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APPLICATION OF MAKE A MATCH COOPERATIVE LEARNING MODEL ASSOCIATED WITH MEDIA CARD TO INCREASE SCIENCE LEARNING OUTCOMES

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ABSTRACT

Teachers who use the lecture method too often often make learning boring. One of the subjects considered boring by students is Natural Sciences (IPA). In this study, the author uses the type of classroom action research (CAR). The purpose of this study was to determine the significant difference in learning outcomes between students who study with the cooperative learning model of make a match with the aid of card media and students who study conventionally. The results showed that all aspects of the application of the make a match cooperative learning model which were carried out in 2 cycles in science learning had been carried out and students experienced an increase in each cycle. The percentage of the classical value of the implementation of the first cycle of learning, which is 61.10%, is still categorized as incomplete. The percentage of the classical value of the implementation of the second cycle of learning is 88% which is included in the category of complete learning so that students can be said to be complete in participating in learning. Thus, it can be concluded that the application of the make a match type of cooperative learning model assisted by card media to improve science learning outcomes for fourth grade students at SDN Laladan has been successful.

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A. Introduction

Education is a very important aspect and is considered by various countries in the world, Indonesia is no exception (Adilah, 2017)(Anggarawati et al., 2014). Insightful human resources have a very strategic role to implement development plans in Indonesia. Because of this strategic role of education, it will be very important to ensure that educational goals can be achieved. The purpose of education itself is closely related to the quality of learning, where the quality of good learning will certainly make educational goals can be achieved.

Many studies or literature studies from experts state that in many places, including at the elementary school level, learning is boring. This is mostly caused by teachers who often explain the material using the lecture method which causes students to feel bored in participating in learning. Lecture method The lecture method itself according to Fred Percival and Henry Ellington is a common way used to deliver lessons to students or practice the theory that has been learned in order to achieve learning objectives. He further explained that the drawback of the lecture method is that the teacher dominates learning too much so that it does not help students organize material in their memory for a long period of time and can reduce students' creativity (Amaliah et al., 2014).

One of the subjects that students consider difficult and boring is Natural Science (IPA). This is supported by the results of data from the Ministry of Education and Culture, from 2015-2020 which states that Indonesia is still ranked 70th out of 78 countries regarding student competence at the elementary and secondary school levels. Based on the results of the data collection, it is stated that there are still 60% of students who have not met the minimum competence of students in science learning. Students consider a lot of material that is difficult to understand in science lessons. This happens because many teachers present this learning in a monotonous and unpleasant style. The teacher in presenting science learning more often uses the lecture method, thus making students unable to understand science material well, even though science is one of the most important subjects.

According to (Maryandi et al., 2013), science is one of the sciences that has an important role in improving the quality of education, especially in producing quality students. Students will be able to think critically, creatively, logically and take the initiative in responding to problems caused by the impact of the

development of science and technology in society (Mardiyana et al., 2020). If science is taught appropriately, interestingly, and fun, then science will become a subject that is able to provide opportunities for students to think critically. So the development of students' abilities in the field of science is one of the keys to the success of increasing their ability to adapt to the changing world entering the current era of increasingly advanced globalization.

Based on the results of a preliminary study at SDN Laladan on March 23, 2022, through teacher interviews and questionnaire results, homeroom teachers often use the lecture method because it is considered the easiest and most efficient way to use. In addition, the homeroom teacher also does not master other learning methods so that when learning students feel bored and tend not to pay attention to the teacher's explanation. Students tend to prefer to play rather than follow a series of lessons. In learning, the use of media or facilities to support the learning process is still not optimal. This is marked by the existence of learning media that are often not available during learning until inadequate learning facilities make learning seem monotonous. So in the implementation of learning only focus on the teacher and also depend on textbooks so that student learning outcomes are low. These problems encourage research to improve the learning outcomes of fourth grade students at SD Laladan, especially in the science subject of heat energy.

Efforts to improve the results of fourth grade students at SD Laladan, especially in the heat energy science subject, are by applying the make a match cooperative learning model using card media. The cooperative learning model itself is a teaching and learning strategy that emphasizes shared attitudes or behavior in working or helping each other in a regular cooperative structure in groups, consisting of two or more people (Mikran et al., 2014). There have been many studies that prove that this learning model is very suitable to be applied in science learning. Therefore, the researcher then conducted classroom action research at SDN Class IV Laladan, with the aim of improving science learning outcomes in that class.

B. Method

The type of research used is classroom action research (CAR). Classroom Action Research is research that aims to improve/improve the quality of learning practices to make them more effective (Salim et al., 2015). With this research, educators can detect the shortcomings or weaknesses of students during learning

and take action to overcome these shortcomings or weaknesses. This research consisted of 2 cycles and each cycle was conducted once in one meeting. Each cycle consists of several stages including the stages of planning, implementation, observation and reflection (Mu'alimin & Cahyadi, 2014). Data collection techniques in this study using observation, interviews, tests and documentation. Observation is an activity to observe, analyze and conclude something based on facts and is objective. In this study, observations focused on learning activities in the classroom to measure the affective and psychomotor aspects of students. The second technique is interviews, which are used to obtain direct data on various matters relating to science learning in schools. The targets of this interview are students and educators. Interviews for students were carried out after the lesson to determine the impact of heat energy science learning using a cooperative model of make a match type with the aid of a card. Furthermore, interviews for educators were conducted before the planning stage was carried out. This is done to find out the obstacles and shortcomings of the ongoing science learning. Furthermore, documentation to collect evidence as research evidence data. Documentation in the form of videos, photos and sound recordings during interviews. Finally, the test technique used to measure the ability of students in the cognitive aspect after learning. In this study, using a written test with a total of 10 items in the form of multiple choice. The test is carried out after learning in each cycle. In knowing the learning outcomes of grade 3 students, the scores obtained by students individually can be calculated. In determining the success of using the make a match type of cooperative learning model, it can be seen from the learning outcomes of students who get grades according to the KKM standard or minimum completeness criteria. While the classical success can be calculated using the formula:

$$P = \frac{Total\ grade\ point\ average\ that\ reaches\ the\ KKM}{Total\ Students} \text{ x } 100\ \%$$

Information:

P : Percentage

In finding the level of student learning success, the assessment criteria used are:

Table 2.1. Categories of Science Literacy Levels in Class 3 Elementary School Students

No	Score	category
1	0-20	Not good
2	21-40	Not enough
3	41-60	Enough
4	61-80	Good

5	81-100	Very good

(Riduwan, 2012)

This classroom action research uses descriptive quantitative and qualitative descriptive data analysis techniques. Quantitative data were analyzed using descriptive statistics, quantitative data in the form of learning outcomes scores and classical completeness in each cycle. While the analysis with qualitative descriptive techniques was carried out for qualitative data in the form of observations and interviews. The information obtained will be discussed, studied and solved together between researchers and collaborators.

C. Result and Discussion

Result

This research was conducted on May 17, 2022 and May 20, 2022 with the research subjects being students in grade 3 semester 2 for the academic year 2021/2022 at SDN Laladan Dusun Keduran, Laladan, Deket District, Lamongan Regency. The data collected in this study include the implementation of learning, learning outcomes and obstacles faced during science learning activities on heat energy material. This research was conducted in 2 cycles.

In the planning stage in cycle 1, researchers have prepared an action plan which is carried out by making a learning implementation plan or lesson plan related to heat energy material using paired card media. This was done as from the results of observations made at the beginning in detecting learning problems at Ladadan Elementary School. Then, the researcher compiled student worksheets, observation sheets, prepared paired card media and prepared a list of values.

The next stage is implementation and observation. This stage is a form of implementation of the learning design that has been prepared. In this implementation stage, researchers have compiled the steps of learning activities, namely as follows:

Initial activity

a. Teacher says hello
b. The teacher guides the students to pray together
c. The teacher asks how the students are
d. The teacher takes the attendance of students

Core activities

a. The teacher conveys the learning objectives and motivation
b. The teacher asks students to form groups
c. The teacher presents information related to heat energy material
d. The teacher asks students to write questions related to material that is still not understood
e. The teacher gives 4 cards in the form of questions to each group
f. The teacher gives instructions to each group in turn to find a pair of cards in the box in front of the class for 5-8 minutes
g. Each group that has got a pair of cards will get 2 points
h. The group that gets the highest points will get a reward while the group with the lowest points will get a punishment according to the agreement
i. Each group is asked to read the questions and answers from each card they get
j. Each group asks the teacher questions related to the questions that have been written

Closing Activities

a. The teacher gives a material conclusion
b. The teacher gives formative test questions
c. The teacher closes the lesson with a prayer

In this stage of observation or observation, the researcher observes the learning activities that have been arranged. The thing that is observed in this stage is the state of teaching and learning activities using the make a match cooperative learning method. The last stage in cycle I is the reflection stage. The reflection stage is the stage where researchers and educators discuss together to analyze the overall learning outcomes and observations that have been made. In this stage, the evaluation points are related to reflection on the learning process and notes on obstacles or shortcomings encountered during the learning process. The following is the research data obtained in cycle 1:

Table 3.1. Data on Initial Findings of Student Learning Outcomes

No	Score	Predicate	Students	Presentage
1.	86-100	A	0	0%
2.	70-85	B	8	44,4%
3.	55-69	C	9	50%
4.	0-54	D	1	5,6%

(Riduwan, 2012)

Based on the table above, it can be seen that there were 8 students who got good predicate with a percentage of 44.4%, while 9 students got enough predicate with a percentage of 50% and 1 student with a bad predicate with a percentage of 5.6%. Mastery learning here is determined based on the classical value obtained. Here's the classical value formula:

$$P = \frac{Ttotal\ grade\ point\ average\ that\ reaches\ the\ KKM}{Total\ Students} \text{ x } 100\ \%$$

Keterangan

P : Percentage

The data shows the classical value obtained is 44.4%, which means that the study has not been completed. Therefore, researchers conduct research to improve and improve student learning outcomes so that they are able to complete learning.

Cycle I

Table 3.2. Student Activity Observation Value Cycle I

Total Skor	20
Persentase	85%

Based on the results of observations related to student activities in learning in cycle I in this study obtained 85%, it can be seen from the observed aspects there are 5 items. These aspects include students who listen to the teacher, students who are enthusiastic in learning, students participate in every activity in learning, students are able to work together in groups, and improve learning outcomes. Furthermore, observations on teacher activities were also carried out.

Table 3.3. Teacher Activity Observation Value Cycle I

Total Skor	72
Persentase	93,6%

Based on the results of observations related to teacher activities in learning designed by researchers in the first cycle, it was 93.6%. Here the researcher is located as the executor of learning. While the class teacher becomes an observer who observes and assesses the learning carried out. In learning the researchers as implementers have prepared a lesson plan (RPP) properly. Furthermore, students learning outcomes were obtained after the first cycle of research was carried out.

Table 3.4. Student Learning Outcomes Cycle I

No	Score	Predicate	Students	Persentage
1.	86-100	A	1	5,6%
2.	70-85	B	10	55,5%
3.	55-69	C	6	33,3%

4.	0-54	D	1	5,6%

Based on the table above, it can be seen that there are 1 student who gets a very good predicate with a percentage of 5.6%, 10 students get a good predicate with a percentage of 55.5%, while 6 students get a pretty good predicate with a percentage of 33.3% and 1 student with a predicate is not good with a percentage of 5.6%. The data shows the classical value obtained is 61.1%, which means that the study has not been completed. Therefore, the researchers conducted research in the second cycle in order to improve and improve student learning outcomes so that they were able to complete learning.

Siklus II

Table 3.5. Value of Student Activity Observation Cycle II

Score	20
Persentage	90%

Based on the results of observations related to student activities in learning in cycle II in this study obtained 90%, it can be seen from the observed aspects there are 5 items. These aspects include students who listen to the teacher, students who are enthusiastic in learning, students participate in every activity in learning, students are able to work together in groups, and improve learning outcomes. Furthermore, observations on teacher activities were also carried out.

Table 3.6. The Observation Value of Cycle II Teacher Activities

Score	72
Persentage	98,6%

In the second cycle, the observer obtained 98.6% results, 5% greater than the observations in the first cycle. In the second cycle, researchers as educators increased their interaction with students in delivering material, such as when they explained the meaning of heat energy, they would immediately ask questions. Based on this, students become more active and enthusiastic in learning. Furthermore, students learning outcomes are presented in cycle II.

Table 3.7. Student Learning Outcomes Cycle II

No	Score	Predicate	Students	Persentage
1.	86-100	A	8	44,4%
2.	70-85	B	8	44,4%
3.	55-69	C	2	11,2%
4.	0-54	D	0	0%

Based on the table above, it can be seen that there are 8 students who get a very good predicate with a percentage of 44.4%, 8 students get a good predicate

with a percentage of 44.4%, while 2 students get an adequate predicate with a percentage of 11.2%. classical obtained by 88% which means complete learning. This shows that research conducted for 2 cycles has a good impact so that student learning outcomes can be completed.

Discussion

In this study, science learning material on heat energy is packaged using a make a match type cooperative model. Make a match itself is indeed a method in the cooperative learning model, where in practice, students are formed into small groups, where each group member has different abilities (Ningtyas & Wuryani, 3 C.E.). In the make a match method, students look for partners through cards containing questions and answers (Suprijono, 2013). Interesting learning activities in this method are expected to make the learning atmosphere more enjoyable

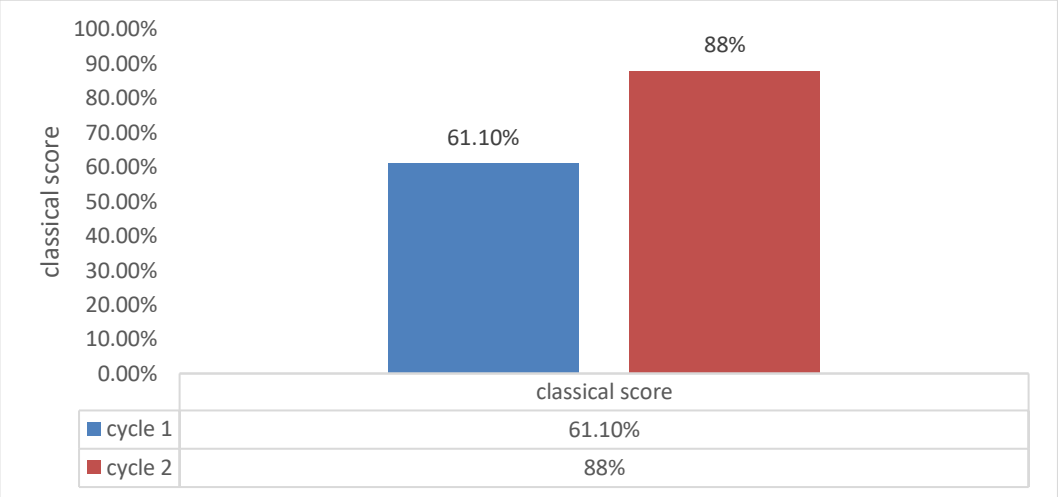

Figure 1. Comparison Diagram of Cycle I and Cycle II Learning Implementation

Based on the implementation of science learning on heat energy material with the application of the make a match cooperative learning model in cycle I to cycle II, it shows that the implementation of learning has been implemented in all aspects and has increased in each cycle. The percentage of classical value of the implementation of the first cycle of learning is 61.10% categorized as incomplete. Achievements do not meet the standards for complete learning that must be achieved by students. The results of observations related to student activities in learning in cycle I in this study obtained 85%, it can be seen from the observed aspects there are 5 items.

The first aspect is students' awareness to listen to the material. During learning, the majority of students listened to the teacher well, with the following details: two students still often played or focused more on their own world, in the

sense of focusing on playing with their writing instruments or disturbing their classmates. Unlike the other 16 students, they focused on listening to the teacher's explanation. This shows that the majority of students already understand the importance of listening to the teacher's explanation, especially regarding the material. The second aspect is the enthusiasm of students in participating in learning. In general, grade 4 students feel happy in learning. The third aspect, the participation of students in every learning activity. all students actively participate in all series of activities such as questions and answers, group discussions and group presentations related to the paired cards that have been obtained. The fourth aspect is the ability of students to collaborate in groups. In this study, students were divided into 4 groups. The division of groups is based on the numbers obtained by students, namely 1, 2, 3 and 4. In the first cycle, not all group members can work well together. There are 3 children in groups 1 and 2 who are still passive and cannot be invited to discuss with their groups. So that these two groups get more guidance in the learning process.

The last aspect is the improvement of learning outcomes. When conducting interviews the class teacher explained that the classical grade 4 students on hot material was 44.4%, meaning that learning in grade 4 had not been said to be complete. In the first cycle, learning with heat energy material is still not complete with a classical mastery percentage of 61.1% so it requires cycle II to get maximum learning improvements. Although it is not yet complete, through learning with a cooperative model of make a match type, there is an increase in the maximum completeness score of 16.7%. This observation is a form of observation from researchers who are observers to observe the behavior or behavior of students in accordance with predetermined aspects.

The results of observations in learning activities designed by researchers in the first cycle obtained a score of 93.6%. Here the researcher is located as the executor of learning (model teacher) while the class teacher becomes the observer who observes and assesses the learning carried out. In learning the researcher as the implementer has prepared a lesson plan (RPP) properly. The RPP has listed the name of the institution, theme, sub-theme, learning, basic competencies, indicators, learning objectives, learning activities (Opening, Core and Closing Activities) and assessment correctly. In the first cycle, the material was delivered through the lecture method and the make a match type of cooperative learning model. However, learning does not produce maximum learning outcomes. This is

because the delivery of material in the form of lectures causes students to get bored and find it difficult to convey the material. So that in the first cycle, improvements are needed.

The percentage of the classical value of the implementation of the second cycle of learning is 88% which is included in the category of complete learning so that students can be said to be complete in participating in learning. This is discussed by (Aliputri, 2018), where in his research, the cooperative model of this type of make a match is indeed effective in improving learning outcomes. Based on the results of observations on student activities in cycle II in this study obtained 90%, it can be seen from the observed aspects there are 5 items. The first aspect is the awareness of students to listen to the material. In the learning that is carried out, all students listen to the teacher well. All students of 4 Ladadan Elementary School already understand the importance of listening to the teacher's explanation, especially regarding the material

The second aspect is the enthusiasm of students in participating in learning. 4th grade students feel happy in learning. This is because the use of the make a match type of cooperative learning model can stimulate students' enthusiasm and desire to learn. This is because the use of the make a match type of cooperative learning model can stimulate students' enthusiasm and desire to learn. This is in accordance with the opinion of (Noviyanto et al., 2022) which states that the make a match cooperative learning model can stimulate students to be more enthusiastic in learning.

The third aspect, the participation of students in every learning activity. all students actively participate in all series of activities such as questions and answers, group discussions and group presentations related to the paired cards that have been obtained. . This is also the impact of applying the make a match cooperative learning model. As stated (Ermita, 2021) that the make a match method is an effective learning method in increasing student activity.

The fourth aspect is the ability of students to collaborate in groups. In this study, students were divided into 4 groups. The division of groups is based on the numbers obtained by students, namely 1, 2, 3, and 4. In cycle II all students are willing to work well with their groups such as discussing to determine answers, looking for pairs of cards that have been distributed. This is because the make a match cooperative model is also very suitable and has a significant impact in increasing student motivation for group discussions, increasing students' desire to

excel, increasing curiosity, and wanting to learn. The last aspect is improving learning outcomes (Chonstantika et al., 2013).

The last aspect is the increase in learning outcomes, in the second cycle student learning outcomes increased by 23.6% seen from classical completeness in the previous cycle. learning with heat energy material obtains a classical completeness percentage of 88% so that the second cycle of learning is said to be complete. This is in accordance with what was conveyed by Trianto in (Royani, 2017) that a class can be said to have completed its learning (classical completeness) if in a class there are more than 85% of students who have completed learning.

In the second cycle, the results of the observation were 98.6%, 5% greater than the results of the observations in the first cycle. In the second cycle, researchers as educators increased their interactions with students in delivering material, such as when they explained the meaning of heat energy, they would immediately ask questions and answer. Based on this, students become more active and enthusiastic in learning. After the implementation of the second cycle, students have reached the completion of learning science material, especially heat energy material.

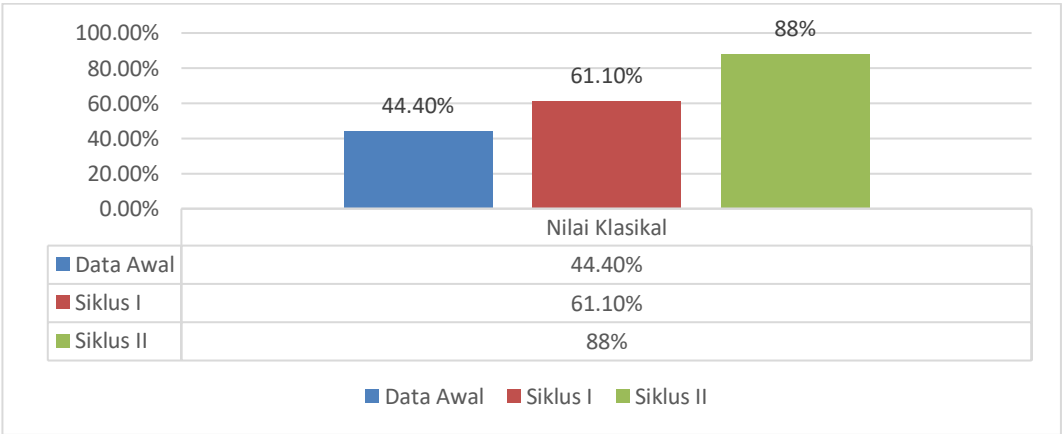

Figure 3.2. Comparison Diagram of Student Learning Outcomes in Initial Findings, Cycle I and Cycle II

Based on the diagram, the results of learning science on heat energy material for class IV SD N Laladan in the initial findings showed low classical completeness, namely 44, 40%. Therefore, it is necessary to improve science learning through classroom action research by applying the make a match cooperative learning model assisted by card media to improve student learning outcomes. After the research was conducted, the learning outcomes in the first

cycle showed that classical mastery was still lacking, namely 61.1% so that the implementation of the second cycle resulted in a high classical mastery of 88%.

Student learning outcomes from cycles I to II have increased and have reached indicators of success in cycle II. This happens because learning in the classroom uses a make a match type cooperative model. This model has been proven in several studies, one of which is research from (Kurniasih & Sani, 2017) that one of the advantages of the make a match learning model is that it is able to improve student learning outcomes in order to achieve classical mastery levels. With the increase in student learning outcomes from cycles I to II, the students' understanding ability in absorbing learning materials also increases. This is because students have begun to recognize and are familiar with the application of the make a match type cooperative model assisted by card media which makes it easier for students to understand the material presented by the teacher.

Science learning of heat energy material in class IV with the application of a cooperative model of make a match type assisted by card media creates independent and active students during learning activities, trains students in exploring new information, identifies events related to the material being taught and raises problem solving skills. This is in accordance with the opinion (Adilah, 2017) that science is needed in everyday life to meet human needs through solving identifiable problems. By understanding the natural environment around him. Students are expected to be able to develop skills, insight and awareness of technology related to its use in everyday life.

Given the importance of learning science in elementary schools, in its implementation it is necessary to have the ability of teachers to manage the learning process so that student learning outcomes can be optimal. However, in reality, science learning in elementary schools has so far placed more emphasis on memorizing material and has not facilitated students to get maximum learning outcomes. Students are forced to remember various information without being required to understand and find the information based on its potential. This causes students to become bored and bored, so that student learning outcomes are not good (Adilah, 2017). With the application of a cooperative model of make a match type assisted by card media in class IV SD N Laladan, it is able to overcome student boredom and be able to improve student learning outcomes.

Based on the discussion review, the application of the make a match type of cooperative learning model assisted by card media can be used as an alternative

learning model that can increase students' interest in learning to take part in classroom learning and also have a positive impact on the progress of student learning outcomes. Because, in the make a match type of cooperative learning model, students are invited to look for pairs of cards while learning about a topic in a fun learning atmosphere. So that students become motivated to stay active in finding pairs of cards and students will have a meaningful learning experience. This is in accordance with the opinion (Shoimin, 2014) that make a match is a learning model that requires students to be active in finding pairs of cards that match the questions or answers on the card (Riyanti & Abdullah, 2018)

The application of the make a match type of cooperative learning model is also able to create students' curiosity about the questions and answers given by the teacher. Students become interested in exploring the material provided in order to solve problems that are packaged in the form of games in groups. Based on the results of the research that has been done, the application of the make a match type of cooperative learning model assisted by card media is very appropriate to overcome student problems, especially to improve student learning outcomes in the teaching materials used in this study. Thus, it can be concluded that the application of the make a match type of cooperative learning model assisted by card media to improve science learning outcomes for fourth grade students at SDN Laladan has been successful.

However, in the implementation of this research there are also some obstacles that occur in the field. These obstacles include difficulties in organizing students to start learning. This is because students before starting learning are used to playing, running or joking with their friends. Even so, the teacher is able to coordinate students to take part in learning solemnly. Then, the difficulty of students in understanding the instructions given by the teacher in the implementation of learning. Although the delivery of instructions has been arranged in such a way, but there are still many students who do not understand it. This requires the teacher to explain the instructions repeatedly which makes time ineffective. The solution to this problem is that the teacher can manage time well, one of which is by preparing the necessary tools and materials before learning begins and preparing various materials related to learning. This is in accordance with Rusman's opinion that before carrying out the learning process, the teacher needs to set time regarding the ongoing learning process which includes setting

the time allocation such as initial activities ±20%, subject matter ±80%, and closing ±20% (Riyanti & Abdullah, 2018)

D. Conclusion

The application of the make a match cooperative learning model assisted by card media has a significant impact in improving the quality of learning, especially for student learning outcomes. The results of the research applied at SDN Ladadan with grade 2 students as subjects, showed that the use of the make a match cooperative learning model with the aid of card media could improve learning outcomes. It can be seen in cycle 1 that there are 1 student who gets a very good predicate, 10 students get a good predicate, while 6 students get a sufficient predicate, and 1 student with a poor predicate. The data shows the classical value obtained is 61.1%, which means that the study has not been completed. Because the learning outcomes in cycle 1 still do not meet the criteria for complete learning, then cycle 2 actions are carried out. In cycle 2 there is a significant increase in learning outcomes. This is based on student learning outcomes with details, there are 8 students who get a very good predicate, 8 students get a good predicate, while 2 students get a sufficient predicate. The data shows the classical value obtained is 88%, which means complete learning. This shows that research conducted for 2 cycles has a good impact so that student learning outcomes can be completed. In the application of the cooperative learning model, make a match assisted by media cards, students are more active in learning, the learning atmosphere is more fun, students are easy to understand the material and students can foster a sense of cooperation and mutual cooperation with their group friends.

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