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Improving Science Learning Outcomes through the Application of Project-Based Learning Model to Fourth Grade Students of SD Inpres Bangkala III Makassar

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ABSTRACT

Science subjects require media in teaching. The learning process will not be maximized if the material is only based on textbooks. Therefore, the objectives of this research is to determine the improvement of science learning outcomes through the application of project-based learning model to fourth grade students of SD Inpres Bangkala III Makassar. This type of research is classroom action research which is conducted in a cyclic process with the stages of planning, implementation, observation and reflection. The subjects in this research were the fourth grade students of SD Inpres Bangkala III Makassar consisting of 29 students. The research instruments used in this research were observation sheets, learning outcomes tests and documentation. Data were analyzed by descriptive quantitative. The results of the research indicated that the results of observations of teacher teaching activities in cycle 2 increased to 89.74% with a very good category and the results of observations of student activities increased to 81.81% with a very good category and student learning outcomes reached a minimum completeness criteria score of 82.75%. Therefore, based on the results of this research, it can be concluded that the project-based learning model is able to improve learning outcomes to fourth grade students of SD Inpres Bangkala III Makassar.

Keywords: *Project-Based Learning Model, Science, Primary School*

INTRODUCTION

The term education comes from the Greek pedagogy, which means a child who goes to and from school accompanied by a servant. While the servant who takes and picks up is called *paedagogos*. In Roman, education is called educate, which means getting out something that is in it. In English, education is defined as educating, which means improving morals and training intellectually (Arifin, 2014). Education is a conscious and planned effort to create a learning environment and learning process in order for students to actively develop their potential to have the religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, nation and state. The nature of science learning is a set of knowledge that contains facts, concepts or principles in the process of discovery. According to the purpose of science learning, a teacher must foster students' attitudes to be grateful for God's creation; apply science learning in everyday life; develop curiosity about science, technology, and society; protect and preserve the environment. Therefore, science learning in primary schools emphasizes more on providing direct learning experiences through the utilization and development of process skills and scientific attitudes.

Science subjects require media in teaching. The learning process will not be maximized if the material is only based on textbooks. In teaching, teachers need the right media to facilitate students in understanding the material contained in each of these subjects. The solutions to overcome the problems in learning. Based on the results of observations conducted at SD Inpres Bangkala III Makassar, especially on the fourth grade on November 14, 2020, there are often constraints and difficulties, especially in conveying the expected learning outcomes. It is caused by several things, such as many students who think that science is an inadequate lesson so that most students do not like science lessons and the desired learning outcomes are sometimes not achieved. The limitations of teaching aids and learning media caused teachers to have problems in explaining certain material in science learning.

During the material presentation, especially on the application of motion energy concepts on the fourth grade of SD Inpres Bangkala III, researchers found that there were still many students who did not like the lesson, not enthusiastic and easily bored with the material presented because the teacher did not use interesting and varied media. Lack of student activeness in participating in learning, such as when the teacher asks students to ask questions, but no students ask and there are still many students who cannot solve problems well. Among the 24 students, only 10 students managed to reach the KKM while 14 of them scored under the KKM. Therefore, it causes some concern about the impact on their learning outcomes later. While the Minimum Completeness Criteria (KKM) for science subjects at SD Inpres Bangkala III is 70.

Based on research from Amsikan (2022), in his research he applied Project-Based learning in 2 cycles of physics learning to 34 students of class X-MIPA3 at

SMA Negeri 1 Soe. His research indicated that there was an increase in learning outcomes from cycle I to cycle II; cycle I had an average score of 85.6 with a good category and cycle II had an average score of 88.7 with a very good category. It indicates that there is an increase in science process skills from cycle I to cycle II in students. Meanwhile, Syukriah et al (2019) stated in their research that in improving students' cognitive learning outcomes used Project-Based learning combined with PDEODE (predict-discuss-explain-observe-discuss-explain). This research was conducted at several senior high schools in Banda Aceh from September to October 2018. The Pre-test post-test control group design was employed in this research. The total of 172 students was involved as subjects which was divided in to 2 groups (control and experiment). The students' learning outcomes were measured by calculating gain normalization (g) and the Mann-Whitney test. The results showed a significant difference between control group and experiment group α=0.05, the value of Asymp. Sig. (2-tailed) 0.00<0.05. To concluded, the PjBL model combined with PDEODE has significantly improve the cognitive learning outcomes of students. Then, according to Safaruddin et al (2020), their research analyzed the effect of using Project-Based learning strategy assisted by electronic media in increasing learning motivation and science process skills on the material "heat transfer." It discovered that using PjBL based on e-media strategy is effective and affects the improvement of KPS (science process skills) and learning motivation of elementary school students.

Therefore, based on the observation and background of the problem above, teachers are required to be able to design and implement learning experience programs appropriately so that students gain complete knowledge and the learning process becomes more meaningful for students. The low science learning outcomes of students can also be caused by the learning model used that is less interesting and not in accordance with the conditions of the students. By selecting the right learning model used by the teacher in teaching, it can stimulate students to be enthusiastic about learning, the learning outcomes can increase. Therefore, the objectives of this research is to determine the improvement of science learning outcomes through the application of project-based learning model to fourth grade students of SD Inpres Bangkala III Makassar.

LITERATURE REVIEW

Science Learning

Science education basically has two components, which are product and process components. Science as a product is the collection of empirical results and analytical activities conducted by scientists for centuries, for example facts or concepts about natural phenomena. Meanwhile, science as a process is one of the organized and systematic series conducted to find concepts, principles and laws about natural phenomena (Riastini et al., 2022). Science is a systematic knowledge

related to natural and material phenomena that is organized regularly, applicable in general as a collection of observation and experimentation results (Rati et al., 2017). In addition, according to Jessani (2015) science education does not only teach facts such as types of animals, plants, natural laws, but also teaches good problem-solving methods, encourages good attitudes, trains the ability to make conclusions, be objective, train cooperation in groups and be responsible.

Project-Based Learning Model

Project-based learning model can be defined as learning with long-term activities that involve students in designing, creating and presenting products to solve real-world problems (Abdullah, 2014). Project-based learning is a learning model that allows teachers to manage classroom learning by involving project work (Rati et al., 2017). It uses problems as the first step in gathering and integrating new knowledge based on real-life experiences. Project-based learning is designed to be used with complex problems that students need to investigate and understand. Project-based learning has a big potential in providing a more interesting and meaningful learning experience for students. There are several characteristics of project-based learning according to the Center for Youth Development and Education Boston, such as (1) students make their own decisions within a predetermined framework; (2) students try to solve problems that do not have one definite answer; (3) students are encouraged to think critically, solve problems, collaborate, and try various forms of communication; (4) students are responsible for finding and managing the information they collect themselves; (5) evaluation is conducted continuously throughout the project; and (6) students regularly reflect and meditate on their work, both the process and the results (Hosnan, 2014). Therefore, this learning will lead students to produce a product that is constructed from the material they have acquired from the problems provided. Students should focus on solving problems or questions that lead them to understand concepts and principles related to the project. The teacher's role is to assist students in planning project work, analyzing sketches, arranging for any cooperation that may be needed, and so on but not provide direction on how to complete the project that students plan. The objective of this learning is to understand concepts and principles better (Abdullah, 2014). The products conveyed in this learning can be in the form of electronic media, printed media, appropriate technology, written works, and so on. Product delivery can be conducted through online media, exhibitions, or other activities. The assessment conducted is in the form of process assessment and product assessment so that teachers need to develop relevant learning rubrics.

RESEARCH METHODOLOGY

The approach used in this research is a descriptive quantitative approach. The quantitative approach is a research approach that primarily used the post-positivism paradigm in developing science, such as thinking about causal reduction of

variables, hypotheses, specific questions, using measurement and observation, theory testing. This type of research is classroom action research. Classroom action research is an observation conducted by teachers in their own classrooms through self-reflection with the aim of improving their profession as teachers in order to improve student learning outcomes (Khasinah, 2013). In addition, Arikunto et al (2021) stated that classroom action research is an observation of learning activities of an action that is intended to appear and occur in the classroom together. The main objective of this research is to implement a project-based learning model with the aim of improving science learning outcomes in fourth grade students of SD Inpress Bangkala III Makassar in all planning, action, observation, and reflection processes. There are three research focuses in this research, such as (1) project-based learning media; (2) science learning ability; and (3) research settings and subjects. The research subjects consisted of 14 male students and 15 female students of the fourth grade of SD Inpres Bangkala III Makassar in the 2020/2021 school year. The research procedure conducted in this research used classroom action research consisting of two cycles.

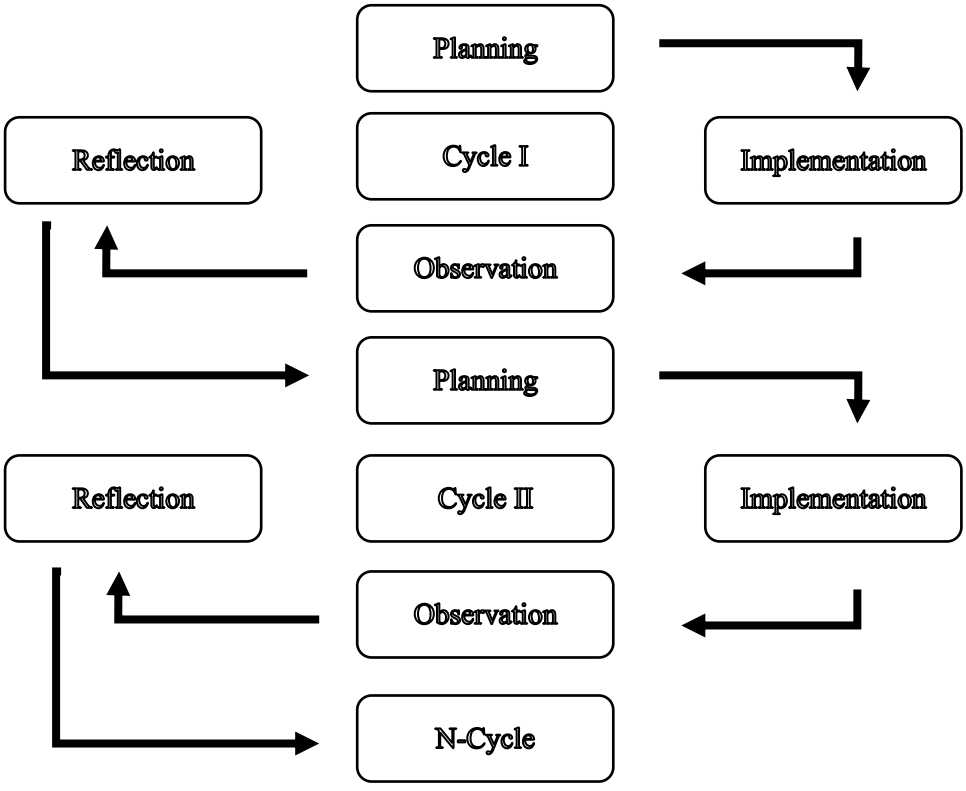

Figure 1. The Diagram of Research Procedure

RESULT AND DISCUSSION

Cycle I Implementation Description

Science learning activities with the project-based learning model in cycle I were conducted three times for meetings. The first meeting was on September 14, 2022, the second meeting was held on September 16, 2022 and the third meeting was held on September 17 with a total of 29 students. There are three steps in this cycle which describes below.

a. Cycle I Plan

1) Prepare lesson plan with project-based learning model. The lesson plans were prepared by researchers with the consideration of lecturers and teachers. The lesson plan is used by the teacher as a reference in the learning that will be implemented;
2) Prepare teacher and student observation sheets for each meeting of classroom learning implementation;
3) Compile and prepare evaluation test questions for students given at the end of cycle. The test questions were prepared by the researchers with the consideration of homeroom teachers; and
4) In this planning step, first, the researchers provide an overview or explanation to the homeroom teacher about the project-based learning model before it is used in learning.

b. Implication

1) First Meeting of Cycle I

The first meeting of cycle I was held on Tuesday, September 14, 2022 in which researchers acted as teachers to implement the learning process, while the fourth grade teacher acted as an observer. There are 3 activities in each meeting which will be explained in the following below:

a) Preliminary Activity

The preliminary activity requires about 10 minutes. In the preliminary activities, the teacher greets the students and conditioning the class to be ready to learn. A student is asked to lead the prayer, check student attendance, apperception and convey learning objectives.

b) Main Activity

Learning is continued in the second activity which requires about 55 minutes. In this activity the teacher conducts learning by using a project-based learning model with several steps, such as (1) the teacher asks one or more questions about the conservation of animal and plant biodiversity; (2) the teacher asks the students to answer the questions individually while maintaining their dignity; (3) the teacher asks students to pair up

and exchange answers and discuss together with their partner; (4) the teacher asks each pair to come up with an answer about conserving biological resources and discuss it with their partner; and (5) the teacher instructs all pairs to formulate a new answer and then compare their answers with the answers of other pairs regarding the conservation of biological resources.

c) Last Activity

In the last activity, the teacher closes the lesson with about 5 minutes.

2) Second Meeting of Cycle I

The second meeting of Cycle I was held on Thursday, September 16, 2022 in which researchers acted as teachers to implement the learning process, while the fourth grade teacher acted as an observer.

a) Preliminary Activity

The preliminary activity requires about 10 minutes. In the preliminary activities, the teacher greets the students and conditioning the class to be ready to learn. A student is asked to lead the prayer, check student attendance, apperception and convey learning objectives.

b) Main Activity

Learning is continued in the second activity which requires about 55 minutes. In this activity the teacher conducts learning by using a project-based learning model with several steps, such as (1) the teacher asks one or more questions about natural resources; (2) the teacher asks the students to answer the questions individually with natural resources; (3) the teacher asks students to pair up and exchange answers and discuss together with their partner; (4) the teacher asks each pair to come up with an answer about natural resources and discuss it with their partner; and (5) the teacher directs all pairs to formulate a new answer, then compares the answer with other pairs' answers about natural resources.

c) Last Activity

In the last activity, the teacher closes the lesson with about 5 minutes.

3) Third Meeting of Cycle I

The teacher summarizes the learning at the first and second meetings, then the teacher distributes evaluation sheets to students about the previous learning material so that the teacher can find out the students' learning outcomes.

c. Observation

The success rate of this implication in cycle I was observed during the implementation process. The focus of observation was the behavior of teachers and students during the learning process using the cycle I activity observation sheet.

1) Observation results of teacher activity of cycle I (first and second meeting)

The learning process of the cycle I was observed by the fourth grade teacher of SD Inpres Bangkala III Makassar. The implementation of cycle I actions observed for researchers is presented in table 1 below:

Table 1. The Observation Result of Teacher's Teaching Activity in Cycle I

Criteria	Cycle			
	First Meeting		Second Meeting	
	Score	Rating	Score	Rating
Good (3)	3	9	4	12
Adequate (2)	8	16	8	16
Less Good (1)	2	2	1	1
The Total Score Obtained		27		29
Percentage		69.23%		74.35%
Category		Less Good		Adequate

Source: Processed Data by Researchers

Based on the table above, it can be concluded that in the implementation of teacher activity observation results in cycle I of first meeting I in the good category 3, there are 8 adequate category, there are 2 less good categories. The total score obtained is 27 with a percentage of 69.23% which is included in the less good category. In the implementation of learning outcomes of teacher activity observations in cycle I of the second meeting in the good category there were 4, there were 8 adequate category, there were 1 less good category. The result of the teacher's observation of the second meeting was that the total score was 29 with a percentage of 74.35% which was included in the adequate category.

Table 2. The Observation Result of Student Learning Activity in Cycle I

Criteria	Cycle			
	First Meeting		Second Meeting	
	Score	Rating	Score	Rating
Good (3)	4	12	3	12
Adequate (2)	5	10	6	12
Less Good (1)	2	2	2	2
The Total Score Obtained		24		26
Percentage		72.72%		78.78%
Category		Adequate		Good

Source: Processed Data by Researchers

Based on table 2 above, it can be concluded that in the implementation of student learning activity observation results in cycle I of first meeting I in the good category 4, there is a adequate category 5, the category is not good for 2. The result of observation of student learning activities at the first meeting, the total score is 24 with a percentage of 72.72% which is included in the adequate category. In the implementation of learning outcomes observation of student learning activities in cycle I of second meeting in the good category there were 3, there were 6 in the adequate category, there were 2 in the less good category. The result of student learning observations in second meeting total score was 26 with a percentage of 78.78% which is included in the good category.

The observation results indicate that the learning activities are still not fully implemented properly. It is indicated by indicators: students have not been able to be fully independent, student activity is still lacking, the result of group work has not been maximized because there is no visible cooperation between group members, researchers have not succeeded in assisting students to make conclusions and encourage students to ask questions. The indicator of learning process that has not been going well can also be observed from the classroom atmosphere which still sounds crowded with students' babbling that is irrelevant to learning.

The majority of students did not dare to express their opinions and were still selfish. However, the students were very enthusiastic when it was announced that group work would be held. After distributing individual tasks into each group, the observation results of the second meeting indicated that the implementation of the learning model and student activities had improved a lot. It can be observed from the

seriousness of students in working on each task given together in their groups. On the second hour, students' activities and the implementation of the learning model were still the same as on the first meeting.

The results of the first meeting were still not optimal because there were still students who had not focused on the lesson, still busy chatting with their friends. Therefore, the researcher gave directions to assign tasks to each group member so that they have their own tasks and responsibilities. As a consequence, the researcher went around visiting each group. Students' learning outcomes in science subjects in cycle I

The result of quantitative descriptive analysis indicated that the average score obtained by all students in cycle I evaluation reached 67.58 with the highest score of 93 and the lowest score of 40. The scores obtained by students in cycle I can be presented in table 3 as follows:

Table 3. Frequency and Percentage Distribution of Science Learning Outcomes in Cycle I

No.	Score	Frequency	Percentage (%)
1	0-60	10	34.48
2	61-74	12	41.32
3	75-79	0	0
4	80-84	3	10.32
5	85-100	4	13.79
Total		**29**	**100**

Source: Processed Data by Researchers

Based on table 3 above, it is known that fourth grade students who have reached the minimum completeness criteria (KKM) of 75 are 7 students (24.13%). This can be observed from the number of students who get scores from 75 and up. While those who have not reached the minimum completeness criteria (KKM) of 75 are 22 students (75.86%). This can be observed from the number of students who get scores under 75. The following are the criteria for achieving science learning outcomes in the fourth grade of SD Inpres Bangkala III Makassar.

Table 4. Achievement Criteria for Science Learning Outcomes in Cycle I

No.	The Level of Success	Predicate of Success	Frequency (Student)	Class Average Score (%)	Completion Percentage (%)
1	0 – 60	Very Low	10		
2	61 – 74	Low	12		
3	75 – 79	Medium	0		
4	80 – 84	High	3	67. 58%	24.13%
5	85 – 100	Very High	4		
Total			**29**		

Source: Processed Data by Researchers

Based on the table, it can be known that student learning outcomes in the very low category were 10 students, the low category was 12 students, the medium category was 0, there were 3 students in the high category, and 4 students were very high. . Learning outcomes in cycle I indicated that 24.13% of students had reached the KKM. These results indicate that the application of The Power Of Two learning model has not been successful because it has not reached the success criteria of 75.86% or above the KKM.

2) Reflection

The result of observation data reflection indicates that the cycle I learning has not been maximized. The cycle I plan has not been successfully implemented. Then continued in cycle II with some improvements such following below:

a) Teacher Aspect, this aspect consists of 2 reflection outcomes, such as (1) teachers must be good in managing the class, so that students do not do other work in the learning process; and (2) teachers must control learning, so that students can respond and be motivated to find answers to these problems.

b) Student Aspect, this aspect consist of 2 reflection outcomes, such as (1) students are expected to consider the material explained by the teacher; and (2) students must respond to create a fun atmosphere with the project-based learning model.

Cycle II Implementation Description

a. Cycle II Plan

The planning in the cycle II was almost the same as the planning in cycle I. The implementation of activities in cycle II was conducted by considering the results of previous reflections. The obstacles encountered in

the implementation of cycle I activities were attempted to be improved. Based on the reflection in cycle I, in planning the activities of cycle II, the researchers designed the activities to be conducted as follows:

1) Create a lesson plan (RPP) using a project-based learning model. The steps of lesson plans were prepared by considering the results of previous reflections. The lesson plan was prepared by the researcher with the consideration of the class teacher who is also a science teacher. The lesson plan is used by the teacher as a reference in the learning that is conducted;
2) Prepare observation sheets for each meeting of classroom learning implementation; and
3) Develop and prepare evaluation test questions for students that are given at the end of cycle. The test questions were prepared by the researchers.

b. Implication

1) First Meeting of Cycle II

The first meeting of Cycle II was held on Thursday, September 16, 2022 in which researchers acted as teachers to implement the learning process, while the fourth grade teacher acted as an observer.

a) Preliminary Activity

The preliminary activity requires about 10 minutes. In the preliminary activity, the teacher greets the students and conditioning the class to be ready to learn. A student is asked to lead the prayer, check student attendance, apperception and convey learning objectives.

b) Main Activity

Learning continued in the second stage which took about 55 minutes. In this activity the teacher conducts learning by using a project-based learning model. The stages of the activity are as follows: (1) the teacher asks one or more questions about natural resource conservation; (2) the teacher asks students to answer the questions individually by conserving natural resources; (3) the teacher asks students to pair up and exchange answers and discuss together with their partner; (4) the teacher asks each pair to create an answer about natural resource conservation and discuss it with their partner; and (5) the teacher directs all pairs to formulate a new answer, then compare the answer with other pairs' answers about natural resource conservation.

c) Last Activity

In the last activity, the teacher closes the lesson with about 5 minutes.

2) Second Meeting of Cycle II

The second meeting of Cycle II was held on Monday, September 20, 2022 in which researchers acted as teachers to implement the learning process, while the fourth grade teacher acted as an observer.

a) Preliminary Activity

The preliminary activity requires about 10 minutes. In the preliminary activity, the teacher greets the students and conditioning the class to be ready to learn. A student is asked to lead the prayer, check student attendance, apperception and convey learning objectives

b) Main Activity

Learning continued in the second stage which took about 55 minutes. In this activity the teacher conducts learning by using a project-based learning model. The stages of the activity are as follows: (1) the teacher asks one or more questions about potato can generate electricity; (2) the teacher asks students to answer the questions individually by conserving natural resources; (3) the teacher asks students to pair up and exchange answers and discuss together with their partner; (4) the teacher asks each pair to create an answer about natural resource conservation and discuss it with their partner; and (5) the teacher directs all pairs to formulate a new answer, then compare the answer with other pairs' answers about potato can generate electricity.

c) Last Activity

In the last activity, the teacher closes the lesson with about 5 minutes.

3) Third Meeting of Cycle II

The teacher summarizes the learning at meetings 1 and 2, then the teacher distributes evaluation sheets to students about the previous learning material so that the teacher can find out the students' learning outcomes.

c. Observation

The success rate of the activity in cycle I was observed during the implementation process. The focus of observation was the behavior of teachers and students during the learning process using the observation sheet of the activity in the cycle I.

1) Observation results of teacher activity of cycle II (first and second meeting)

The implementation of cycle II actions observed for researchers is presented in table 5 below:

Table 5. The Observation Result of Teacher's Teaching Activity in Cycle II

Criteria	Cycle			
	First Meeting		Second Meeting	
	Score	Rating	Score	Rating
Good (3)	1	3	4	9
Adequate (2)	9	18	8	20
Less Good (1)	3	3	1	0
The Total Score Obtained		24		29
Percentage		61.53%		74.35%
Category		Less Good		Adequate

Source: Processed Data by Researchers

Based on the table above, it can be concluded that in the implementation of the results of observations of teacher teaching activities in cycle II, meeting I was in the good category 1, there were 9 adequate category, there were 3 less good category. The total score obtained was 24 with a percentage of 61.53%, which is included in the less good category. In the implementation of learning outcomes observation of teacher teaching activities in cycle II of the second meeting in the good category there were 4, adequate category there were 8, the less good category was 1. The results of teacher observation of the second meeting total score was 29 with a percentage of 74.35% which is included in the adequate category.

Table 6. The Observation Result of Student Learning Activity in Cycle II

Criteria	Cycle			
	First Meeting		Second Meeting	
	Score	Rating	Score	Rating
Good (3)	3	9	4	15
Adequate (2)	6	12	8	12
Less Good (1)	2	2	1	0
The Total Score Obtained		23		27
Percentage		69.69%		81.81%
Category		Less Good		Good

Source: Processed Data by Researchers

Based on the table above, it can be concluded that in the implementation of the results of observations of teacher teaching activities in cycle II, meeting I was in the good category 1, there were 9 adequate category, there were 3 less good category. The total score

obtained was 24 with a percentage of 61.53%, which is included in the less good category. In the implementation of learning outcomes observation of teacher teaching activities in cycle II of the second meeting in the good category there were 4, adequate category there were 8, the less good category was 1. The results of teacher observation of the second meeting total score was 29 with a percentage of 74.35% which is included in the adequate category.

Data from the test results are obtained in the form of numbers regarding the score obtained by each student. The results of quantitative descriptive analysis indicate the class average score obtained by all students in the evaluation of cycle II can be presented in the following below:

Table 7. Frequency and Percentage Distribution of Science Learning Outcomes in Cycle II

No.	Score	Frequency	Percentage (%)
1	0-60	0	0
2	61-74	5	580
3	75-79	0	0
4	80-84	11	263.6
5	85-100	13	44.82
Total		**29**	**100**

Source: Processed Data by Researchers

Based on table 7 above, it can be concluded that most of the fourth grade students have reached the minimum completeness criteria which is ≥ 75. The following are the criteria for achieving science learning outcomes in cycle II.

Table 8. Achievement Criteria for Science Learning Outcomes in Cycle II

No.	The Level of Success	Predicate of Success	Frequency (Student)	Class Average Score (%)	Completion Percentage (%)
1	0 – 60	Very Low	0		
2	61 – 74	Low	5		
3	75 – 79	Medium	0	83.65%	82.75%
4	80 – 84	High	11		
5	85 – 100	Very High	13		
Total			**29**		

Source: Processed Data by Researchers

Based on this data, it can be concluded that the results of the cycle II test which was attended by 29 students, the average class score has reached 83.65%. Then, the average class success criteria in cycle II has been reached. However, the percentage of completeness of all students, which is at least 80% of the number of students who get a score of 75, has been reached in cycle II. The percentage of students who reached the minimum score reached 82.75% or most students had reached the minimum score.

2) Reflection

Based on the implementation of cycle II actions, the results indicated that science learning activities with project-based learning models could proceed successfully and well compared to learning activities in cycle I. Based on observations, the learning situation improved. Based on observation, the learning situation indicates an improvement. There were 7 children who had completed their learning in cycle I and if presented in cycle I was 24.13%. Meanwhile, in cycle II there were 24 children who had completed their studies and if the percentage was 82.75%. Therefore, it can be stated that the minimum standard 75 with a success indicator of 75 reached 80% of the total number of students achieved and this research is considered to have been completed.

The Research Result

This research used a project-based learning model to improve the science learning outcomes of fourth grade students of SD Inpres Bangkala III Makassar for the 2021/2022 academic year. The project-based learning model improves learning outcomes because by using the project-based learning model, students become more interested in participating in learning.

Improve student learning outcomes by using the Project-Based model which has the principle that thinking together is much better than thinking alone. According to Halimatusyadiyah et al (2022), project-based learning is a learning activity used to encourage cooperative learning and reinforce the importance and benefits of two-person synergy. Learning activities with the power of two people, used to enhance learning, and emphasize the benefits of synergy, that is, that two heads are better than one. The model chosen by the teacher should not contradict the learning objectives. The model must support where educational interaction activities proceed in order to achieve goals. The main purpose of learning is to develop the ability of individual children to solve all the problems they encounter (Mahajan & Singh, 2017).

In cycle I, during learning activities, students were less active and less enthusiastic in participating in the learning process. It was because the method applied by the teacher had not yet started the learning process. In addition, the teacher in conveying the subject matter is still not optimal so that there are still

many students who do not understand and are less active, which in this case is certainly very influential on how to improve student learning outcomes.

After reflecting on the activities in cycle I, several improvements were made in Cycle II with activities that were considered necessary, such as maximizing the use of the project-based learning model used and the teacher was better prepared so that the display and delivery of material in learning could be maximized, so that students would more easily accept the material and feel enthusiastic in participating in learning. Because of this situation, it has a great impact on improving student learning outcomes.

In cycle II, it can be known that science learning outcomes of fourth grade students of SD Inpres Bangkala III Makassar have increased student learning outcomes which indicate that the average acquisition of student scores from cycle I to cycle II has increased, that is, from cycle I with the acquisition of 67.58 increased to 83.65 in cycle II. It indicates that the success indicators are achieved, thus the use of the project-based learning model is able to improve student learning outcomes, especially in science subjects of fourth grade students of SD Inpres Bangkala III Makassar. Observation of teacher and student activities through observation sheets in cycle II has increased. During the first and second meetings, the implementation of learning progressed well.

CONCLUSION

The results of cycle I research indicated that the percentage of students who scored higher than the KKM only reached 24.13%, and therefore still could not reach the research success criteria. In cycle II, the steps of applying the project-based learning model to improve student success were conducted by connecting the material to everyday life and activities that students have experienced themselves, providing motivation, dividing the number of members into smaller groups and the heterogeneity of its members, and providing opportunities to make group presentations on the results of their group work in front of the class. The percentage of student scores higher than the KKM in cycle II increased to 82.75%, therefore there was an increase from cycle I to cycle II by 60%. Based on the results of research and discussion, it can be concluded that the project-based learning model can improve students' science learning outcomes.

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