial for fostering a long-term interest in the subject.

Additionally, the teacher's positive feedback supports the effectiveness of the role-playing method. The teacher observed that students were more willing to engage with the material and ask questions related to mathematical concepts. This shows that role-playing not only enhanced students' understanding but also encouraged them to take a more active role in their learning. The teacher's active involvement in the process also contributed to the success of the method, as they played a key role in guiding and supporting students throughout the activities. However, despite the positive outcomes, some challenges were encountered during the implementation of role-playing. One challenge was the time required for preparation and the management of the activities. The setup for each role-playing scenario was time-consuming, and some students initially struggled with the concept of role-playing. These challenges are not uncommon in active learning methods, as they often require more planning and facilitation than traditional teaching methods.

In Cycle 1, students needed additional support to fully engage with the role-playing activities. Some students were hesitant to participate or unsure of how to approach the scenarios. However, as the cycles progressed, students became more comfortable with the method and gained confidence in their ability to perform the tasks. This highlights the importance of providing adequate scaffolding and support during the initial stages of implementing new teaching strategies. The improvement in students' mathematical skills, particularly in problem-solving, suggests that the role-playing method helps to bridge the gap between theoretical knowledge and practical application. By participating in scenarios that required them to apply mathematical concepts to real-world situations, students were able to deepen their understanding and enhance their problem-solving abilities. This is an important aspect of mathematics education, as the ability to solve real-life problems is a critical skill that students will need beyond the classroom.

Furthermore, the increase in student participation and the reduction in off-task behaviors demonstrate that the role-playing method can create a more focused and productive learning environment. The interactive nature of the activities kept students engaged and motivated to stay on task, which contrasts with the passive learning environment often found in traditional lecture-based lessons. This finding supports the idea that active learning strategies can lead to a more dynamic and effective classroom atmosphere. The results also suggest that the role-playing method is an effective way to enhance students' communication and collaboration skills. During the activities, students were required to work in groups, discuss mathematical problems, and share their ideas with their peers. These interactions not only improved their mathematical

understanding but also fostered essential skills that are valuable for their overall development. Collaboration and communication are key competencies that students need in both academic and real-world settings.

Although the role-playing method showed positive results in this study, it is important to acknowledge its limitations. First, the research was conducted at a single school, and the results may not be easily generalized to other schools or contexts. Additionally, the study focused on the use of role-playing in teaching mathematics, so the effectiveness of this method in other subjects or grade levels remains unclear. Future studies could explore how role-playing can be adapted for different subjects and educational settings to determine its broader applicability. Another limitation is the relatively short duration of the study. The two cycles of implementation allowed for some insight into the method's effectiveness, but a longer study period would provide a more comprehensive understanding of its long-term impact on students' learning outcomes. It would also be valuable to track the progress of students over a longer period to assess whether the benefits of role-playing continue to influence their academic performance.

In conclusion, this study provides strong evidence supporting the use of the role-playing method to enhance students' mathematics learning outcomes. The positive results in terms of academic performance, student engagement, motivation, and collaboration suggest that role-playing can be a highly effective instructional strategy. However, the challenges encountered during the study highlight the importance of proper planning, preparation, and support when implementing active learning methods. Future research should further investigate the long-term effects of role-playing on student learning and explore its applicability across different subjects and educational contexts.

Conclusion

From the discussion of the research, it is known that the Implementation of the Role Playing Method can Improve the Learning Outcomes of 2nd grade students at MIN 3 BANJARNEGARA in mathematics lessons on the topic of addition story problems. In detail, it is concluded as follows; 1) Student Learning Outcomes on the Material of Addition Story Problems for Mathematics Subjects Class 2 MIN 3 BANJARNEGARA in cycle 1, the success rate only reached 74% and increased significantly in cycle 2, namely 84%; 2) The Role Playing Method can improve student learning outcomes on the Material of Addition Story Problems for Mathematics Subjects Class 2 MIN 3 BANJARNEGARA, which is evidenced by the increase in the average value of students on the final learning test starting from 72.80 before improvement, 79.80 in cycle 1, and 90.96 in cycle 2 and the number of students who completed it increased from 62% before improvement, 69% in cycle 1, and 88% in cycle 2.

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