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Improving Mathematics Learning Outcomes Using Multiplication Bag Media for Grade IV Elementary School Students.

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Abstract

This study aims to improve mathematics learning outcomes through multiplication pocket media among fourth-grade students at SDN Katol Barat 1 Bangkalan. Employing Classroom Action Research (CAR) across two cycles, this research involved 24 fourth-grade students as subjects. Data collection methods included interviews, tests, observations, and documentation, which were analyzed using both quantitative and qualitative approaches. The findings reveal that the integration of multiplication pocket media significantly enhances student achievements. In the pre-cycle stage, only ***[***37.46%***]*** *of students achieved the learning mastery criteria (KKTP). Following the intervention, the student passing rate increased to* ***[***48.13***%]*** *in Cycle I, and further escalated to* ***[***74,58***%]*** *in Cycle II. Additionally, the concrete media boosts students' classroom engagement and enthusiasm. This study concludes that multiplication pocket media serves as an effective instructional tool to optimize elementary mathematics learning outcomes.*

Keywords: *Elementary Mathematics, Learning Media, Multiplication Learning, Multiplication Pocket Media, Learning Outcomes.*

1. Introduction

Education is a crucial process in shaping students' thinking skills, attitudes, and skills. At the elementary school level, the learning process serves as the primary foundation for the development of students' intellectual abilities, particularly in understanding basic concepts that will be used at subsequent levels of education (Matematika et al., 2024). Therefore, learning in elementary schools is not only oriented towards mastering the material but also on how students can understand concepts meaningfully. In this process, teachers play a crucial role in creating active and engaging learning that is appropriate to the developmental characteristics of elementary school students who are still in the concrete operational stage (Ulya et al., 2024).

Elementary school mathematics education requires concrete learning media to bridge the gap between abstract mathematical concepts and students' cognitive development. The integration of mathematical manipulatives into classroom practice plays a crucial role in fostering conceptual understanding and building students' positive attitudes toward mathematics learning (Quane, 2025). By physically interacting with tangible tools, students can visualize abstract number operations, significantly minimizing verbalism and conceptual errors during the learning process (Quane, 2025).

Mathematics is a subject that plays a crucial role in developing logical, critical, and systematic thinking skills. It serves not only as a calculation tool but also as a foundation for practicing problem-solving skills in everyday life. However, in reality , mathematics is still often considered difficult by most elementary school students, especially multiplication (Koten & Zulhiyah, 2024). The abstract concept of multiplication makes it difficult for many students to understand the relationships between numbers concretely. As a result, students tend to memorize multiplication results without understanding the underlying concepts (Aliyah & Purwanto, 2022).

This problem was also found among fourth-grade students at SDN Katol Barat 1. Based on initial observations, it was found that students' mathematics learning outcomes in multiplication were still relatively low and had not met the

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Learning Objective Achievement Criteria (KKTP). Furthermore, student engagement in the learning process was also less than optimal (Nurdilianti et al., 2025). Some students appeared passive, lacked enthusiasm, and experienced difficulties when asked to solve multiplication problems independently. This condition indicates that the ongoing learning process has not fully helped students understand the concept of multiplication effectively (Hendri, 2023).

Low student learning outcomes are influenced by several factors, one of which is the use of conventional learning methods. The learning process is largely dominated by teacher explanations without the support of engaging and interactive learning media. (Moong et al., 2025)Monotonous learning quickly causes students to become bored and struggle to grasp abstract mathematical concepts. Furthermore, differences in ability between students also pose a challenge in the learning process. Some students are able to grasp multiplication concepts well, while others still struggle with basic concepts. This situation indicates that classical learning is unable to accommodate the diverse learning needs of students (Amalia et al., 2025).

The lack of use of learning media also impacts students' low retention of the material they have learned. Many students quickly forget multiplication, requiring teachers to repeat the explanation in the next meeting. This occurs because learning emphasizes memorizing numbers and symbols without involving concrete learning experiences. Elementary school students, at the concrete operational stage, need the help of real objects or manipulative media to more easily understand concepts. If learning only focuses on conveying formulas abstractly, students will have difficulty visualizing the concept of multiplication and tend to view mathematics as something difficult and boring (Istianah, 2025; Nopiana et al., 2026).

To address this issue, learning innovations are needed that can help students understand the concept of multiplication in a more concrete, engaging, and interactive way. One alternative learning medium that can be used is the Multiplication Pockets media. The Multiplication Pockets media is a manipulative learning medium designed to help students understand the concept

of multiplication through practical activities using real objects. With this medium, students can learn while actually practicing, making learning more active and enjoyable. The use of concrete learning media can also help increase students' attention, motivation, and memory of the material being studied (Sari, 2026; Simbolon & Hutagalung, 2024).

The use of instructional media in the teaching and learning process has a significant impact on learning success. According to Maulidina, Subrata, and Muhimmah (2023), instructional media can help students understand abstract mathematical concepts more concretely, making them easier for elementary school students to understand. Therefore, the implementation of the "Multiplication Bag" media is expected to improve the learning activities and mathematics learning outcomes of fourth-grade students at SDN Katol Barat 1, especially in multiplication.

Based on the description, this classroom action research was conducted to improve mathematics learning outcomes through the application of Multiplication Bag media to fourth grade students at SDN Katol Barat 1. This research is expected to contribute to creating a mathematics learning process that is more effective, interesting, and in accordance with the development of elementary school students (Rohdianti et al., 2025).

Initial observations at SDN Katol Barat 1 Bangkalan revealed that low mathematics learning outcomes were primarily due to several critical factors. Students conceptualized multiplication as mere memorization rather than understanding it as repeated addition. Furthermore, the abstract nature of the learning process and the lack of interactive tools left students disengaged and passive during lessons.

Although numerous studies have extensively investigated the use of multiplication pocket media in elementary education (e.g., Sukataman et al., 2022; Silvia et al., 2023; Simbolon & Hutagalung, 2024), classroom action research specifically examining its implementation in fourth-grade multiplication learning at SDN Katol Barat 1 Bangkalan, focusing on improving learning mastery and class participation, remains limited. Previous studies have largely

Indonesian Literacy. vol.6 no.3, Juli– Oktober 2026
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evaluated the media's general impact through quantitative experimental designs without addressing how reflective cycles of action research can systematically address local classroom passivity. This study fills this research gap by modifying the learning delivery and adapting concrete media specifically to the contextual needs and learning difficulties of fourth-grade students in this school.

Therefore, this study answers the fundamental research question: How can the systematic implementation of multiplication pocket media improve mathematics learning outcomes and classroom engagement in fourth-grade students at SDN Katol Barat 1 Bangkalan? Thus, this study aims to test the effective integration of multiplication pocket media through an action research cycle to optimize student achievement and learning mastery.

2. Method

A. Action Research Design

This study uses Classroom Action Research (CAR) to improve classroom learning processes and outcomes. The model used is the Kemmis and McTaggart model, which consists of four stages in each cycle:

1. planning
2. implementation of actions (acting),
3. observation, and
4. reflection (reflecting).

This research was planned in two cycles, where each cycle was carried out to see the improvement in student learning outcomes after the application of multiplication bag media.

B. Research Time

This research was conducted in the even semester of the 2025/2026 academic year. The research implementation period was planned for approximately one month, covering the preparation stage, implementation of actions (cycles I and II), and evaluation of research results.

C. Description of Research Location

This research was conducted at SDN Katol Barat, precisely in Badung, Katol Bar., Geger District, Bangkalan Regency, East Java 69152. This school was chosen because based on the results of observations, problems were found in mathematics learning, especially in multiplication material, namely low student learning outcomes and the lack of use of innovative learning media .

D. Subjects and Their Characteristics

The subjects of this classroom action research were 24 fourth-grade students at SDN Katol Barat 1 Bangkalan. The participants comprised 16 boys and 8 girls. Professionally observed during the initial pre-cycle phase, students demonstrated diverse academic abilities, with major challenges in understanding multiplication concepts, leading to low initial learning outcomes and minimal classroom engagement.

The characteristics of students in this study are:

- Have heterogeneous (diverse) abilities
- Some students still have difficulty understanding the concept of multiplication.
- Student learning activities are still low
- Motivation to learn mathematics is still lacking

E. Action Scenario

research was conducted through several systematic stages in each cycle, with reference to the Kemmis and McTaggart model, namely as follows:

1. **Planning**

   Researchers develop a learning plan by identifying problems, preparing lesson plans, multiplication media, and observation and evaluation instruments. This stage aims to ensure that learning is directed (Antari et al., 2023).

2. **The tutor**

   Teaches mathematics using multiplication bags. Students are actively

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engaged in understanding the concept of multiplication through practical activities using these media (Faujiah & Nurafni, 2022; Risqi & Siregar, 2023).

3. **Observation**

   Researchers observed student activities during learning, such as student activity, engagement, and responses when using media.

4. **Evaluation**

   After the learning process, a test is conducted to determine students' understanding of the multiplication material and to see improvements in learning outcomes (Risqi & Siregar, 2023).

5. **Reflection:**

   Researchers analyze learning outcomes to identify deficiencies and determine improvements in the next cycle (Mailani & Hareza, 2023).

F. Data Collection Techniques and Instruments

techniques and instruments used in this study include interviews, pretests and posttests, observations, and documentation. The explanations are as follows:

1. **Interview**

   Interviews are a data collection technique conducted through direct question-and-answer sessions between researchers and respondents. In this study, interviews were used to obtain information regarding learning conditions, student difficulties, and obstacles faced by teachers in teaching mathematics (Sabela et al., 2025).

2. **Pre-test and Final Test**

   Pre-tests and post-tests are data collection techniques administered before and after learning activities. Pre-tests aim to determine students' initial abilities, while post-tests are used to measure improvements in learning outcomes after implementing the multiplication bag method (Adha et al., 2024).

3. **Observation**

   Observation is a data collection technique that involves direct observation of activities occurring during the learning process. In this study, observation was used to assess student activity, engagement in media use, and progress in the classroom learning process (Andani, 2025).

4. **Documentation**

   Documentation is a data collection technique that involves gathering written and visual evidence, such as photographs, score lists, and activity records. This technique is used to supplement research data and strengthen the results obtained (Andani, 2025; Elfiza, 2025).

Data collection relied heavily on formative learning outcome tests to measure student achievement. The test instrument consisted of a total of (15) items, specifically structured into (10) multiple-choice questions and 5 short-answer questions. This evaluation was designed based on learning objectives (TP) and specific indicators, which included: (1) the ability to calculate basic multiplication operations up to 100, (2) the ability to solve contextual word problems involving repeated addition, and (3) the ability to analyze multiplication concepts through concrete visual representations. To ensure the quality of structure and content, the test instrument underwent rigorous face and content validity checks by experts, including fourth-grade homeroom teachers and peer researchers, who confirmed its alignment with the basic elementary school curriculum.

G. Action Success Criteria

The success of the action in this study was determined based on the improvement of students' mathematics learning outcomes in multiplication after the application of the multiplication bag media. Assessment was carried out individually and in class. Individually, students were declared successful if they obtained a minimum score according to the established learning objective achievement criteria (KKTP), namely ≥ 70. This

Indonesian Literacy. vol.6 no.3, Juli– Oktober 2026
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minimum criterion was justified based on the official Learning Objective Achievement Criteria (KKTP) set by the school administration for the fourth grade mathematics curriculum. The determination of this threshold integrated three fundamental aspects of educational acceptance analysis: (1) students' initial conditions, by considering students' previous academic achievements, (2) complexity, by assessing the cognitive demands of multiplication concepts at the fourth grade elementary school level, and (3) daily capacity, by evaluating school facilities and learning media used in the classroom .

H. Data Analysis Techniques

technique in this study uses quantitative and qualitative descriptive analysis.

1. Quantitative Data Analysis

   Quantitative data analysis was used to process student learning outcomes data obtained from pretests and posttests. The data was analyzed by calculating average scores and percentage completion rates to determine improvements in student learning outcomes in each cycle (Sukataman et al., 2022).

2. Qualitative Data Analysis

   Qualitative data analysis in this study refers to the Miles and Huberman model which includes three stages, namely:

   a. Data Reduction

      Data reduction is done by selecting, simplifying, and focusing observation data that is relevant to the research.

   b. Data Presentation

      Data presentation is done in descriptive form to make it easier for researchers to understand the learning conditions that occur.

   c. Conclusions Drawn

      Conclusions are drawn based on the results of data analysis to determine whether there is an increase in learning outcomes and changes in student activities during the learning process.

3. Results and Discussion

A. Results

This study aims to improve students' mathematics learning outcomes in multiplication through the implementation of multiplication bags. This study was designed as a classroom action research (CAR) conducted in stages through several cycles until predetermined success indicators were achieved. Prior to the implementation of the action, students were given a pre-cycle test to determine their initial understanding of the multiplication concept. This test also aimed to identify difficulties experienced by students during the learning process (Silvia et al., 2023).

The action was carried out in two cycles, each consisting of planning, implementation, observation, data analysis, and reflection. The results of each cycle are described below.

1. Pre-cycle

Based on the results of the initial test that has been conducted, it was found that most students have not achieved the minimum completion criteria (KKM) that has been determined, namely ≥ 70. This shows that students' understanding of multiplication material is still relatively low and needs to be improved in the learning process.

NO	NAME	L/P	SIGN	Percentage Value	Information
1.	Student A	L	29	29%	Not completed
2.	Student B	L	36	36%	Not completed
3.	Student C	L	43	43%	Not completed
4.	Student D	L	15	15%	Not completed
5.	Student E	P	75	75%	Finished
6.	Student F	L	18	18%	Not completed
7.	Student G	L	45	45%	Not completed
8.	Student H	L	30	30%	Not completed
9.	Student I	P	33	33%	Not completed
10.	Student J	P	29	29%	Not completed
11	Student K	P	32	32%	Not completed
12.	Student L	L	32	32%	Not completed
13.	Student M	P	70	70%	Finished
14.	Student N	L	44	44%	Not completed
15.	Student O	L	25	25%	Not completed
16.	Student P	L	18	18%	Not completed
17.	Student	P	39	39%	Not completed

Indonesian Literacy. vol.6 no.3, Juli– Oktober 2026
ISSN 2746-8208 (Online) and ISSN 2746-3575 (Print)

	questions				
18.	Student R	L	36	36%	Not completed
19.	Student S	L	39	39%	Not completed
20.	Student T	L	70	70%	Finished
21.	Students U	P	70	70%	Finished
22.	Student V	L	32	32%	Not completed
23.	Student W	L	37	37%	Not completed
24.	Student X	P	25	25%	Not completed
Amount			899		
Average			37.46		

B

Table 3.1 Tin **Table 3.1 Level** of Completion of Student Learning Outcomes in the Pre-cycle

Based on the table above, it can be seen that student learning outcomes in the pre-cycle stage are still relatively low. Of the 24 students, only 4 students (16.67%) have achieved learning completion, while the other 20 students (83.33%) have not met the minimum completion criteria (KKM ≥ 70). The lowest score obtained by students is 15, while the highest score is 75, with a class average of 37.46 . This shows that most students still have difficulty in understanding multiplication material (Ruda et al., 2023).

These low learning outcomes are caused by several factors, including the lack of use of engaging learning media, conventional teaching methods, and low student engagement in the learning process. Based on these conditions, it can be concluded that students' ability to understand multiplication is still suboptimal. Therefore, improvements are needed through the application of more concrete and interactive learning media, namely multiplication bags (Ruda et al., 2023).

2. Cycle 1

a. Planning stage

At this stage, the researchers developed a learning plan, prepared multiplication pocket media, and research instruments in the form of observation sheets and evaluation tests. The planning focuses on improving students' understanding of the concept of multiplication (Mainda et al., 2024).

b. Implementation stage

1) Initial Activities

The lesson begins with a greeting , prayer, introduction, and presentation of the learning objectives. The teacher also provides motivation to prepare students for the lesson.

2) Core activities

The teacher explains the concept of multiplication using multiplication bags. Students actively engage in practical activities using these bags to help them concretely understand the concept.

3) Closing Activities

Teachers and students conclude the learning material and give an evaluation test.

c. Observation stage

Observations show that some students are starting to become active and interested in learning. However, there are still students who don't understand how to use media optimally.

d . Data Analysis Stage

At the end of cycle I, the researcher gave an evaluation test to determine the progress of students' learning outcomes after implementing the multiplication bag media. Assessment is based on Minimum Completion Score (KKM) ≥ 70.

The results obtained can be seen in the following table.

NO	NAME	L/P	SIGN	Percentage Value	Information
1.	Student A	L	40	40%	Not completed
2.	Student B	L	50	50%	Not completed
3.	Student C	L	70	70%	Finished
4.	Student D	L	30	30%	Not completed
5.	Student E	P	85	85%	Finished
6.	Student F	L	30	30%	Not completed
7.	Student G	L	60	60%	Not completed
8.	Student H	L	50	50%	Not completed
9.	Student I	P	50	50%	Not completed
10.	Student J	P	35	35%	Not completed
11	Student K	P	45	45%	Not completed
12.	Student L	L	45	45%	Not completed

Indonesian Literacy. vol.6 no.3, Juli– Oktober 2026
ISSN 2746-8208 (Online) and ISSN 2746-3575 (Print)

13.	Student M	P	80	80%	Finished
14.	Student N	L	55	55%	Not completed
15.	Student O	L	50	50%	Not completed
16.	Student P	L	20	20%	Not completed
17.	Student Q	P	60	60%	Not completed
18.	Student R	L	55	55%	Not completed
19.	Student S	L	50	50%	Not completed
20.	Student T	L	80	80%	Finished
21.	Student U	P	85	85%	Finished
22.	Student V	L	40	40%	Not completed
23.	Student W	L	45	45%	Not completed
24.	Student X	P	35	35%	Not completed
	Amount		**1,155**		
	Average		**48.13**		

Table 3.2 Level of Completion of Student Learning Outcomes in Cycle I

Based on the data, it is known that 5 students (20.83 %) successfully completed their education, while 19 students (79.17%) did not. The lowest score obtained by students was 30, while the highest score was 85. These results show an increase compared to the previous cycle, but it is not yet significant.

e. Reflection stage

The results of cycle I showed that learning was not optimal. Some students still struggled to understand the material. Therefore, improvements are needed in cycle II, particularly in clarifying the delivery of the material and improving student guidance.

3. Cycle 2

a. Planning Stage

At this stage, the researcher made improvements based on the results of reflection in cycle I, such as increasing student interaction and clarifying the use of multiplication bag media.

b. Implementation Stage

a. Initial Activities

The teacher starts the lesson with understanding and motivation.

b. Core Activities

Learning is conducted using multiplication bags in a more focused manner. Students are more active in practice and discussions.

c. Closing Activities

The teacher concludes the material and provides an evaluation.

c. Observation stage

Observations show increased student engagement. Students are more enthusiastic and better able to understand the material.

d. Data Analysis Stage

At the end of cycle II, the researcher administered another evaluation test to determine improvements in student learning outcomes following corrective actions. The assessment was conducted using a Minimum Competency Score (KKM) of ≥ 70.

The results obtained can be seen in the following table:

NO	NAME	L/P	SIGN	Percentage Value	Information
1.	Student A	L	70	70%	Finished
2.	Student B	L	85	85%	Finished
3.	Student C	L	80	80%	Finished
4.	Student D	L	65	65%	Not completed
5.	Student E	P	100	100%	Finished
6.	Student F	L	65	65%	Not completed
7.	Student G	L	75	75%	Finished
8.	Student H	L	70	70%	Finished
9.	Student I	P	80	80%	Finished
10.	Student J	P	65	65%	Not completed
11	Student K	P	60	60%	Not completed
12.	Student L	L	65	65%	Not completed
13.	Student M	P	100	100%	Finished
14.	Student N	L	70	70%	Finished
15.	Student O	L	70	70%	Finished
16.	Student P	L	50	50%	Not completed
17.	Student Q	P	85	85%	Finished
18.	Student R	L	80	80%	Finished
19.	Student S	L	70	70%	Finished
20.	Student T	L	95	95%	Finished
21.	Students U	P	100	100%	Finished
22.	Student V	L	80	80%	Finished
23.	Student W	L	70	70%	Finished
24.	Student X	P	60	60%	Not completed
	Amount		**1,790**		
	Average		74.58		

Table 3.3 Level of Completion of Student Learning Outcomes in Cycle II

Indonesian Literacy. vol.6 no.3, Juli– Oktober 2026
ISSN 2746-8208 (Online) and ISSN 2746-3575 (Print)

Based on the table of student learning outcomes in cycle II above, there is a significant increase compared to the previous cycle. Of the 24 students, 17 students (70.83%) have achieved learning completion, while 7 students (29.17%) have not reached the minimum completion criteria (KKM ≥ 70). The scores obtained by students show quite good improvement, with the lowest score being 50 and the highest score reaching 100. In addition, the class average also increased to 74.58, which indicates that in general students' understanding of the multiplication material is better than in cycle I.

These improvements demonstrate that the implementation of the multiplication pockets has had a positive impact on student learning outcomes. Students found it easier to grasp multiplication concepts because the learning was conducted in a concrete manner and involved hands-on practice. Therefore, it can be concluded that the actions taken in Cycle II have shown quite optimal results, although some students have yet to achieve individual learning mastery.

e. Reflection Stage

Based on the results of the implementation of actions in Cycle II, there was a significant improvement in student learning outcomes. This was demonstrated by the increase in the number of students who completed the learning process to 17 (70.83%), as well as an increase in the class average score to 74.58.

In addition to improving learning outcomes, student activity and involvement in the learning process also experienced better development compared to cycle I. Students appeared more enthusiastic in using multiplication bag media and were more courageous in answering questions and expressing opinions.

However, there were still 7 students (29.17%) who had not completed the learning process. This indicates that further attention and guidance are needed for students who are having difficulty understanding the material. Based on an in-depth analysis of the test results at the end of Cycle II, the most

frequent student errors were significantly minimized . In the pre-cycle and Cycle I stages, students often made procedural errors because they considered multiplication to be a dead memorization and experienced calculation failure when faced with operations on numbers above 5 or story problems . Through object manipulation in the multiplication bag media, students were able to visualize repeated addition so that these obstacles were reduced .

However, there were still 7 students (29.17%) who had not achieved individual classical mastery . The main factor causing these 7 students to not complete was not media failure, but rather intrinsic obstacles in the form of very low initial academic *intake characteristics* and indications of functional reading delays . This made it take them longer to understand the text stimulus and instructions in contextual story problems . Overall, the implementation of multiplication bags in mathematics learning has had a positive impact on improving student learning outcomes. Therefore, the actions taken in Cycle II can be said to have been successful in improving learning outcomes, although they have not yet achieved maximum classical mastery.

B. Discussion

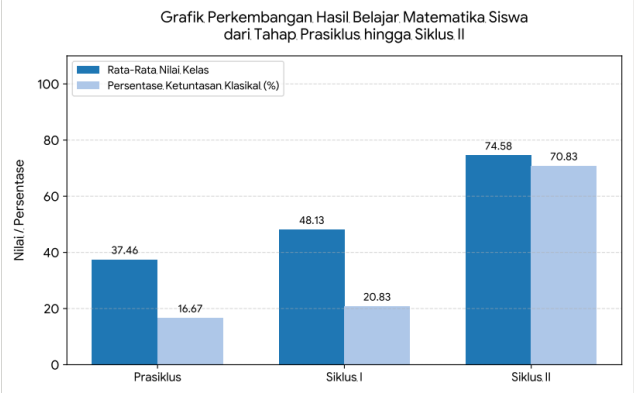

Figure 1. Bar Graph of the Increase in Average Class Scores and Percentage of Students' Classical Completion from the Pre-Cycle Stage to Cycle II

The research results show that the implementation of multiplication bags has a positive impact on the mathematics learning outcomes of fourth-grade students at SDN Katol Barat. This improvement is clearly visible in the comparison of learning outcomes in the pre-cycle, cycle I, and cycle II, which show gradual improvement.

Indonesian Literacy. vol.6 no.3, Juli– Oktober 2026
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In the pre-cycle stage, student learning outcomes were still low, with an average score of 37.46 and a completion rate of only 16.67%. This aligns with the theory that abstract mathematics learning without media support will make it difficult for students to grasp concepts, especially at the concrete operational stage. This situation also strengthens the theoretical study's argument that elementary school students need concrete media to understand mathematical concepts.

After implementing the multiplication bag media in cycle I, the average score increased to 48.13, with a completion rate of 20.83%. While this increase is not significant, it indicates a positive change. However, these results also indicate that the media's use is not optimal. In accordance with learning theory, the use of media must be accompanied by effective guidance so that students truly understand the concept, not just simply use the tool.

In cycle II, learning outcomes improved significantly, with an average score of 74.58 and a completion rate of 70.83%. This improvement indicates that the multiplication bag media is effective in helping students understand the concept of multiplication as repeated addition. This aligns with Marlina's (2025) opinion, which states that manipulative media can improve conceptual understanding through direct experience.

Furthermore, increased student engagement during learning supports Sari and Wijaya's (2022) theory that learning media can increase student motivation and engagement. Students become more enthusiastic, active, and confident in participating.

Theoretically, the effectiveness of this multiplication bag media is in line with the findings of Sukataman et al. (2022) and Silvia et al. (2023) who stated that concrete visualization can break the chain of verbalism in basic mathematics . However, the difference and new contribution of this study lies in the context of action modification . While previous studies (such as Sukataman et al., 2022) focused more on improving purely cognitive values in lower grades, this study at SDN Katol Barat 1 Bangkalan proves that the deliberate use of multiplication bags in fourth grade can solve the problem of social interaction passivity and increase class participation as a class .

Although the final classical completion rate was at 70.83 % , which is generally below the ideal CAR standard (usually > 75% or > 80%), the claim of success in this study remains valid. Considering the very passive initial condition of the class with a pre-cycle completion of only 16.67 % , the surge in academic performance and changes in learning behavior achieved up to Cycle II already represent a very significant optimization of learning.

Therefore, the results of this study are in line with various theoretical studies and relevant research discussed in Chapter II. Overall, the application of multiplication bag media has been proven to be able to:

1. To concretize the abstract concept of multiplication.
2. Increase student learning activities and motivation
3. Improve learning outcomes gradually

C. Research Findings

Based on the results of the research that has been conducted, several findings were obtained as follows:

1. Multiplication bag media is effective in improving conceptual understanding. Students find it easier to understand the concept of multiplication because it is done through direct activities, not just memorization.
2. There is a gradual improvement in learning outcomes.
   From pre-cycle to cycle II, the average value and completion of student learning experienced a significant increase.
3. Increase student activity and participation
   Students become more active in learning, such as daring to ask questions, answer questions, and be involved in using media.
4. Concrete media helps students with low abilities
   Students who previously had difficulty began to show improvement as they were helped by real visualizations.
5. Learning becomes more interesting and not boring
   The use of media makes the learning atmosphere more enjoyable, thereby increasing student motivation.

Indonesian Literacy. vol.6 no.3, Juli– Oktober 2026
ISSN 2746-8208 (Online) and ISSN 2746-3575 (Print)

6. The indicator of the ability to calculate basic multiplication results and relate them to concrete visual representations is the aspect of student ability that experienced the highest increase during the action cycle .

D. Research Limitations

This study has several limitations related to methodological aspects, namely as follows:

1. Limitations on action design

   This study only used two cycles, so it cannot describe long-term improvements in learning outcomes.

2. Limitations of research instruments

   Limitations of the research instrument: The test instrument used in this study has undergone rigorous content and face validity testing with experts and fellow teachers, but the focus of the measurement is still dominated by cognitive aspects, so that the affective and psychomotor domains of students have not been explored separately but are only monitored through classroom activity observation sheets .

3. Limitations in controlling variables

   In classroom action research, it is difficult to control all variables that influence learning outcomes, such as students' psychological conditions and the learning environment.

4. Limitations in generalizing the results

   The results of this study only apply to the context of the class studied, so care must be taken in generalizing them to different conditions .

5. Limitations of media implementation

   The effectiveness of media is highly dependent on the teacher's skills in managing learning, so the results can be different if applied by other teachers with different approaches.

4. Conclusion

Based on the research results, it can be concluded that student learning outcomes in mathematics before the implementation of the multiplication

bags media were still relatively low and had not yet reached the criteria for achieving learning objectives. After the implementation of the multiplication bags media, student learning outcomes gradually improved in each cycle. The use of this media helped students understand the concept of multiplication more concretely, thus making learning more effective than before .

Furthermore, the use of multiplication bags has a positive impact on student learning. Students become more active, enthusiastic, and engaged in the learning process. Therefore, implementing multiplication bags can be an effective solution for improving student mathematics learning outcomes, particularly in multiplication in elementary school.

The results of this study provide important implications for elementary school mathematics teachers, particularly in expanding their role from mere transmitters of material to facilitators who bridge the transition of students' cognitive thinking from the concrete to the abstract. Teachers can no longer rely on rote memorization (verbalism) to instill multiplication concepts in fourth graders; instead, they must actively design manipulative learning environments.

Therefore, it is strongly recommended for education practitioners to integrate the use of concrete media such as multiplication bags in basic mathematics learning. The use of this media has proven effective in breaking the chain of misconceptions in counting, reducing the number of procedural errors made by students, and at the same time stimulating interactive classical participation in small classes.

For future research, it is recommended to expand the scope of the study beyond the cognitive domain of learning outcomes, but also to explore the influence of this concrete media on students' mathematics anxiety *or* problem *-solving abilities* . Furthermore, future researchers can also test the effectiveness of this media on a larger class scale or combine it with game-based digital tools (*gamification*) to optimize full learning outcomes.

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