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Improving Learning Outcomes Materials on Earth's Rotation and Eclipses Through Demonstration Methods

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Abstract
This study aims to examine the extent to which the learning outcomes of grade IV students at SD Negri 2 Belikurip have increased after the application of the demonstration method to learning rotation and revolution of the earth and the occurrence of lunar and solar eclipses. This research is a Classroom Action Research (CAR). The subjects of this study were 11 fourth grade students at SD Negri 2 Belikurip. This research was conducted in 2 cycles, each cycle held 2 meetings. The first meeting explained the material using the demonstration method and the second meeting was to carry out tests. The results of this study concluded that with the demonstration method it can be concluded: (1) active learning reached 11 students or 100% with an average value of 92; (2) learning outcomes reached 11 students or 100% with an average value of 90.9; (3) The activity and learning outcomes reached 11 students or 100% with an average score of 91.5 or all of them were in the very good category (A).
Keywords: Demonstration Method, Learning Activeness, Learning Outcomes, Earth's Movement

INTRODUCTION

Considering that learning Natural Sciences is a very important lesson for students, because Science is a natural learning concept and has a very close and broad relationship with everyday human life, even Science has efforts to arouse human interest and ability to develop science and technology. as well as an understanding of the universe which has many facts that have yet to be revealed and are still confidential so that the findings can be developed into new natural sciences that can be applied in everyday life. Therefore it is very important to provide students with knowledge about the natural surroundings so that with this provision, students will later become knowledgeable people about the natural surroundings.

Natural Science is a subject in elementary school which is meant for students to have organized knowledge, ideas and concepts about the natural surroundings, which are obtained from experience through a series of scientific processes including investigation, preparation and presentation of ideas. In principle, studying science is a way of finding out and how to do or do and helping students to understand the natural surroundings more deeply (Depdiknas in Suyitno, 2002: 7). The material "Earth Rotation and Revolution and the Occurrence of Lunar and Solar Eclipses is one of the natural science learning materials found in the "Earth and the universe" group. This material is contained in the second semester program of the 2013 curriculum, namely Theme 8. My Earth, Basic Competency 3.8 Explaining the events of the earth's rotation and revolution and the occurrence of lunar and solar eclipses.

The demonstration method is a way of learning that is carried out through a demonstration or performance to display a process of occurrence of an event, which is carried out either directly or through the use of teaching media relevant to the material being presented. In this study, what is meant by demonstrations is student activities to demonstrate or demonstrate the process of rotation and revolution of the earth, as well as the process of occurrence of lunar or solar eclipses using the media of artificial objects (sun, earth, moon) and others (available in the IPA KIT).).

The demonstration method has the following characteristics: (1) The teacher conducts an experiment; (2). Aiming for students to be able to understand how to organize or compose something; (3). If students do their own demonstrations, they will be more successful, understand more in using something. tools. (4) Students can choose and compare the best way. The purpose of using the demonstration method in learning activities is to show the process of occurrence of an event according to teaching material, how to achieve it and make it easy for students to understand in class teaching. The benefits of applying the demonstration method are for: (1) students' attention can be more focused; (2) the student learning process is more focused on the material being studied; (3) Experiences and impressions as learning outcomes are more embedded in students. The way of presenting the demonstration method can be done by showing actual objects, models, and imitations and accompanied by an oral explanation. Demonstrations will be active if done well by the teacher and then carried out by students. This method can be done for activities that have limited tools but will be carried out continuously and repeatedly by students.

How to present the demonstration method: (1) The teacher sets instructional objectives to give strong motivation to students to learn. (2) The teacher considers that the choice of technique he uses is able to guarantee the achievement of the goals that have been formulated. (3) The teacher examines the tools to be used regarding the amount, condition, and place. Besides that, also try beforehand so that the demonstration that he runs can be successful. (4) The teacher determines the outline of the steps to be carried out. (5) The teacher believes that sufficient time is available so that he can provide information if necessary and students can ask questions. (6) During the demonstration the teacher must give students the opportunity to observe carefully and ask questions. (7) The teacher needs to evaluate whether the demonstration is successful. If necessary, demonstrations can be repeated (M. Subana and Sunarti. 2008: 110-112).

The demonstration method is a teaching method that presents learning material by demonstrating directly the object or the way of doing something to demonstrate a certain process. Demonstrations can be used in all subjects. In carrying out demonstrations the teacher must be sure that all students can pay attention and observe the object to be demonstrated. Before the demonstration process the teacher has prepared the tools used in the demonstration.

By paying attention to the steps in learning activities, the steps taken in using the demonstration method are as follows: (1). Planning (a) Formulate clear objectives both from the point of view of skills or activities that are expected to be pursued after the demonstration method ends. (b). Determine the outline of the demonstration steps to be carried out (c) Calculate the time needed. (2). Implementation (a) Examine the things above for the umpteenth time. (b) Starting the demonstration by attracting the attention of students. (c) Remembering the main points of the material to be demonstrated so that the demonstration reaches the target. (d) Pay attention to the condition of the students, whether all of them follow the demonstration well. (e) Provide opportunities for students to actively think about what they see and hear in the form of asking questions. (f) Avoiding tension, therefore the teacher should always create a harmonious atmosphere. (3). Assessment or Evaluation Assessment or evaluation activities in learning that use the demonstration method are in the form of giving assignments, such as making reports, answering questions, holding further exercises. In addition, teachers and students evaluate the demonstrations carried out, whether they have been running effectively as expected.

Based on the theoretical study of the demonstration method above, it can be concluded that the demonstration method is a method of teaching by demonstrating or

demonstrating/showing something in front of students and explaining events, rules, and the sequence of carrying out an activity, through the use of media appropriate to the material being presented." . Several aspects to measure students' ability in conducting demonstrations about the material, namely "Explaining the events of the earth's rotation and revolution and the occurrence of lunar and solar eclipses", include the following aspects: (1) the ability to choose the tools/media to be used; (2). Ability to arrange equipment or media; (3). The ability to demonstrate or demonstrate the results of experiments; (4). Ability to explain the sequence of events; (5) the ability to report or conclude the results.

The lack of student activity in participating in the learning process can be seen when the teacher demonstrates KD 3.8 material. Explaining the events of the earth's rotation and revolution and the occurrence of lunar and solar eclipses, students appear passive and lack enthusiasm. And when given a repetition, the results just reached the average in the less category. The lack of active student learning is caused by 2 factors, namely student and teacher factors. Factors from students Factors from students (1). Students are still used to being free/relaxed because with virtual learning without any supervision from the teacher about their learning activities. (2). There is dependence on students in doing their assignments, because they are often assisted by people around them so that students are lazy to think for themselves. (3). Students are annoyed or bored because they are not given the opportunity to try or practice directly. Factors from the teacher: (1). The implementation of demonstrations by the teacher is just like showing a show to students. (2). The teacher does not give students the opportunity to practice it or try to do it so that students do not really understand the material.

In practice, the demonstration method will be active if it is done well by the teacher and then carried out by students. However, in practice the teacher does not provide opportunities for students to do so, so that students are less active and less deep into the material. Therefore, when a test is carried out or given a repeat, the results have not met expectations (still lacking). Therefore the teacher seeks to correct any deficiencies that occur at the beginning of the cycle, in the form Classroom Action Research by applying the demonstration method carried out by students. This is based on the belief that the demonstration method is well suited to this material. Because the demonstration method is a method that requires demonstrating or demonstrating an event or event that is still fictitious for students so that students can actually observe, explore, and understand. This is in accordance with Rusminiati's opinion stating that demonstrations are demonstrations or performances to display a process of an event occurring. (Rusminiati, 2007: 2).

In this study carried out in 2 cycles, each cycle 2 meetings. Cycle I, meeting 1, implementation of learning using the demonstration method which was carried out in small groups, and observations were made about the activeness of student learning using observation sheets. Meeting 2, to conduct tests to determine student learning outcomes. Cycle II, meeting 1, implementation of learning using the demonstration method carried out individually, and observations were made about student learning activeness using observation sheets. Meeting 2, to conduct tests to determine student learning outcomes.

In this study, a temporary hypothesis (hypothesis) can be put forward from this study that: (1) There is an increase in the activeness of learning material explaining the events of the earth's rotation and revolution and the occurrence of lunar and solar eclipses after learning using the demonstration method for class VI students of SD Negeri 2 Belikurip, Baturetno District, Wonogiri Regency Semester II, 2021/2022 academic year. (2) There was an increase in learning outcomes in material explaining the events of the earth's rotation and revolution and the occurrence of lunar and solar eclipses after learning was carried out using the

demonstration method for class VI students at SD Negeri II Belikurip, Baturetno District, Wonogiri Regency Semester 2 for the 2021/2022 academic year. (3) There was an increase in the activity and learning outcomes of material explaining the events of the earth's rotation and revolution and the occurrence of lunar and solar eclipses after learning was carried out using the demonstration method for class VI students at SD Negeri 2 Belikurip, Baturetno District, Wonogiri Regency Semester II for the 2021/2022 academic year.

RESEARCH METHODS

This study used the Classroom Action Research method. This Classroom Action Research was carried out for 3 months, starting from February to March 2022. In semester II of the 2021/2022 school year. Details are explained in the following table:

Table 1. Research Time Allocation

No	Activities	Month/Week													
		February 2022					March 2022					April 2022			
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	Finding research problems		√													
2	Research Permit			√									4			
3	Data collection by taking action a. Cycle I b. Cycle II				√		√	√	√							
4	Data analysis									√	√					
5	Interpretation, inference of data										√					
6	Compile a Report												√	√	√	√

The research time allocation described in the table above, the research implementation has been calculated by adjusting the educational calendar. Data collection through action is carried out on effective school days. The research was conducted at SD Negeri 2 Belikurip, Baturetno District, Wonogiri Regency, in class VI (six) students in semester 2 of the 2021/2022 academic year. Determination of the place of research by considering several things including, 1). In carrying out research activities do not leave the task; 2). the implementation of the research affected the learning process in class VI of SD Negeri 2 Belikurip, Baturetno District, Wonogiri Regency.

Based on the problems raised in this study, the subjects of this study were class VI students at SD Negeri 2 Belikurip, Baturetno District, Wonogiri Regency, Semester 2 of the 2021/2022 academic year. The number of students there are 11 children consisting of 8 boys and 3 girls in one study group. The object of research is: the activity and learning outcomes of students in the Material "Explaining the events of the rotation and revolution of the earth and the occurrence of lunar eclipses and solar eclipses". Data obtained from: (1). Data on student learning activeness while participating in the learning process and conducting demonstrations; (2). Learning outcomes data obtained from the value of the test results.

The research is planned using recycling actions as developed by Suharsimi Arikunto (2010:17) using the steps: planning, implementing, observing and reflecting. The research was carried out in two cycles as follows:

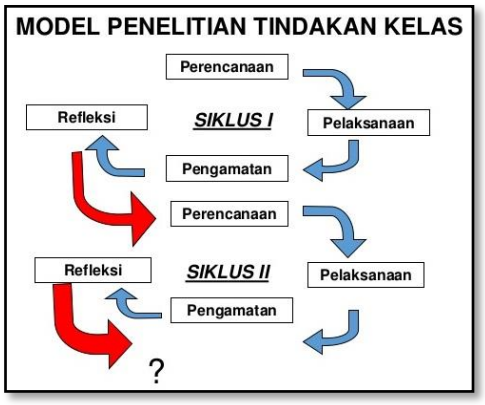

Figure 1. Implementation of Actions in Two Cycles

The implementation of the first cycle of actions will be carried out in February 2022 because it adapts to the second semester learning material for the 2021/2022 school year contained in KD material. 3.8 Explains the events of the earth's rotation and revolution and the occurrence of lunar and solar eclipses Implementation of the actions in cycle 1 applies the demonstration method small group. In cycle 1 the evaluation was carried out by answering 10 filling questions and 5 descriptive questions related to KD.3.8 material Explaining the events of the earth's rotation and revolution and the occurrence of lunar and solar eclipses.

The activities in cycle II continue the activities in cycle I, the difference is only in the development of demonstration activity techniques. If in the first cycle the demonstration activities were carried out in groups, in the second cycle they were carried out individually. The research method used is Qualitative Research with types of research including: Descriptive Studies, Literacy Studies, Case Studies, Phenomenology, Ethnography, Narrative, Mix Method. While Quantitative Research Methods can be in the form of Surveys, Correlational, and Experimental. As for Classroom Action Research, a maximum of 3 cycles is carried out, consisting of planning, implementation, observation, and reflection. Data collection techniques must be described in detail such as observation, documentation, interviews, questionnaires, questionnaires which are also supported by relevant references.

RESEARCH RESULTS AND DISCUSSION

Research Result

1. Pre Cycle Description

   In the initial conditions of the learning process material "KD 3.8. Explaining the events of the earth's rotation and revolution as well as the occurrence of lunar eclipses and solar eclipses, carried out face-to-face using demonstration methods using tools or media from KIT IPA. In following the learning process, students are less active and even less enthusiastic. The initial condition learning process which was only dominated by the teacher, resulted in a lack of active learning and student learning outcomes. This can be shown through the data presented in the table and the following description.

Table 2. Data Summary of Pre-Cycle Student Activity and Learning Outcomes

Interval	Predicate	Category	Total students	Percentage (%)
90 ≤ A ≤ 100	A	Very good	0	0%
80 ≤ B < 90	B	Well	0	0%
70 ≤ C < 80	C	Enough	3	27%
D <70	D	Less (needs guidance)	8	73%
Rata-rata	59,3		Kurang (D)	

Based on table 2, it can be seen that the activity and learning outcomes of students who score in the very good category (A) are 0 students or 0%, who score in the good category (B) are 0 students or 0%, who score in the sufficient category (C) as many as 3 students or 27%, and those who got less (D) as many as 8 students or 73%. The highest score is 77.5 and the lowest is 37.9, while the average is 59.3 or in the less category (D).

2. Description of Cycle I

The implementation of cycle I actions was carried out in 2 meetings. The first meeting was used to deepen the material through group demonstration activities. The second meeting is used to test the absorption of the material for students by giving several questions in the form of tests or tests. The results of the implementation of the first cycle are as follows:

Table 3. Activity Recapitulation and Student Learning Outcomes Data Cycle I

Interval	Predicate	Category	Total students	Percentage (%)
90 ≤ A ≤ 100	A	Very good	1	9%
80 ≤ B < 90	B	Well	5	45%
70 ≤ C < 80	C	Enough	1	9%
D <70	D	Less (needs guidance)	4	36%
Rata-rata	76		Enough (C)	

From the table it can be seen that the activity and learning outcomes of students who score in the very good category (A) are 1 student or 9%, who score in the good category (B) are 5 students or 45%, who score in the moderate category (C) as many as 1 student or 9%, and those who get less (D) as many as 4 students or 36%. The highest score is 93.4 (A) and the lowest is 63.4 (D), while the average is 76 or in the sufficient category (C).

From the reflection results it can be concluded that: (1). the use of demonstration methods carried out in groups has succeeded in increasing student activity and learning outcomes, but has not yet achieved the expected indicators of performance success. (2). The use of demonstration methods carried out in groups is less effective, because there are some students who are less active in doing group work. Some students expect to work independently.

Based on the results of cycle I, the research needs to be continued to cycle II by applying the demonstration method which is carried out individually so that there is no lack of cohesiveness and students can do it themselves, present themselves and truly experience it themselves so they can deepen/understand the material.

3. Description of Cycle II

Based on these findings or constraints, in cycle II the learning process is carried out using the demonstration method but the implementation is done individually, with the intention that there is no lack of cohesiveness and students can do it themselves, present themselves and really experience it themselves so that they can deepen/understand the material. . The results of the implementation of cycle II are as follows:

Table 4. Comparison of Student Activity and Learning Outcomes from Cycle I to Cycle II

Value conversion (scale 0-100)	Predicate	Jumlah/%		Ascension/ (%)
		Cycle I	Cycle II	
90 ≤ A ≤ 100	A	1 (9%)	8 (73%)	7 (63%)
80 ≤ B < 90	B	4 (36%)	3 (27%)	-1 (-9%)
70 ≤ C < 80	C	0 (0%)	0 (0%)	
D <70	D	0 (0%)	0 (0%)	

Average Value		76,0	91,5	
Increase in average value				15,5
Good category increase				5 siswa (54%)

Based on the test results from pre-cycle to cycle II, it can be seen that there was an increase of 6 (54%) students who had learning outcomes in the good category, from 5 students (46%) in cycle I to 11 students (100%) in cycle II. Meanwhile, the mean value increased by 15.0 (fifteen), from 75.9 in cycle I to 90.9 in cycle II, or from the moderate category (C) to very good (A).

Discussion

From the results of the discussion between cycles it can be summarized as a whole that learning uses the demonstration method carried out by the teacher without involving students to do so which causes students to be less active, feel bored and annoyed. After entering cycle I, the learning process was carried out using the demonstration method carried out by students in groups. After the cycle I process was carried out, the results turned out to be lacking. Some groups have members who are less cohesive, some groups have dominated the work. So that research needs to continue its research into cycle II by applying different demonstration methods, which are carried out individually. With this demonstration method which is carried out individually, students are expected to be able to work alone (individually). The learning process using the demonstration method carried out by students individually has actually increased. All students are trained to be independent, to be responsible individually, to be more active and understand the material more and more.

CONCLUSION

Referring to the results of the research and discussion, it can be concluded that the demonstration method can be used to increase the activity and learning outcomes of students in the material of Earth's Rotation and Eclipse.

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