



IMPROVING STUDENT LEARNING OUTCOMES THROUGH DIAGRAM BOARD MEDIA IN MATHEMATICS LESSONS ON DATA MATERIAL IN CLASS VB SDN 244 PALEMBANG

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Abstract

This is a design research study with the goal of developing worksheets based on relations and functions for valid. This research is a class action research that aims to determine the use of Diagram Board Learning Media can improve student learning outcomes in mathematics subjects in class VB SDN 244 Palembang. This type of research is class action research with two cycles, the data collection technique used is the data material learning outcomes test. The criteria used to conclude that this research is said to be successful is if in this study the learning outcomes of SDN 244 Palembang students meet the Minimum Completion Criteria (KKM) of 75 and the classical provisions of 80%. Based on the results of the study, it was obtained that in cycle I the classical completeness was 44% and in cycle II the classical completeness increased to 88%. The increase in learning outcomes that occurred between cycle I and cycle II was 44% so it can be concluded that the use of diagram board learning media on data material can improve the learning outcomes of class VB students of SD Negeri 244 Palembang. In addition, diagram board learning media can provide innovation for teachers in carrying out learning in the classroom.

Keywords: Learning Media, Learning Outcomes, Classroom Action Research

Abstrak

Penelitian ini merupakan penelitian tindakan kelas yang bertujuan untuk mengetahui penggunaan Media Pembelajaran Papan Diagram dapat meningkatkan hasil belajar siswa pada mata pelajaran matematika di kelas VB SDN 244 Palembang. Jenis penelitian ini adalah penelitian tindakan kelas dengan dua siklus, teknik pengumpulan data yang digunakan adalah tes hasil belajar. Kriteria yang digunakan untuk menyimpulkan bahwa penelitian ini dikatakan berhasil adalah apabila dalam penelitian ini hasil belajar siswa SDN 244 Palembang memenuhi Kriteria Ketuntasan Minimal (KKM) yaitu 75 dan ketentuan klasikal 80%. Berdasarkan hasil penelitian, diperoleh bahwa pada siklus I ketuntasan klasikal sebesar 44% dan pada siklus II ketuntasan klasikal meningkat menjadi 88%. Peningkatan hasil belajar yang terjadi antara siklus I dan siklus II sebesar 44% sehingga dapat disimpulkan bahwa penggunaan media pembelajaran papan diagram pada materi data dapat meningkatkan hasil belajar siswa kelas VB SD Negeri 244 Palembang. Selain itu, media pembelajaran diagram board dapat memberikan inovasi bagi guru dalam melaksanakan pembelajaran di kelas.

Kata Kunci: Media Pembelajaran, Hasil Belajar, Penelitian Tindakan Kelas

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School education is closely related to the curriculum, students, and facilities and infrastructure. With good facilities as well as supporting and competent teachers in their fields, it is very influential on the progress of students. Teachers can choose the desired model and media according to the needs and creativity needed during learning (Wang, 2021). Basically, learning is a process where the provision of knowledge to students who initially did not know became more understanding and understood, with learning, of course humans will be better able to solve a problem, with what they know (Fauza, 2021). Education as a means of character building in a person, can also affect a person's attitude and behavior when interacting in society. The next generation of the nation must have education in order to compete

nationally and internationally (Puspaningtyas, 2019). One of the lessons that focuses on mastering competencies and character values is mathematics learning. Susanto in (Mukrimatin, et al, 2018) revealed that mathematics can make humans learn to think critically, creatively and actively.

Mathematics is a science that deals with the study of abstract structures. Learners need an understanding of the concepts contained in mathematics. Learners at the elementary school level are still in the concrete operational stage. That means in the implementation of learning, students must be given objects that are real and often encountered by students. That is because mathematics is a deductive, formal, and abstract science. Mathematics is one of the lessons whose application can increase students' critical and logical thinking (Wulandari, 2020). Mathematics learning in elementary schools is not always centered on mastering material, but mathematics is also used as a means for students to achieve a predetermined competency (Wiryanto, 2020). Therefore, there needs to be innovations in order to improve students' understanding of mathematics learning. The innovation that can be done is with learning media as a means to convey messages or subject matter to students, it is done so that messages can be more easily understood by students.

Media as a means in learning certainly has several functions for learning, namely to realize an effective learning situation, the use of media is an internal part of the learning system, learning media is important in order to achieve learning goals, the use of media in learning to accelerate the learning process and help students in their efforts to understand the material presented by the teacher in class (Gabriela, 2021). The selection of learning media must be in accordance with the material to be taught and the conditions of the students, so that students are expected to actively participate in learning activities (Wati, 2021).

Based on initial observations made by researchers at SDN 244 Palembang, information was obtained that learning media had been used in the classroom. The learning media in question are PPT media and pictures. The learning process is carried out by giving questions to students, then the teacher displays PPT to display how to process data. However, when using the media there are still students who do not understand the material through the PPT explanation. So, sometimes students feel bored to learn data material. In class VB, there are still many students who think that learning Mathematics is difficult and boring. Learning media that is less effective and efficient, causing unbalanced cognitive, affective and psychomotor abilities (Pambudi et al., 2021). The lack of maximum media used by the teacher results in a lack of understanding in students. This resulted in low learning outcomes for students in data material, low student learning outcomes can be seen from the data on the achievement of mathematics evaluation results for class VB students at SD Negeri 244 Palembang during the initial research obtained from the VB homeroom teacher. There are still many students who have not reached the Minimum Completeness Criteria (KKM) set by the school in Mathematics is 70. Based on the evaluation data obtained, out of 25 students in the class, there are 19 students who have not met the minimum criteria for completeness, meaning that > 70% of students have not reached KKM. With the

existence of learning media, it is hoped that an effective, conducive, and enjoyable learning situation will be created.

Based on the initial interview with the homeroom teacher of class 5b, information was obtained that this class had never used the Diagram Board learning media, so additional learning media was needed so that students could more easily understand learning using concrete learning media. Board diagram media is the media used in data presentation material (Komariyah, 2021). This board media can be used as data presentation material to read data in picture diagrams, bar charts and also line charts. Researchers use this media to improve students' low mathematics learning outcomes and by using this media board diagrams students can work together well. This is in line with research (Fitriyadi, 2018) that the use of diagram board media can increase students' active participation in learning because this media is used in groups so that it can train students' cooperation. Advantage of this diagram board learning media is that it can provide meaningful understanding for students, concrete learning media so that students better understand the material being presented, learning media in accordance with the material being studied, namely data material so that students can present simple data from the surrounding environment in the form of pictograms and bar charts.

METHODS

The research method used in this research is classroom action research (PTK). According to Arikunto (2021: 2) classroom action research is an observation and action on learning activities by paying attention to the process and learning outcomes. The aim of the research is to improve student learning outcomes by using diagram board learning media. Research activities consist of observation and exploration of the learning process with the aim of obtaining data and information that will be used to improve learning. Then classroom action refers to the main activities carried out as an improvement effort with repeated cycles in the classroom under study.

This class action research is carried out in a cyclic manner and each cycle consists of four stages, namely planning, acting, observing, and reflecting. Data collection techniques carried out in this study using test techniques. The test was conducted to determine the learning outcomes of students after the implementation of the learning process at the time of the study. The implementation of classroom action research consists of two cycles in which each meeting students are given evaluation questions about data material.

Planning: the process of making an action plan that will be carried out in an effort to improve student learning outcomes. Things that are done at the planning stage are profiling or diagnostic assessment, compiling teaching modules with the Problem Based Learning learning model, Student Worksheets, and making learning media Diagram Board which contains material to be studied. Implementation: the action is carried out by the model teacher using the learning device design that has been prepared. The action implementation stage is carried out using the Problem Based Learning (PBL)

learning model during the learning process and using the Diagram Board learning media. During the implementation the observer can observe the learning process that has been implemented.

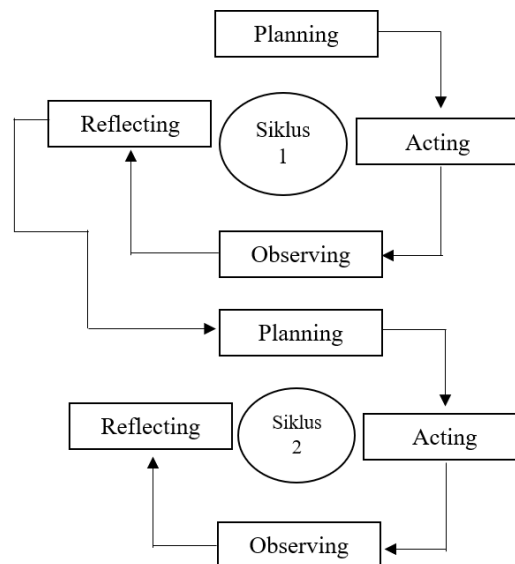


Figure 1. Action Research Flow

Observation: researchers and observers take data on student learning outcomes during learning. Data collection is carried out through the assessment of learning outcomes according to the results of the pretest and posttest and observation of the implementation of the

Reflection: the reflection stage is an activity to observe and analyze the overall action taken. Analysis is carried out based on data that has been collected during observation. This stage also evaluates the obstacles and obstacles that have been collected during the observation so that the obstacles and obstacles that exist during the learning process can be known which are used as considerations in planning the implementation of the next cycle.

The assessment is guided by the test acquisition criteria from the Ministry of Education and Culture in 2019 with very good, good, sufficient and insufficient criteria. Then the formula used to analyze the results of the assessment of students' knowledge and skills tests is guided by Muchlison (2021). The formula used is as follows:

$$p = \frac{\sum \text{Learners Complete}}{\sum \text{Learners}} \times 100\%$$

The criteria used to conclude that this research is said to be successful is if in this study the learning outcomes of SDN 244 Palembang students meet the Minimum Completion Criteria (KKM) of 75 and the classical provisions of 80%.

RESULTS AND DISCUSSION

The data presented in this study were obtained after the implementation of the treatment in 2 PTK cycles. The following is an explanation of the results of the research conducted.

CYCLE I

At the time of planning, the researcher started the cycle by preparing a learning plan in the form of a Teaching Module. This planning activity begins with (1) Determining learning outcomes according to the elements that will be used when implementing learning, (2) Arranging learning steps using the Problem Based Learning model, (3) Making Diagram Board Media in accordance with the material studied, (4) Preparing the media used when implementing learning, and (5) Arranging test assessment instruments as materials to measure student learning outcomes. The next stage is the action stage, at this stage the action is carried out by starting lessons in class according to the steps in the Teaching Module that has been made. The implementation of learning begins with opening activities, core activities, and closing activities. At the core activity stage, students pay attention to media impressions by the teacher. At the beginning and at the end of learning, students are given a test in the form of 5 questions to measure the learning outcomes that have been carried out. The next stage is the observation stage, at this stage the researcher observes students when learning is carried out. Then the researcher gets data in the form of student learning outcomes obtained. At this stage the researcher focuses on student learning outcomes as follows.

Table 1. Frequency of Students' Learning Completeness Cycle 1

Tes Score	Total number of learners	Classical provisions	Learning Completeness
70-100	11	44%	Completed
<70	14	56%	Not Completed

Based on student learning outcomes on test assessments that have been carried out in cycle 1 in class VB in Mathematics subject Fraction material, it can be seen that the highest score obtained by students is 90 and the lowest score obtained by students is 40. Students who completed in cycle 1 were 11 people with a frequency of classical completeness of 44%. While students who were not complete in cycle 1 were 14 people with a classical frequency of 56%. Based on the learning outcomes obtained in cycle 1, it can be concluded that students have not yet achieved the research success indicators that have been set previously. The research success indicator stipulates that the research success criteria must reach $\geq 80\%$ of students who are complete in learning. Therefore, because the learning outcomes obtained by students of class VB SDN 244 Palembang have not met the requirements for the achievement of success in this study, it can be followed up in cycle 2. The last stage is the reflection stage, on the implementation of cycle 1 learning that has been done. Researchers and class teachers held discussions related to the use of Diagram Board Media. Based on the results of these discussions and observations that the use of Diagram Board Media has not run optimally. This is because during the implementation of learning the researcher has not delivered the material in detail and most students still have difficulty understanding the concept of Data Presentation then the media made by the researcher

is still too small so that there are some students who cannot reach the media. The follow-up plan that will be carried out by researchers in the next cycle is to convey the material in more detail, adding ice breaking activities in class.

CYCLE 2

During the implementation of cycle 2 the stages carried out were the same as cycle 1 and obtained the following results:

Table 2. Frequency of Students' Learning Completeness Cycle 2

Tes Score	Total number of learners	Classical provisions	Learning Completeness
70-100	22	88%	Completed
<70	3	12%	Not Completed

Based on student learning outcomes on test assessments that have been carried out in cycle 2 of class VB students in Mathematics Data Material, it can be seen that the highest score obtained by students is 100 and the lowest score obtained by students is 45. 22 students completed this cycle 2 with a classical completeness frequency of 88%. While students who were not complete in cycle 2 were 3 people with a classical frequency of 12%. Based on the learning outcomes obtained in cycle 2, it can be concluded that students have achieved the research success indicators that have been set previously. The research success indicator stipulates that the research success criteria must reach $\geq 80\%$ of students who are complete in learning. Therefore, because the learning outcomes obtained by VB grade students of SDN 244 Palembang by using Diagram Board Media have reached the research success indicator with a classical completeness rate of 88%. The last stage is the reflection stage, in the implementation of cycle 2 learning that has been carried out. Researchers did not find significant problems related to the application of the Diagram Board. The whole series of learning activities had also been carried out well. Based on the results of discussions with the class teacher, students who have not completed the learning outcomes test are students who have not read fluently and are less careful in reading the questions presented. After implementing the learning process for 2 cycles, there was an increase in student learning outcomes from cycle 1 to cycle 2 which are presented in the following table:

Table 3. Frequency of Students' Learning Completeness Cycle 1 and 2.

Learning Completeness	Tes Score	Total Number of learners		Classical provisions	
		Cycle I	Cycle II	Cycle I	Cycle II
Completed	70-100	11	22	44%	88%
Not Completed	<70	14	3	56%	12%

Based on the table above, it can be seen that class VB students experienced an increase in learning outcomes that occurred over 2 cycles. In cycle 1, 11 students were complete and 14 students were not complete. The frequency of classical completeness of class VB students was 44%. In cycle 2,

22 students were complete and 3 students were not complete. The frequency of classical completeness of class VB students in cycle 2 was 88% and had reached the success indicator of the research conducted. Based on the explanation above, it is proven that Diagram Board Media can improve student learning outcomes, especially elementary school children who tend to be more interested in concrete objects in front of them. In line with the results of research conducted by Cahyani (2023), student learning outcomes in mathematics subject data material after using diagram board learning media increased, this increase occurred every cycle and met the specified indicators, namely 80%. This increase is because students are interested in using concrete learning media which provides direct experience in the learning process. Then, in the learning process, researchers added games to use learning media to train students' cooperation in learning.

CONCLUSION

Based on the results of the research and discussions that have been carried out, it can be concluded that the use of diagram board media has succeeded in improving the learning outcomes of class VB students as evidenced by the student learning outcomes in cycle 1 and cycle 2. Learning using diagram learning media on student learning outcomes shows positive results. Learning using diagram board media can also increase students' motivation and interest in learning. Apart from that, the teaching and learning process becomes conducive, comfortable, interesting, comfortable and enjoyable and runs effectively and efficiently. This diagram board learning media can help students understand the subject matter well. Based on the conclusions above, the researcher provides several suggestions for future improvements, namely using a variety of activities when using learning media, making diagram board learning media using materials that are not easily damaged so they can last a long time.

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