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The Application of Visual Media in Mathematics Learning to Improve Students' Understanding of Arithmetic Operations Grade 3 of MIS Al Yazier, North Rawajitu

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Abstract

The purpose of this study is to determine the application of image media in mathematics learning and improve the understanding of arithmetic operations in grade 3 students of MIS Al Yazier North Rawajitu. This study is a classroom action research consisting of 4 steps, namely planning, action, observation, and reflection. This research was conducted in grade 3 MIS Al Yazier in the 2024/2025 academic year located in North Rawajitu. Data were obtained through observation, interview, test and documentation techniques. The indicators of success in this study are understanding of arithmetic operations and achieving minimum completeness criteria. Based on the results of the study, it can be concluded that learning with image media can improve students' understanding of arithmetic operations as can be seen from the pre-survey data (46.43%) who completed, and after the test results at the end of cycle I that 20 students (71.43%) completed and 8 students (28.57%) had not completed with an average student learning outcome of 71.61. After the second cycle, there was an increase to 25 students (89.29%) completing the task and only 3 students (10.71%) not completing it with an average learning outcome of 78.04. Thus, the picture media was successful in improving students' understanding of arithmetic operations.

INTRODUCTION

According to Kurniati et al., in Putra, Mahmudah, and Laili, learning outcomes are a measure of students' achievement in understanding and mastering learning material. Education is so important that a learning model is needed to achieve optimal learning objectives. The selection of an appropriate learning model must take into account the students' conditions, characteristics, materials, available facilities or media, and the educator's condition. (Putra et al., 2024)

Learning media is anything that can be used to convey messages from the sender to the recipient, thereby stimulating students' thoughts, feelings, attention, and interest in learning. Among the mathematics learning media are learning using visual aids such as smart trees, snakes and ladders, comics, digital learning media such as computers, internet-based learning media such as blogs, game-based fun games such as PO games, e-learning,

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virtual learning, and augmented learning. (Pulungan & Rakhmawati, 2022) Using media during learning can foster interest and motivation, improve the quality of education, and facilitate the delivery of information. Learning media has been proven to improve learning outcomes and enhance student achievement. (Safitri & Koeswanti, 2021)

Learning media is a learning tool that serves as a learning resource that conveys messages in the form of material to students. Therefore, learning media is considered a means of communication between teachers and students. If a teacher uses learning media in the learning process, it will help develop students' cognitive, psychomotor, and affective skills. Learning media can help students solve problems they face. (Lestari et al., 2024)

The use of visual media in mathematics learning is a component of the teaching method, an effort to enable a learning process that combines facts and ideas to explain mathematical material. In mathematics, visual media functions to facilitate the learning process based on the belief that learning with the aid of visual media can improve student learning outcomes and achieve mathematics learning objectives. (Amir, 2016)

Rahmawati and Abdullah explained in their research that improvements in student learning outcomes during the learning process using visual media can be seen in the results of student learning tests over two cycles. Learning outcomes improved in accordance with the established classical learning success indicators, namely ≥ 80%, and individually achieved the specified Learning Completion Criteria (KKM) of ≥ 66. (Rahmawati & Abdullah, 2019)

Understanding of arithmetic operations is the ability to perform calculations using addition, subtraction, multiplication, and division. Understanding of arithmetic operations is a student's ability to break down a problem and find a solution, and to solve real-world problems based on its relationship to mathematical concepts. (Kumalasari et al., 2023)

Silalahi and Wandini also explained that phenomena in basic mathematics learning indicate a tendency for teachers to use media less than optimally. Teachers can at least use inexpensive and efficient tools, even though simple, are essential to achieving the desired teaching objectives. (Silalahi & Wandini, 2023)

Research by Muhamad Yusup Kurniansyah et al., explains that children's learning motivation increases after using visual media in learning. Beautiful, attractive, and colorful images will engage and motivate children, fostering enthusiasm for learning, especially in mathematics, thus increasing their motivation to learn mathematics. (Kurniansyah et al., 2024)

Based on preliminary survey data conducted by researchers at MIS Al Yazier, North Rawajitu, many students still experience difficulty solving problems with pictures. Based on the preliminary survey data on mathematics scores for arithmetic operations, it can be seen that of the total 24 third-grade students, only 9 students achieved the Minimum Competency (KKM), or 37.5%. Meanwhile, 15 students, or 62.5%, failed to achieve the KKM. (Results of the Daily Mathematics Test for Grade 3, MIS Al Yazier, North Rawajitu, 2024)

However, during the learning process, some students inevitably paid less attention to the teacher's explanations. After the material was presented, when the teacher asked questions about the material or asked them to ask questions, the students remained silent. This was because they were simply playing by themselves while the teacher was explaining and not paying attention. Furthermore, students lacked time management skills, both during study and playtime. They perceived mathematics as a confusing and difficult subject to understand. (Initial Survey of 3rd Grade Students at MIS Al Yazier, North Rawajitu, October 13, 2024)

To address this problem, researchers considered the use of visual media in mathematics learning. This is because visual media can provide a stimulus response, increasing students' interest in learning. Through visuals, abstract material can be made concrete. Furthermore, researchers also recognized the need to provide students with an understanding of arithmetic operations. This is crucial because understanding the basics of arithmetic operations in elementary school can develop stronger mathematical reasoning skills in secondary school, as they master the basics of arithmetic operations in elementary school.

The purpose of this study was to determine the application of visual media in mathematics learning and to improve the understanding of arithmetic operations in 3rd grade students at MIS Al Yazier, North Rawajitu.

METHOD

The research used by the researcher is classroom action research (action research). The purpose of CAR is to make changes in all students as research subjects and changes in the situation where the research is conducted in order to achieve continuous improvement in practice. This research was conducted at MIS Al Yazier from November to March 2025. The subjects in this study were 28 students. The research was conducted in two cycles,

each cycle consisting of several stages: planning, implementation, observation and reflection. In collecting the necessary data, the researcher used several techniques, namely observation, tests, interviews and documentation. Observations were used to obtain data such as student learning activities in class, the practice of applying image media during learning activities. Tests were used to determine students' understanding of arithmetic operations. So every evaluation is held at the end of the cycle, it will be seen how the students' understanding of arithmetic operations has improved through this technique. The test used was in the form of 10 questions. Interviews were conducted not only with students but also with the principal and the teachers to ask about the brief historical data of the establishment of MIS Al Yazier Rawajitu Utara as well as the conditions of student activity in the teaching and learning process and the condition of the teaching and learning facilities. Documentation is used to obtain data on the results of students' understanding of arithmetic operations, organizational structures, teacher and student data, and photo documentation.

FINDINGS AND DISCUSSION

1. Cycle I

The implementation of actions in cycle I is divided into four stages: action planning, action implementation, observation, and reflection. Each stage in this research will be explained in more detail as follows:

a. Action Planning

The stages in planning this classroom action include; 1) Determining the research class, 2) Determining the concept/main material, 3) Learning scenarios, 4) Preparing the syllabus and learning implementation plan, 5) Preparing worksheets to be given to students, 6) Preparing the evaluation (learning test results).

b. Implementation of Actions

Learning in cycle I was carried out on February 24, 2025 for 2 lesson hours (2 x 35 minutes) with the topic of arithmetic operations. The steps of class actions in cycle I are as follows: 1) Greetings and prayers before starting learning, 2) The teacher takes attendance, 3) Starts the meeting by conducting apperception, 4) Delivering basic competencies and achievement indicators, 5) Explaining the lesson material in general, 6) Dividing students to be able to pair up randomly. In this case, male students may pair up with female students, 7) Distribute discourse/material to students to read and

summarize, 8) Determine the first student and act as reader and who acts as listener, 9) The speaker reads the results of his work as completely as possible, 10) The listener listens/corrects/points out incomplete answers and ideas, 11) The listener helps remember/memorize the main ideas by connecting with previous material, 12) Each group exchanges roles, initially as readers, then becomes listeners and vice versa, 13) The teacher clarifies and concludes, 14) Provides evaluation/practice tests, 15) The teacher closes the lesson.

Picture 2.1

The Process of Implementing Image Media in Mathematics Learning

c. Observation

The results of observations in cycle I are as follows:

1). Observation Sheet for Students' Understanding of Arithmetic Operations

In the first cycle, student learning outcomes were already evident: 48.3% paid attention to teacher explanations, 49.1% made summaries and read aloud to partners, 46.4% listened and listened to partner summaries, 46.4% answered questions, 45.5% worked on problems, and 59.8% interacted within groups.

The observation sheet for students' understanding of arithmetic operations revealed that some students were enthusiastic about the learning process, but overall, their understanding of arithmetic operations had not yet reached its maximum potential. This was because only a few students actively participated in the learning process.

After conducting classroom action in the first cycle using visual media and conducting an evaluation, data showed that students' understanding of arithmetic operations in the first cycle was better than the pre-survey results before the action. The class average was 71.61, with 71.43% (20 students) achieving learning completion, and only 28.57% (8 students) had not yet achieved completion.

Although the average understanding of arithmetic operations of students has reached the minimum completeness criteria (KKM) standard of 70, the classical

completeness that has been determined in the success indicators has not been achieved. Where it is expected that 80% of students get a score > 70. Based on these results, reflection is needed to improve students' understanding of arithmetic operations in cycle I.

d. Reflection

With the end of cycle I, then in this reflection I, there were still shortcomings that occurred in cycle I. The shortcomings in cycle I were as follows; 1) In class control when the teacher explained, students paid less attention so that students were still noisy, 2) Students were still less interested in making summaries and listening to their partners in reading summaries, 3) Students were not very able to answer questions from the teacher, correctly, firmly, and in accordance with the material, 4) The teacher in providing motivation and apperception was lacking so that not many students understood or had difficulty in understanding what the teacher had conveyed, 5) Students had not fully worked in groups because their individual sense was still high.

Based on the reflection of cycle I, the actions or solutions that the teacher will take in cycle II are; 1) When explaining, the teacher should pay more attention to noisy students so that students can listen to what the teacher is saying. 2) Teachers monitor students' difficulties in understanding the lesson, 3) Teachers direct and reprimand students who are not serious, 4) Teachers must provide detailed explanations of the material so that students ask questions properly and correctly, 5) Teachers must direct and motivate so that children are enthusiastic about participating in learning, 6) Teachers must interact with students so that they can work together with their groups.

2. Cycle II

a. Action Planning

At this stage, the activities carried out by the researcher are; 1) Making a learning plan using image media, 2) Preparing teaching materials and tools needed during learning activities, 3) Making practice question sheets according to the lesson material, 4) Making observation sheets.

b. Implementation of actions

The second cycle was carried out for 2 lesson hours (2 x 35 minutes). The basic competency was "Arithmetic operations." using picture media. In this second cycle, the teacher began the learning activities with an introduction by conveying the learning

objectives and motivating students to improve their learning. The implementation of the research in this stage in brief was; 1) The teacher opened the lesson, organized the class and gave apperception, 2) Presented the material, 3) The teacher divided the students into pairs, 4) Each pair of groups carried out their respective tasks with direction from the teacher, 5) The teacher conducted a question and answer session with students, 6) Students were given practice questions, 7) The teacher closed the lesson.

c. Observation

Observations were conducted similarly to those in Cycle I, conducted by the observer. The observation phase in Cycle II was conducted concurrently with the implementation of the action. Based on these observations, the researcher will make decisions about further action. The observation sheet for the researcher's activities in Cycle II can be seen in the following table:

1). Observation Sheet for Students' Understanding of Arithmetic Operations

In the second cycle, students' understanding of arithmetic operations increased by 80.4%, including paying attention to teacher explanations, summarizing and reading to a partner (79.5%), listening and attending to the results of the partner's summary (76.8%), answering questions (73.2%), working on problems (74.1%), and interacting in groups (86.6%). Observations from cycle I to cycle II revealed significant improvements in student learning outcomes.

After conducting classroom action in cycle II using visual media and conducting evaluations, data showed an increase in students' understanding of arithmetic operations in cycle II compared to cycle I. The average class score was 78.04, with 89.29% (25 students) achieving learning completion, with only 10.71% (3 students) remaining incomplete.

Based on the learning completion percentage, it can be seen that cycle II achieved learning completion, as 89.29% of the students achieved scores above the minimum required completion. Thus, it can be said that image media is able to improve students' understanding of arithmetic operations.

d. Reflection

The results of the second cycle of research indicated that the learning activities using visual media were significantly better than those in the first cycle. This was evident in the significant improvement in the planning and implementation stages of the lesson

by the teacher. Students' learning activities and understanding of arithmetic operations also improved significantly and met the established success indicators.

For three students whose understanding of arithmetic operations was incomplete, the researcher assigned the class teacher to conduct remedial work. This was due to time constraints in the classroom action research conducted by the author at MIS Al Yazier, North Rawajitu. Therefore, the reflection on the second cycle concluded that:

Students were more active in learning activities, particularly in following and paying attention to teacher explanations, completing assignments, working collaboratively in pairs with other students, asking and answering questions from the teacher. There were no longer passive students who simply came, sat, and listened in class. Students had the courage to ask questions during the lesson. Students understood and enjoyed mathematics better when using visual media. Teachers were better able to manage the class and deliver lessons that engaged students' interest.

B. Discussion of Research Results

1. Observation of Students' Understanding of Arithmetic Operations

Observation data on students' understanding of arithmetic operations during the learning process using image media in Cycle I and Cycle II are as follows:

Table 01

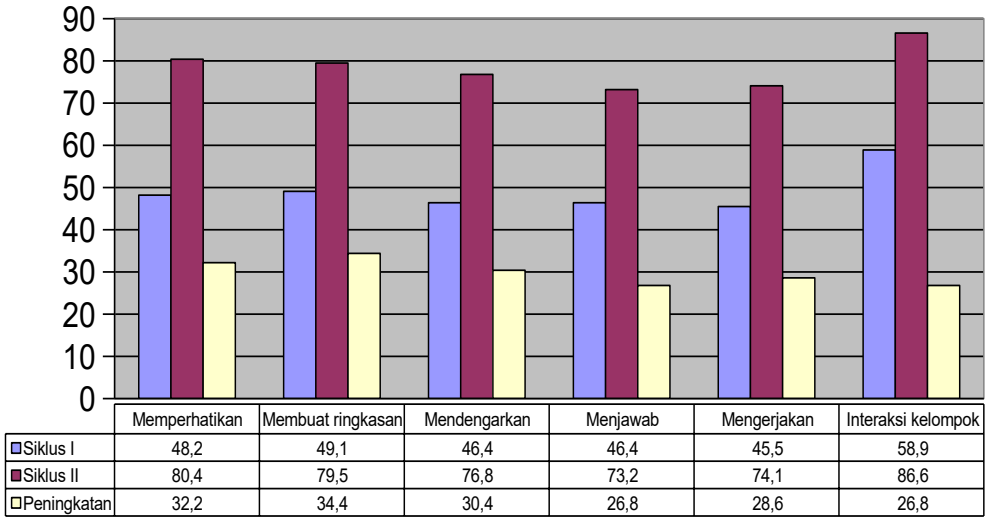
Observation Data on Students' Understanding of Arithmetic Operations during the Learning Process in Cycles I and II

No	Students' understanding of arithmetic operations	Meeting		Improvement
		Cycle I	Ciycle II	
1.	Pay attention to the teacher's explanation	48,2%	80,4%	32,2%
2.	Make a summary and read it to your partner	49,1%	79,5%	34,4%
3.	Listen and pay attention to the results of the partner's summary	46,4%	76,8%	30,4%
4.	Ability to answer questions	46,4%	73,2%	26,8%
5.	Ability to work on questions	45,5%	74,1%	28,6%
6.	Interaction in groups	59,8%	86,6%	26,8%

Amount	**295,5%**	**470,5%**	**179,2%**
Average	**49,3 %**	**78,4%**	**29,9%**

Graph 01

Results of students' understanding of arithmetic operations in Cycle I and Cycle II



	Memperhatikan	Membuat ringkasan	Mendengarkan	Menjawab	Mengerjakan	Interaksi kelompok
Siklus I	48,2	49,1	46,4	46,4	45,5	58,9
Siklus II	80,4	79,5	76,8	73,2	74,1	86,6
Peningkatan	32,2	34,4	30,4	26,8	28,6	26,8

From the results above, it can be seen that learning using image media can increase students' learning activities. There are significant changes between cycle II and cycle I. Students are more active and diligent in participating in learning activities in class and are interested in Mathematics subjects.

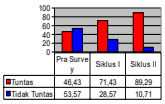
2. Students' Understanding of Arithmetic Operations

Data on students' understanding of arithmetic operations in the subject of mathematics, the topic of arithmetic operations, is as follows:

Graph. 4.2

Students' Understanding of Arithmetic Operations

from the Pre-Survey, Cycle I and Cycle II



When researchers conducted a pre-survey at MIS Al Yazier North Rawajitu, students' understanding of arithmetic operations in Mathematics was still low, with many students scoring below the established Minimum Completion Criteria (KKM) of 75. The pre-survey also revealed that this problem was due to students' boredom with the learning model or strategy used by teachers. Therefore, the researchers decided to conduct research in fifth-grade students using picture media. This learning method encourages students to be more creative, active, and effective, fosters discipline, and leads to greater success. Essentially, it creates an effective and enjoyable learning experience.

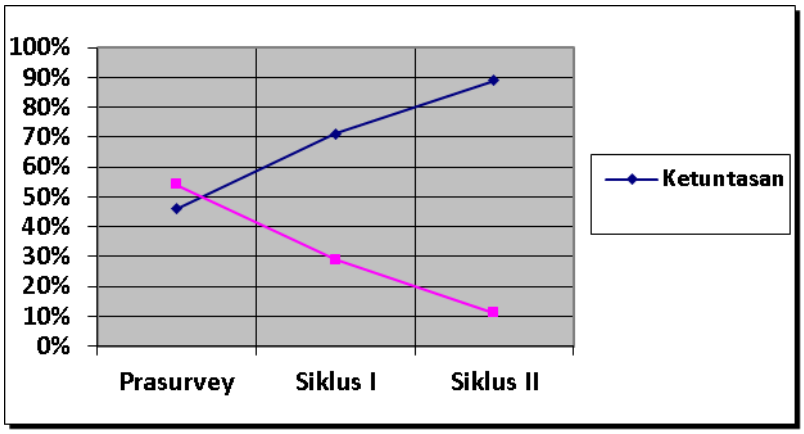
The first cycle was conducted in two 35-minute sessions. Activities included introducing picture media, explaining the learning steps and reinforcement, and providing an introduction to the subject matter on arithmetic operations.

The percentage of student learning completion in the pre-survey reached 46.43%. In the first cycle, 71.43% of students met the Minimum Completion Criteria, while 28.57% were incomplete. This is because there are still some students who pay less attention and still consider Mathematics subjects less important, so that students are less interested in asking questions when there is material they do not understand, and to improve learning in cycle I, researchers made efforts, namely by motivating and providing more basic explanations so that students can understand the subject matter easily, so that students dare to ask when students do not understand. In cycle II, the increase in student learning outcomes experienced a significant increase and was as expected. In cycle II, completeness reached 89.29%. Thus, it can be concluded that student understanding increased which had an impact on students' understanding of arithmetic operations also increased.

Graph. 4.3

Improving Students' Understanding of Arithmetic Operations

from the Pre-Survey - Cycle II



From the explanation above, it can be concluded that students have successfully grasped and accepted the material presented. The increasing learning outcomes in each cycle also increase the students' understanding of arithmetic operations. With this increase in students' understanding of arithmetic operations, the efforts made to improve students' understanding of arithmetic operations in Cycle I can be said to be successful and able to improve students' understanding of arithmetic operations in Cycle II.

This improvement in learning outcomes using image media also occurred in Rahmawati, M. Husni Abdullah's study entitled "The Use of Image Media to Improve Mathematics Learning Outcomes on the Theme of Self in Grade I Students of SDN Ketemasdungus Mojokerto." The results of the study indicate that the improvement in student learning outcomes during the learning process using image media can be seen in the results of student learning tests during the two cycles as shown in tables 4.3 and 4.7. Learning outcomes improved in accordance with the established classical learning success indicators, namely ≥ 80%, and individually achieved the specified Learning Completion Criteria (KKM) of ≥ 66. (Rahmawati & Abdullah, 2019).

Similarly, the research by Muhamad Yusup Kurniansyah, Hardiansyah Masya, and Nur Kholifah, entitled "Using Picture Media to Determine Early Childhood Mathematics Learning Motivation," showed an increase in children's learning motivation after the use of picture media in learning. This increased children's active and earnest involvement in classroom learning and assigned assignments; their initiative and desire to learn began to grow; and their commitment to continuing learning and persevering in learning began to improve. Beautiful, attractive, and colorful pictures will engage children, motivate them,

and foster enthusiasm for learning, especially in mathematics. Therefore, this study indicates an increase in motivation to learn mathematics in early childhood. Through good images, children will be interested in observing and will become accustomed to persisting in certain learning activities, focusing on the objects being explained, and being less easily distracted by abstract events. (Kurniansyah et al., 2024)

CONCLUSION

Learning with visual media can improve students' understanding of arithmetic operations, as evidenced by pre-survey data (46.43%) who completed the task. After the final test at the end of Cycle I, 20 students (71.43%) completed the task and 8 students (28.57%) did not, with an average understanding of arithmetic operations of 71.61. After Cycle II, this increased to 25 students (89.29%) who completed the task and only 3 students (10.71%) did not, with an average understanding of arithmetic operations of 78.04. Thus, visual media successfully improved students' understanding of arithmetic operations.

This success is due to the emphasis on active learning, which requires students to be more active individually and within their groups, making it easier for teachers to implement and assess the learning process.

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