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The Use of Domino Card Media to Improve Student Learning Outcomes in Natural Science Learning at MIS Mawu

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ABSTRACT

The results of students' science learning are still very low when viewed from the results of daily tests that have been held four times, namely the average is 6.45, this means that it has not met the KKM for science subjects, which is 6.7. The factors causing low student learning outcomes are the teaching methods applied by teachers tend not to activate students, teachers never use media during learning so that students are not interested and not motivated to participate in learning. To solve the above problems, researchers use domino card media in learning. This study aims to determine the impact of using domino card media on improving the science learning outcomes of class III students of MIS Mawu, Ambalawi District, Bima Regency in the 2022/2023 academic year. The method used in this study is classroom action research. PTK is action research carried out with the aim of improving the quality of learning practices in the classroom. The subjects in this study were 39 class III students of MIS Mawu. The type of data used in this study is quantitative data. Where quantitative data is data obtained from student learning outcome data for each evaluation. Data was collected using a learning outcome test. The results of the study showed that the average student learning outcomes in cycle I were 65.00 and had not met the KKM for science subjects and in cycle II the average student learning outcomes increased to 75.12 and had met the KKM for science subjects. Thus, it can be concluded that the use of domino card media can improve the science learning outcomes of class III students of MIS Mawu, Ambalawi District, Bima Regency in the 2022/2023 academic year.

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Introduction

Education in Indonesia today can be likened to an old car with a cranky engine that is in the middle of traffic on a toll road. Why is that? On the one hand, how the world of education in Indonesia is currently plagued by major problems, while on the other hand the challenges of entering the third millennium are no joke. According to Sudarminta in Paul Soparno, et al; (2002), the major problems faced include: 1) the quality of our education is still low, 2) the learning system in schools is inadequate, 3) the moral crisis

that has hit our society. Meanwhile, the challenges faced in order to remain "alive" entering the third millennium are the need to strive for: 1) education that is Mawup to the situation of global competition and cooperation, 2) education that forms individuals who are able to learn throughout life, 3) education that realizes and strives for the importance of value education.1

Waiting for central government policies to improve the condition of our education is probably not the right attitude. Moreover, with the current condition of the government which still has to bear the burden of a very heavy and comprehensive crisis. It would be more appropriate if at least from now on all actors, lovers, and observers of education in the field together think about, discuss, strive for, work on, and reform this concerning education. In this case, schools as formal educational institutions play an important role in improving the quality of education, because through these educational institutions children get the opportunity to develop their abilities, and can channel their talents and interests according to their development. In line with that, Madrasah Ibtidaiyah (MI) Mawu as one of the basic education levels in Ambalawi District, Bima Regency, also thinks about its important role as a producer of quality educational products. Because this is where students gain various skills, which are accompanied by application, development and high discipline in the teaching and learning process.

In teaching, there are many problems faced by a teacher in guiding students to learn. Among the many problems, there are several main problems that are always sought for solutions, including the method used. The method is a facility for delivering learning materials in an effort to achieve goals. Therefore, it can be understood that the method is a way of presenting learning materials to students to achieve the goals that have been set (Fathurrohman and Sutikno: 2007). Until now, there has been no definite guideline for the right teaching media, there is no single best teaching method, sometimes the method is combined with other methods. The rightness of a new method is proven by student learning outcomes. Based on initial observations and interviews with class III teachers at MIS Mawu, Ambalawi District, Bima Regency in June, students' science learning outcomes were still very low as seen from the results of daily tests that had been held four times, as in the following table. From the table above, students' daily test results are still very low, when viewed from the Minimum Completion Criteria (KKM) value for science lessons is 6.7. The low learning outcomes of students are caused by the teacher's teaching method which is still monotonous, the teacher never uses media during learning, does not involve students enough, so that students are not interested and not motivated to follow the ongoing learning.

The use of media in the learning process is very important because the media functions as a learning aid and can attract students' attention, so that students are motivated to follow the learning. To solve the problems described above, researchers use learning media as a tool to assist learning activities. In this case, researchers use

domino card media, which is a form of game-based learning media consisting of domino cards to convey information in the form of material through questions on concepts or sub-concepts of science lessons for class III semester I. Learning using domino card media is carried out in groups so that students play an active role in participating in learning. From the description above, the author is interested in examining the level of use of domino card media to improve the science learning outcomes of class III students of MIS Mawu, Ambalawi District, Bima Regency, 2022/2023 academic year. MIS Mawu, Ambalawi District, Bima Regency was chosen as the object of research because to the author's knowledge, so far no researcher has been interested in making MIS Mawu an object of research, especially regarding the role of learning media as a means of teaching and learning.

Methods

The method used in this study is classroom action research. PTK is an action research conducted with the aim of improving the quality of classroom learning practices. The main objective of PTK is to solve real problems that occur in the classroom and improve the real activities of teachers in their professional development activities.19 Subjects are people used for experiments.20 Where the subjects in this study are students in one class selected by the researcher. In this study, the researcher used class III students of MIS Mawu, Ambalawi District, Bima Regency. The subjects in this study were class III students of MIS Mawu, Ambalawi District, Bima Regency, totaling 39 people. The type of data used in this study is quantitative data. Where quantitative data is data obtained from student learning outcome data for each evaluation. This type of research is classroom action research developed in 2 cycles. The steps in each cycle are: (1) conducting domino card learning, (2) observing, (3) evaluating, and (4) reflecting. The use of domino card media aims to improve students' thinking and creativity. Learning using domino card media is a learning activity that maximally involves all students' abilities to be active in learning and motivated to continue learning. So it is hoped that students will be motivated in learning and will ultimately improve the learning outcomes of class III semester 1 students at MIS Mawu, Ambalawi District, Bima Regency in the 2022/2023 academic year. According to Kemmis and Taggart, classroom action research is carried out in four stages (Wiriaatmadja, 2005). The stages are as follows: 1) Planning stage; 2) Action stage; 3) Observation stage; 4) Reflection stage.

The indicator of achievement in cycle I is that student learning outcomes are said to have increased if the average score is at least 6.7. In cycle II, the stages will be carried out as in cycle I, and steps for improvement will be taken for the implementation of the next learning based on the results of reflection in cycle I. The research instrument is a tool used to measure natural and social phenomena that are observed. The instruments that will be used in this study, namely: Tests are a way of conducting an assessment in

the form of a task or series of tasks that must be done by students or a group of students so as to produce a value about the behavior or achievement of the student, which can be compared with the values achieved by other students or with the standard values set. According to Suharsimi Arikunto, that: "Observation is a technique that is carried out by conducting observations carefully and systematically. The data obtained from the observation are recorded in an observation. The recording activity in this case is part of the observation activity". Actions are carried out based on planning, but actions are not absolutely controlled by the plan. An action that is decided to contain risks because it occurs in a real situation, therefore the action plan must be tentative and temporary, flexible and ready to be changed according to existing conditions as an effort towards improvement.

The action implementation stage in this research will be carried out in two cycles, where cycle I will produce data on student learning outcomes using domino cards. After the data from cycle I has been completed, then continue with cycle II which will prove an increase in student science learning outcomes (research subjects). And if the implementation has not achieved the desired results, then an additional cycle will be held, namely cycle III. The stages of the syntax/procedure for carrying out this research can be described as follows. The data collection techniques in PTK (Classroom Action Research) data come from: 1) Tests are given at the end of each teaching and learning activity and are used to determine improvements in student learning outcomes or to determine students' abilities in working on science questions that will be delivered by researchers using domino cards; 2) In this study, the researcher conducted direct observation of the situation and conditions of MIS Mawu as the subject of the study and collected information or data related to its learning or matters related to the focus of the study; 3) Interviews are conversations with a specific purpose. The conversation is conducted by two parties, namely the interviewer and the interviewee.27 Interviews are used when researchers want to conduct a preliminary study to find problems that must be studied, and also when researchers want to know things from respondents in more depth and the number of respondents is small. Here, the researcher conducted interviews with class teachers who teach at MIS Mawu in order to find out the learning outcomes of MIS Mawu students during the teaching and learning process in class, especially in science subjects; 4) Documentation method is a way of collecting data through written remains such as archives and also including books on opinions, theories, propositions or laws and others related to the study. Through this documentation method, researchers collect data, information or data using written materials, printed or documents in the form of written objects, lists of photos, school plans and so on.

This method is used by researchers to collect data taken from the school where the research is conducted, including: Teacher data, student data, employee data, SP

teacher teaching preparation models, RPP, and others related to this researcher. This study uses an observation method on the learning outcomes of science subjects by providing observation sheets to subject teachers on the use of domino card media used by researchers at the research location, so that researchers can reflect on the use of the media used. To see the improvement in student learning outcomes with the use of domino card media, researchers provide written tests in the form of multiple choices at the end of each learning cycle. The test results in each cycle are data used as an assessment of the feasibility of using domino card media to improve science learning outcomes. Data analysis is a very important step in research activities if the conclusions to be studied can be accounted for, the data analyzed by researchers about student learning outcomes in this study are in the form of individual completion values, average student learning outcomes, percentage of learning completion (classical completion).

Result

The location used by the researcher as a research site is MIS Mawu, Ambalawi District, Bima Regency. MIS Mawu, Ambalawi District, Bima Regency was established on April 1, 1945 with NSM: 11252060030. The boundaries of MIS Mawu, Ambalawi District, Bima Regency are bordered by residential houses to the north, bordered by residential houses to the south, bordered by residential houses to the west, and to the east by a highway. This study was conducted to determine the science learning outcomes of grade III students of MIS Mawu, Ambalawi District, Bima Regency using domino cards. Based on the results of the evaluation and observation, quantitative data were obtained. Where quantitative data is data obtained from student learning outcome data for each evaluation. Learning activities in cycle I were carried out on August 5, 2023 for 3x30 minutes or 3 learning hours. The material discussed in cycle I is the characteristics of living things and the needs of living things. The evaluation of cycle I was carried out at the second meeting, namely on Mawul, August 12, 2023, with a time of 40 minutes. The evaluation was given at the end of cycle I, questions were given in the form of 5 multiple-choice questions and 2 essay questions. Activities in cycle I consisted of four stages, namely: The activities carried out at this stage were carrying out teaching and learning activities in the classroom according to the plan that had been prepared based on the learning implementation plan (RPP), namely using domino card media by dividing students into 13 groups, each group consisting of 3 students.

At the beginning of the lesson, the teacher took attendance of students, conveyed learning objectives, conveyed learning materials accompanied by pictures, and conducted question and answer activities about the material being studied. Furthermore, in the implementation activity, the teacher asked students to form groups, each group consisting of 3 people. The teacher read the name of the group, distributed domino cards to each group and each group consisted of eight cards, the teacher

socialized the use of domino card media that would be used in learning, students in groups arranged cards quickly and accurately, the teacher guided groups who had difficulty in completing their tasks.

After all students have finished arranging the domino cards, the teacher appoints one student in each group to communicate the learning outcomes using domino cards in front of the class. Then the teacher explains the correct arrangement steps. The steps for arranging domino card media are as follows: 1) Divide students into several groups. the number of students in each group is between three and four people; 2) Each group is given a set of game equipment; 3) The teacher guides students who have difficulty arranging domino cards; 4) If necessary, the teacher limits the game time; 5) The game begins in a similar way to playing dominoes, namely students who have cards with the word "START" written on them and end with cards with the word "FINISH" written on them. At the end of the lesson, the teacher asks questions with students to draw conclusions from the material that has been learned.

Evaluation is carried out at the end of the cycle, namely at the second meeting. The teacher gives evaluation questions in the form of five multiple choice questions and three descriptive questions. Based on the results of the analysis of the learning evaluation of cycle I followed by 39 students, the average student learning achievement was 65.00 with the lowest score of 40 and the highest score of 90. This means that the achievement indicator for the average student learning achievement has not been met. While for classical completeness, students who got a score of ≥ 67 were 17 students and the result was 43.58% so for classical completeness it has not been met either. Student learning outcomes have not been achieved in cycle I. The shortcomings in cycle I were caused by student factors and teacher factors. Teacher factors include teachers being less even in guiding groups that are still confused about arranging domino cards, while student factors include lack of cooperation in groups, student interaction with teachers is still lacking because students are still embarrassed to express their opinions to the teacher, so the research was continued in cycle II.

The corrective actions that will be taken in cycle II are: 1) The teacher guides students who have difficulty in receiving the material; 2) The teacher asks questions to draw conclusions about the material that has been studied; 3) The teacher increases motivation to be more active in arranging domino cards; 4) The teacher encourages and motivates students not to be embarrassed to express their opinions or ask questions to the teacher about things they do not understand; 5) The teacher explains a little about what students have to do. This is to help students arrange domino cards; 6) The teacher provides equal guidance to all groups; 7) The teacher pays attention to and plans the allocation of time for discussion activities. Learning in cycle II took place on Mawul, August 19, 2023 and August 26, 2023 in two meetings, each meeting held for 3x30 minutes. The material discussed in cycle II, meeting I was human growth. While in

meeting II, the material discussed was the factors that influence the growth and development of living things. The evaluation of cycle II was carried out on September 9, 2023 for 40 minutes, with the form of questions being multiple choice as many as 5 questions and essay questions as many as 2 questions. The activities carried out at this stage are carrying out teaching and learning activities in the classroom with a plan that has been prepared based on the learning implementation plan (RPP) which has been adjusted to the results of the reflection of cycle I.

The activities carried out at this stage are the teacher providing apperception and motivation, namely conducting questions and answers related to the previous material and conveying several important concepts that support learning activities. Then the teacher asks students to form groups, each group consisting of 3 students, the teacher asks students to join their groups and provide information on the name of their group leader. Furthermore, the teacher distributes domino cards to each group, the number of cards for one group is 8 cards. Then the teacher distributes LKS to each group to be discussed and guides students, students conclude the results of the discussion through questions and answers. The teacher also gives awards using candy to groups that arrange domino cards quickly and correctly.

Based on the results of the teacher activity observation sheet, it was found that the learning activities had gone well and all aspects of the teacher's activities had been carried out. Evaluation is given after the learning in cycle II ends, namely at the third meeting. The teacher gives evaluation questions in the form of 5 multiple choice questions and 2 essay questions. Based on the results of the analysis of the cycle II evaluation followed by 39 students, the average achievement of student learning outcomes is 75.12 with the lowest score of 60 and the highest score of 100, this means that the achievement indicator for student learning outcomes has been achieved as well as classical completeness increasing to 82.05%. Student learning outcomes have increased on average compared to cycle I, and the research is sufficient up to cycle II.

Discussion

This classroom action research was conducted as an effort to improve the science learning outcomes of grade III MIS Mawu students using domino cards as the media. This research was conducted in two cycles. The results of the first cycle research showed that the average student score had not reached ≥ 67. This was due to deficiencies that occurred in cycle I. The deficiencies that occurred in cycle I were caused by teacher factors and student factors. Teacher factors include teachers being less even in guiding groups that were still confused about arranging domino cards. In addition, teachers paid less attention to the allocation of learning time using domino cards. Student interaction with teachers was still lacking because students were still embarrassed to express their

opinions or questions to the teacher, so students could not provide feedback on their friends' answers when communicating learning outcomes using domino cards.

Based on the deficiencies in cycle I, corrective actions were taken in cycle II. The corrective actions implemented include, the teacher asks again about what has been conveyed, the teacher encourages and motivates students not to be embarrassed to express their opinions or questions to the teacher about things they do not understand and the teacher provides equal guidance to each group. Based on the improvements made in cycle II, the average student score also increased from cycle I by 65.00 to 75.12. Seeing the results achieved in cycle II shows that the research achievement indicators have been met. Based on the results of the study above, the use of domino card media in science learning can improve student learning outcomes. The increase in learning outcomes is because learning using domino card media can motivate students to learn.

This motivation can come from within the student or because of external factors that encourage the emergence of this motivation. One of the external factors is the teacher as an educator who provides/presents material to students. Teachers who teach students in different ways/methods and are supported by interesting media will be able to stimulate students' thinking skills so that they can meet their needs/achieve their learning goals. What is considered in playing dominoes is the social element, because to play dominoes, students are not alone but in groups. So that there will be interaction between students, where this interaction is a positive interaction.

The pursuit of effective and engaging pedagogical tools is a continuous endeavor in science education. Traditional methods, often relying heavily on textbook memorization and passive listening, can sometimes fail to ignite students' curiosity and foster a deep understanding of scientific concepts. In this context, the exploration and implementation of innovative teaching media hold significant promise for enhancing student learning outcomes in science. One such medium that has garnered attention for its potential to transform the learning experience is the use of domino cards. Domino cards, adapted from the familiar game of dominoes, offer a unique and interactive way to engage students in the learning process. In a science education setting, domino cards can be designed to connect different scientific concepts, terms, definitions, or steps in a process. Students work collaboratively to arrange the dominoes in a sequence that demonstrates their understanding of the relationships between these elements. This active manipulation of the learning material and the collaborative problem-solving inherent in the activity can lead to a more profound andretentive grasp of scientific principles compared to passive learning methods.

The application of domino card media in science classrooms presents a multitude of potential benefits for enhancing student learning outcomes. Firstly, it promotes active learning. Unlike traditional lectures where students are primarily passive recipients of

information, domino card activities require active participation and engagement. Students are actively involved in manipulating the cards, discussing possible connections, and constructing logical sequences, thereby solidifying their understanding through hands-on interaction. This active engagement can lead to increased motivation and a more positive attitude towards learning science. Secondly, domino cards foster collaborative learning and communication skills. When students work in groups to complete a domino sequence, they must communicate effectively, share their ideas, and negotiate solutions. This collaborative environment encourages peer-to-peer learning, where students can learn from each other's insights and perspectives. The process of explaining their reasoning and justifying their choices to their group members further reinforces their understanding of the scientific concepts involved.

Furthermore, domino cards can enhance students' critical thinking and problem-solving abilities. Completing a domino sequence often requires students to analyze the relationships between different scientific elements, identify patterns, and apply logical reasoning to determine the correct order. This process encourages them to think critically and develop their problem-solving skills in a fun and engaging way. The visual and tactile nature of the domino cards can also aid in making abstract scientific concepts more concrete and accessible to students. Moreover, the use of domino cards can cater to different learning styles. The visual learners benefit from the concrete representation of concepts on the cards, while kinesthetic learners benefit from the hands-on manipulation of the dominoes. The collaborative aspect also appeals to social learners who thrive in group settings. This multi-sensory approach can make learning more inclusive and effective for a wider range of students.

The potential for domino cards to improve science learning outcomes is particularly relevant in subjects like Natural Science (Ilmu Pengetahuan Alam) where understanding interconnected concepts and processes is crucial. For instance, domino cards can be used to illustrate the stages of a life cycle, the steps in a scientific experiment, the relationships between different parts of an ecosystem, or the sequence of events in a chemical reaction. By visually and interactively representing these connections, domino cards can help students develop a more holistic and integrated understanding of scientific principles. The implementation of domino card media can also provide teachers with valuable formative assessment opportunities. By observing students as they work on the domino sequences, teachers can gain insights into their understanding of the concepts, identify areas of difficulty, and provide targeted feedback. The completed domino sequences themselves can also serve as a visual representation of students' understanding, allowing teachers to quickly assess their grasp of the material.

In the specific context of MIS Mawu, the introduction of domino card media has the potential to address challenges associated with traditional science instruction and

foster a more engaging and effective learning environment. By providing students with a hands-on and collaborative way to explore scientific concepts, domino cards can help to increase their motivation, improve their understanding, and ultimately enhance their learning outcomes in Ilmu Pengetahuan Alam. In conclusion, the application of domino card media represents a promising pedagogical innovation for enhancing science learning outcomes, particularly in Ilmu Pengetahuan Alam at MIS Mawu. By promoting active learning, fostering collaboration, enhancing critical thinking, catering to diverse learning styles, and providing valuable assessment opportunities, domino cards offer a unique and engaging way for students to interact with scientific concepts and develop a deeper and more meaningful understanding of the natural world. The integration of such innovative media into the science curriculum holds the potential to transform the learning experience and empower students to become more effective and enthusiastic learners of science.

Conclusion

The method used in this study is classroom action research. The subjects in this study were 39 students of class III MIS Mawu. The type of data used in this study is quantitative data. Where quantitative data is data obtained from student learning outcome data for each evaluation. This research was conducted in Mawul from August 5 to September 9, 2023. The results showed that the average student learning outcomes in cycle I were 65.00 and had not met the KKM for science subjects and in cycle II the average student learning outcomes increased to 75.12 and had met the KKM for science subjects. Thus, it can be concluded that the use of domino card media can improve the science learning outcomes of class III MIS Mawu students, Ambalawi District, Bima Regency, in the 2022/2023 academic year.

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