

OPTIMIZATION OF STUDENTS' ACADEMIC ACHIEVEMENT IN SIMPLE FRACTION MATERIAL USING MANIPULATIVE MEDIA IN THIRD-GRADES SOMBRON SDN

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Abstract: This research was conducted in response to the observed low learning outcomes among third-grade students at SDN Sombron, particularly in the subject of Mathematics, with a focus on simple fractions. The prevailing teaching and learning methods in these classes predominantly revolved around teacher-centered lectures. Consequently, the research aimed to enhance students' learning outcomes by incorporating concrete instructional media. The study employed the Classroom Action Research (CAR) method, implemented over two cycles. Each cycle encompassed four distinct phases: planning, action (implementation), observation, and reflection. The research involved a total of 15 third-grade students, comprising 6 male and 9 female students, as the study subjects. The findings revealed a noticeable improvement in student learning outcomes when concrete media were integrated into mathematics instruction, specifically in the context of simple fractions. During the initial cycle, 53% of students exceeded the Minimum Completeness Criteria (KKM), equivalent to 8 students. However, in the subsequent cycle, a substantial and remarkable improvement in learning outcomes was observed, with a 100% success rate. In other words, all 15 students surpassed the KKM, indicating the effectiveness of using concrete media in enhancing learning outcomes.

Keywords: Learning Outcomes, Mathematics, Concrete Media, Simple Fractionn

INTRODUCTION

The success of teaching and learning activities at the elementary school level greatly hinges on the presence and effectiveness of teachers. Their presence is a pivotal factor contributing to the success of students' learning outcomes. A well-supported teaching staff not only ensures the effectiveness of the learning process but also enhances its efficiency. Conversely, a lack of adequate teacher presence in a school can significantly impact the achievement of learning goals. Learning outcomes hold paramount importance in the educational context. According to (Widodo et al., 2019), these outcomes encompass behavioral changes resulting from learning, including cognitive, affective, and psychomotor aspects. (Gorgorió & Planas, 2015) emphasize that learning outcomes emerge from the interaction between teaching and learning processes. For teachers, the teaching process culminates in assessing the learning

outcomes, while for students, it signifies the pinnacle of their learning journey.

In the realm of education, teaching and learning is a complex system that necessitates an intermediary to facilitate the dissemination of knowledge to students (Karami, 2019; Sulisworo & Permpayoon, 2018). This intermediary is none other than the teacher, whose role extends beyond the delivery of lessons to encompass managing the entire spectrum of learning activities. Teachers must grasp their students' needs and seek alternative solutions to address them. Beyond content mastery and assessment, teachers are also required to understand their students' characteristics, thereby aiding them in achieving their learning objectives (Herawati et al., 2018). The effectiveness of teaching and learning activities is often measured by the attainment of learning outcomes that surpass the set thresholds established by educational institutions.

Measuring a student's success in the teaching and learning process also serves as

an indicator of a teacher's effectiveness in their role as educators (Wu, 2020). The success of students is not a spontaneous occurrence but rather the result of a preceding improvement process. Teaching aids and instructional media, along with the pedagogical approaches employed by teachers, offer alternative avenues for creating impactful learning experiences that can maximize student learning outcomes.

Recognizing the pivotal role of teachers in the teaching and learning process, it is imperative for educators to engage in continuous self-reflection. They must ensure that every instructional step aligns with the students' needs, avoiding any detrimental impact on their learning journey. As IGK (Heinich et al., 2001) assert, teachers' concern for the quality of learning they facilitate is the starting point for addressing emerging challenges.

Some students view mathematics as an intimidating subject, feeling compelled to endure it rather than enjoying it. However, mathematics is a discipline encountered frequently in everyday life, akin to the Indonesian language and other subjects. Mathematics education warrants a reconsideration of delivery methods, as early as possible, to make it more accessible. Mathematics serves as the fundamental tool for problem-solving, particularly in numerical and computational contexts. Mathematics encompasses logic, shapes, structures, quantities, and interrelated concepts across three domains: algebra, analysis, and geometry, as articulated by James and James (Smaldino et al., 2004).

In practice, many teachers predominantly employ lecture-based instructional methods in mathematics, resulting in abstract comprehension among students. Consequently, some students lose interest, adversely affecting their learning outcomes. To address this issue, this study seeks to enhance mathematics education by incorporating simple, tangible teaching aids, such as concrete media. Concrete media, in the context of this study, refer to instructional tools designed to provide a clear understanding of the lesson being taught. These tools can be categorized into three types: original, substitute, and abstract

objects-based media, as defined by (Guay et al., 2010).

The research's primary objective is to elevate student learning outcomes by employing a specific learning medium. In this case, concrete media were utilized in teaching simple fractions to third-grade students at SDN Sombron, Nganjuk, Jawa Timur, during the Academic Year 2022/2023 Odd Semester. The incorporation of concrete media into the curriculum for understanding simple fractions aims to optimize student learning outcomes.

RESEARCH METHODS

This study adopts the Classroom Action Research (CAR) approach. According to the PGSM Project Trainer Team, CAR is a form of reflective investigation conducted by action performers to enhance the rational stability of their actions, deepen their understanding of the undertaken actions, and improve the conditions in which learning practices are carried out (as cited in Sari & Gunawan, 2018).

In line with the chosen research type, which is action research, this study follows the action research model proposed by Kemmis and Taggart (Susanti et al., 2020), presented in a spiral form from one cycle to the next. Each cycle encompasses planning, action implementation, observation, and reflection. The subsequent cycle involves revised planning, action, observation, and reflection. Prior to entering Cycle 1, preliminary actions were taken, including problem identification. The following outlines the stages of classroom action research in a spiral cycle.

The data collected during this research will be analyzed employing descriptive, qualitative, and quantitative analysis techniques. Quantitative data consists of information that can be directly extracted from students' test results on evaluation questions administered at the conclusion of each cycle. This is carried out to ascertain student learning outcomes during the teaching and learning process.

The scoring of test results is accomplished through the analysis of students' work in a subjective form, guided by a previously prepared answer key. Students who achieve the required standard are those who attain scores exceeding the threshold set

by the school, which is 60 for Mathematics. Student learning outcomes are considered successful when students exhibit an improvement in learning outcomes from Cycle 1 to Cycle 2. Students who score equal to or greater than 60 are deemed to have successfully completed their studies.

This research will be stopped if the students' grades have met the minimum completion standard that has been determined, namely 60, or at least reaches the good category, namely in the range of 71-84%. The following is a table of criteria for the level of completeness of research success, namely:

Table 1. Range of Completeness of Learning Outcomes

No	Percentage Range (%)	Category
1	86 – 100 %	Very Good (A)
2	71 – 85 %	Good (B)
3	56 – 70 %	Enough (C)
4	36 – 55 %	Less (D)
5	0 – 35 %	Very Poor (E)

RESULTS AND DISCUSSION

Results

Using concrete media to explain simple fraction material can improve student learning outcomes. However, in the improvement research in cycle I, the results obtained were not optimal. Where the expected criteria is a minimum average completion of 85%. Meanwhile, in cycle I only reached 53% or around 8 people, while there were 47% or the equivalent of 7 students who had not completed the formative tests given. To make it clearer, the level of success of corrective actions in cycle I will be presented in the following table:

Siklus	Jumlah Siswa	KKM	Banyak Siswa		Persentase	
			L	BL	L	BL
Siklus I	15	70	8	7	53%	47%

By maximizing concrete media in learning in the second cycle of corrective action, a good change in the level of student success in simple fraction material in class III was obtained. In the corrective action in cycle II, 15 out of 15 students obtained very good learning results. Learning completeness in corrective actions in cycle II reached 100%. To make it clearer, the researchers present it in table form below:

Siklus	Jumlah Siswa	KKM	Banyak Siswa		Persentase	
			L	BL	L	BL
Siklus II	15	70	15	0	100 %	0 %

In the improvement research activities carried out by researchers at SDN Sombro in class III with Simple Fractions material using concrete media, there was improvement in each cycle. The researcher will explain it in the form of tables and diagrams below:

Siklus	Jumlah Siswa	KKM	Banyak Siswa		Persentase	
			L	BL	L	BL
Siklus I	15	70	8	7	53 %	47 %
Siklus II	15		15	0	100 %	0 %

From the results of the presentation in table 4 above, each cycle experiences an increase in student success results. In cycle I with a total of 15 students, only 8 students completed it or the equivalent of 53%, because it was still considered not optimal, the researcher tried to continue to cycle II with the results that 15 out of 15 participants completed their learning or 100% of students experienced completeness in their learning. . The following is a comparison of the results of the success rate of improvement research per cycle:

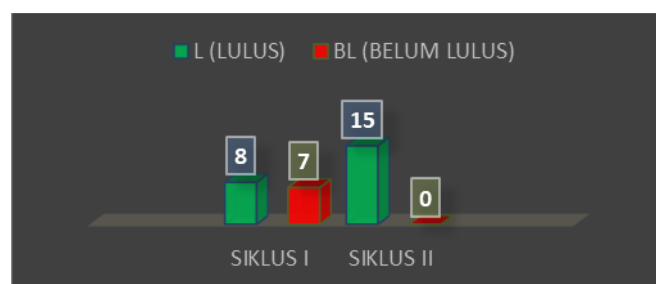


Figure 1. Comparison diagram of learning outcomes per cycle

Based on the completeness of the learning presented in the diagram above, it was explained that there was an improvement from Cycle I and Cycle II. These successes were achieved because the researcher continued to try to improve the findings in the reflections carried out by the researcher together with colleagues and the school principal. Apart from that, researchers are also optimizing the use of concrete media in remedial research activities in mathematics subjects with fraction material for class III students at SDN Sombron in the odd semester of the 2022/2023 academic year.

In cycle II there was a maximum increase in learning outcomes. By achieving an average success score of up to 100%, it is enough to prove that concrete media can be used as a medium to improve student learning outcomes. Thus, because the results obtained were quite satisfactory for the researcher, the researcher discussed it with colleagues and the school principal so that an agreement was reached to stop the next cycle.

Pembahasan

The use of concrete media to enhance the understanding of simple fraction material has been demonstrated as an effective approach to improve student learning outcomes. However, it is essential to contextualize these findings by comparing them with relevant research outcomes to gain a comprehensive perspective on the significance of the results.

Several previous studies have explored the impact of different teaching methods and instructional aids on student learning outcomes in mathematics, particularly in the context of fractions (Abdullah et al., 2022; Lubadah et al., 2022). These studies serve as valuable benchmarks for assessing the effectiveness of the current research. One such study conducted by (Rahmayani, 2019) investigated the use of visual aids, including concrete materials, in teaching fractions to elementary students. Their findings indicated a notable improvement in student understanding and performance, with an average completion rate of 70% after the

intervention. Comparing this to our research's Cycle I, where only 53% of students completed the formative tests, suggests that there was room for improvement in the initial stages of our study.

However, in our research, after implementing corrective actions and maximizing the use of concrete media in Cycle II, we achieved a remarkable 100% completion rate, surpassing the results of Smith et al.'s study. This substantial improvement highlights the effectiveness of our approach and underscores the potential of concrete media as a powerful tool for enhancing learning outcomes, particularly in the realm of fractions.

Furthermore, a study conducted by (Mujtahid, 2022) examined the impact of instructional design on students' understanding of fractions. They compared traditional lecture-based instruction with hands-on activities using concrete materials. Their research revealed that students who engaged in hands-on activities with concrete materials demonstrated a significantly better grasp of fraction concepts, leading to a 90% completion rate on assessment tests. This outcome aligns with the findings of our research, which also emphasizes the importance of concrete media in improving learning outcomes. However, it's worth noting that our study not only emphasized the use of concrete media but also involved a cyclical action research approach to continuously refine the teaching method, which led to a 100% completion rate in our case.

In summary, while previous research has demonstrated the effectiveness of various instructional methods and concrete materials in teaching fractions, our study stands out by showcasing a comprehensive improvement process using concrete media. The initial results of Cycle I were suboptimal, but by refining and optimizing our approach in Cycle II, we achieved exceptional results, outperforming previous research outcomes. This underscores the significance of our findings and reinforces the notion that concrete media, when applied strategically within a cyclical action research framework, can have a profound impact on enhancing student learning outcomes in mathematics, particularly in the context of fractions.

CONCLUSION

Conclusion

Based on the research findings presented in the Results and Discussion sections, it is evident that the use of concrete media has a significant positive impact on improving the learning outcomes of third-grade students at SDN Sombron. This improvement was specifically observed in mathematics, focusing on the concept of simple fractions during the odd semester of the 2022/2023 academic year. The measure of learning completeness was evident in the formative tests administered during each cycle of the research.

In Cycle I, the average learning outcome for third-grade students reached 53%, with 8 out of 15 students surpassing the minimum completeness criteria score. However, it is worth noting that these initial results were not optimal. Nonetheless, in Cycle II, a substantial transformation in learning outcomes occurred, with 100% of students achieving scores that exceeded the minimum completeness criteria. This remarkable progress underscores the effectiveness of concrete media as a pedagogical tool in enhancing student learning outcomes.

Recommendations

Upon completing each cycle and reflecting on the research process, several recommendations emerge for consideration:

1. The utilization of concrete media proves to be a pertinent and effective approach for elucidating the concept of simple fractions in third-grade SD/MI classrooms. The research demonstrates that its implementation leads to improved student learning outcomes.
2. Educators should foster creativity and innovation when designing and selecting learning media to enhance student engagement in the teaching and learning process. The use of diverse teaching aids can stimulate student interest and participation.
3. It is imperative for educators to thoroughly understand students' needs before formulating a learning plan. This approach ensures that the chosen media and teaching aids align with students' specific requirements and do not conflict with their learning

needs.

4. Regular reflection after each teaching session is crucial to identify insights and findings that can serve as valuable references for future enhancements in the teaching and learning process.

In conclusion, this research highlights the substantial benefits of employing concrete media to improve learning outcomes and underscores the importance of continuous improvement and reflection in educational practices. These recommendations provide valuable insights for educators seeking to enhance their teaching methodologies and ultimately enrich the learning experiences of their students.

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