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Improving Student Learning Outcomes Through Demonstration Methods In Elementary School Science Material

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Abstract

The learning process certainly uses methods, in the world of education there are various learning methods. This research aims to improve the learning outcomes of science content on energy changes in class IV students at MI Al Khoiriyah Tapos Depok through the demonstration method. So that students can understand the material about energy changes. This research uses a type of Classroom Action Research (PTK) Demonstration Method with the Kemmis Taggart model. The results in this research have increased, before taking action the number of students who scored above the KKM out of 21 students was only 5 participants or 24%, then experienced an increase in cycle I to 15 participants or 71%, and an increase in cycle II to 21 participants or 100%. Likewise, the class average score before the action resulted in a class average score of 57.38, then increased in cycle I to 77.61 and finally increased in cycle II to 89.28. The implications of the research identify that using the demonstration method in science content regarding energy changes makes students active and interested so that it can improve learning outcomes.

Kata kunci: Demonstration, Learning Methods, Understanding Science

1 INTRODUCTION

Education according to (Pristiwanti, D. 2022) Education is everything that influences the growth, change and condition of every human being. The change that occurs is the development of students' potential, both knowledge, skills and attitudes in life. Therefore, teachers are required to determine the right strategy, the right method, optimal media, careful planning and so on. In an educational institution, the success of the teaching and learning process can be seen from the learning outcomes achieved by students. These learning outcomes are students' learning achievements which can be measured from the students' grades after working on the questions given by the teacher at the time the evaluation was carried out. The success of learning at school will be realized from the success of students' learning. Students' success in learning can be influenced by factors from within the individual and from outside the individual.

The results of the researcher's observations during learning in class IV at MI Al Khoiriyah in science for energy change material using the lecture method were still less effective. It is said to be less effective because many students do not understand the material presented. The lecture method also does not attract students' attention, so that when delivering the material many students lack focus and are sleepy. During learning, there are still many students who are inactive and do not dare to ask or answer questions asked by the teacher. This affects students' learning outcomes, science learning outcomes in class IV are also low. It can be seen that of the 21 students, only 5 got scores above the Minimum Completeness Criteria (KKM) and the remaining 16 got scores below the KKM standard. So the average result of the science repeat test only reached 57.38. Even though the minimum completion criteria for the Energy Change competency standard at MI Al Khoiriyah is 75.

From several problems that arise, teachers do not provide innovation in the learning process. Teachers only use conventional methods, namely using lecture methods that do not involve students actively asking questions, conveying ideas, and being enthusiastic in listening to the teacher's explanations. As a result, students feel bored and do not focus on listening to the teacher's explanation. The learning outcomes for the science content of the changed material are also low, thus appropriate methods to improve learning outcomes for students are really needed in class IV at MI Al Khoiriyah.

Learning outcomes in the world of education are very important to see the extent of students' abilities or understanding of the material taught by the teacher. According to (Indah, R. 2021) Learning outcomes are certain competencies or abilities, both cognitive, affective and psychomotor, that are achieved or mastered by students after participating in the teaching and learning process. Based on the opinion above, it can be said that learning outcomes are the result of students' abilities in terms of behavior that emphasizes their intellectual abilities such as knowledge and thinking skills, students' attitudes and interests, and finally students' motor skills. Likewise, according to (Beddu, S. 2019) learning outcomes are changes in student behavior as a result of learning. The understanding of learning outcomes from these two experts states that if there is a learning process, there will be changes in the results of students in terms of their abilities. Starting from not being able to become able, not knowing becomes knowing, and if you already know then there is a change in students' behavior.

Another opinion: According to (Aprilia, R. 2021), learning outcomes are the extent to which a student can master learning after completing the teaching and learning process, or success which is marked by certain numbers, letters or symbols that have been agreed upon by the education provider. It is the same as the opinion of two previous experts that there are learning outcomes when following the learning process, only according to Aprilia these successes are formed into numbers, letters or symbols. In this case, it shows that values in the form of numbers, letters or symbols are the learning outcomes of the learning process. These learning outcomes are used in education to measure a student's ability, namely using numbers, letters or symbols. From various opinions about learning outcomes, it can be described that learning outcomes are the culmination of student achievement in relation to the learning objectives given. Learning outcomes include cognitive (knowledge), affective (attitude) and psychomotor (behavior) aspects. Changes experienced by students can be interpreted as improvement or progress of students after participating in learning.

Natural Science (IPA) is a science that studies natural phenomena which include living and non-living things or the science of life or the science of the physical world. Science learning emphasizes providing direct experience to develop competencies so that students are able to explore and understand the natural surroundings scientifically. This is in accordance with the opinion of (Rosidah, A. 2023) that science is a collection of systematically arranged knowledge whose use is generally limited to natural phenomena. Likewise, the opinion of (Asmoro. 2019) states that Natural Sciences discusses natural phenomena which are arranged systematically based on the results of experiments and observations made by humans. According to several experts above, it can be concluded that Natural Science (IPA) is a science that deals with systematic natural phenomena and material things that are arranged in an orderly manner, generally applicable and in the form of a collection of systematic observation and experiment results arranged in a system, which has unity.

Energy is something abstract that is difficult to prove but can be felt. According to the 4th grade elementary school module written by (Farida Kumala. 2016) Energy is something that is able to make an object do work, the ability to do work. Energy itself has various forms. The various types of energy and examples are as follows: 1) Light energy is energy that can emit light, for example lamps, fire and the sun. 2) Electrical energy is energy that transmits electric current to an object, for example a handheld cell phone. 3) Sound Energy is energy that can produce a sound or sound, for example bells, gongs, tambourine musical instruments. 4) Thermal Energy is energy that comes from the heat of an object, for example objects that are rubbed against each other, fire and the sun. From the definition

above, it can be understood that energy is something that is difficult to prove but can be felt and gives an object the ability to exert its energy, so that energy changes occur. So the meaning of Energy Change is a change that occurs from one energy to another.

In everyday life we often observe changes in energy, especially in this day and age where we find many sophisticated devices. The continuity of energy changes now relies on these tools. There are various types of energy changes and examples in everyday life, namely: 1) Change of heat energy into motion energy, for example spiral-shaped paper will spin when heated over a candle. 2) Change of motion energy into heat energy, for example when rubbing your hands together they will feel hot. 3) Change of motion energy into sound energy, for example a child playing a drum instrument. 4) Change of wind energy into motion energy, for example a windmill that is blown by the wind will spin. 5) Change of electrical energy into light energy, for example lights.

In overcoming the problem of low learning outcomes in science content on energy changes in class IV MI Al Khoiriyah Tapos Depok, researchers applied a learning method using the demonstration method. According to (Arifin, M. 2020) The demonstration method is a learning method in the form of a presentation or presentation of how a tool works, how to do something, solve a problem, how to behave, provide services and so on which can be assisted with tools or with appropriate media. other. Another opinion according to (Satria, I. 2022) is that the demonstration method is a method used to teach participants by telling and demonstrating the steps in working on something, and demonstration is a practice that is demonstrated to participants. Meanwhile, according to (Astuti, E. 2022), the demonstration method is a method of presenting lessons by demonstrating and demonstrating to students a particular process, situation or object, either actually or just an imitation.

Based on several opinions or theories above, it can be concluded that the demonstration method is a teaching method that uses evidence to clarify students' understanding, especially teachers in teaching, showing how to do something with processes, situations, events using various related tools to help students be creative in understanding the material. The demonstration method is also a learning method that can increase students' enthusiasm for learning. Apart from that, the props used in demonstrations can make students focus and concentrate and students' knowledge and understanding become broader, clearer and not easily forgotten.

The steps for implementing the demonstration method applied by the researcher are in accordance with the opinion of (Muttaqin, A. 2021). The steps in using the demonstration method are the first preparation stage, including; formulate objectives that must be achieved, prepare an outline of the demonstration steps to be carried out, and conduct demonstration trials. The two implementation stages include; opening step, arranging seating so that all students can pay attention clearly to what is being demonstrated, stating what goals students must achieve, stating what tasks students must carry out. The three steps for implementing a demonstration include; 1) Start the demonstration with activities that stimulate students to think, for example through questions that contain puzzles so as to encourage students to be interested in paying attention to the demonstration, 2) Create a calming atmosphere and avoid a tense atmosphere, 3) Convince everyone students follow the course of the demonstration, 4) Give students the opportunity to actively think further according to what they see from the demonstration process. The final stage is ending, including; providing tasks related to the implementation of the demonstration, and jointly evaluating the progress of the demonstration process for further improvements. From the description above, it can be concluded that there are four stages of implementing the demonstration method, first the preparation stage, second the implementation stage, third the demonstration implementation stage, and finally the evaluation stage.

The demonstration method has advantages and disadvantages. The advantages of the demonstration method in the learning process include; 1) Students' attention can be focused, and the emphasis considered important by the teacher can be observed. 2) The students' attention will be more focused on what is being demonstrated, so the students' process will be more focused and the students' attention will be reduced to other problems.

3) Can stimulate students to be more active in participating in the learning process. 4) Can increase students' experience. 5) Can help students remember the material presented longer. 6) Can reduce misunderstandings because teaching is clearer and more concrete. 7) Can answer all the problems that arise in every human's mind. Meanwhile, the shortcomings of the demonstration method are as follows; 1) Requires quite a long time. 2) If there is a shortage of media, the demonstration method becomes less efficient. 3) Requires quite expensive costs, especially to buy the ingredients. 4) Requires a lot of energy. 5) If students are not active then the demonstration method will be ineffective. From the above understanding, it can be understood that there are many advantages found in the learning process using the demonstration method, including students becoming interested so they are focused, active in the learning process, and gain experience. However, of course there are also drawbacks to this method, namely that it takes quite a long time, requires a large amount of capital, and requires a lot of energy.

The problem limitation in this research is increasing science learning outcomes on energy change material through the demonstration method for class IV even semester of the 2022/2023 academic year at MI Al Khoiriyah Tapos Depok. The formulation of the problem that will be sought for a solution through this classroom action research is how to improve the learning outcomes of science content on energy changes using the demonstration method in class IV elementary school. It is hoped that the benefits of this classroom action research will help teachers, students, students and school principals to create effective quality teaching and learning. The action hypothesis in this research is that using the demonstration method is thought to be able to improve learning outcomes in science content regarding energy changes in fourth grade elementary school students.

2 RESEARCH METHODS

The aim of this research is to improve students' science learning outcomes in energy change material and use demonstration learning methods. The research location is Madrasah Ibtidaiyah Al Khoiriyah, Depok City. Located at Jalan KH.I.Djarnuji Rt.02/04, Tapos sub-district, Tapos sub-district, Depok City, West Java. The research was carried out in the even semester of the 2022/2023 academic year. The research period is from 18 November 2022 to 17 June 2023. The research method used in the Classroom Action Research method. According to Kemmis and Mc. Taggart (1993), Classroom Action Research is a study conducted to improve oneself, one's own work experience, which is carried out systematically, planned, and with an introspective attitude. According to Kemmis and Mc. Taggart in (Triyono. 2018) suggests that classroom action research is carried out through a dynamic and complementary process consisting of four essential moments, namely planning, acting, observing and reflecting. Researchers teach in class material on energy changes and use demonstration learning methods.

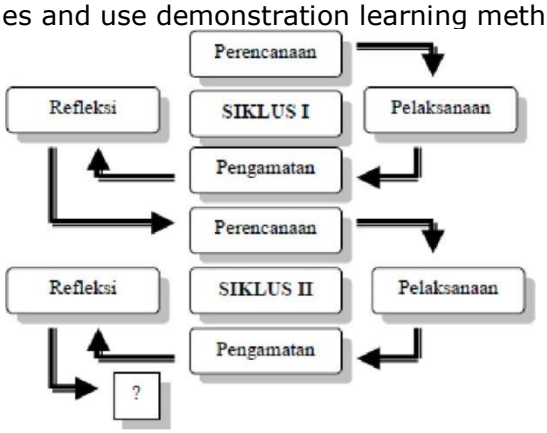


Figure 1. Classroom Action Research Flow Model of Kemmis and Mc Taggart

Research steps where the researcher used two cycles, and each cycle used four steps, namely; planning (planning), action (acting), observation (observing), and reflection (reflecting). The data source was taken from all class IV students at MI Al Khoiriyah, totaling 21 participants. In this research, the data collection instruments used include; 1) Tests, researchers use initial tests and final tests in implementing the research cycle. 2) Observation, where the researcher is the first party to obtain data as well as the teacher who teaches and is assisted by the observer. 3) Documentation, evidence of all actions carried out during research activities, both activities carried out by researchers and activities carried out by students in each lesson as well as other activities that are considered to support the ongoing learning process during research. 4) Interviews in this research are used as a data collection technique if you want to conduct a preliminary study to find problems in learning activities that must be researched. Researchers conducted interviews with class teachers and students to find out and obtain data on learning activities.

The data analysis technique used to obtain research data is by; 1) Data Reduction, recording data carefully and in detail by summarizing, selecting the main things, focusing on the important things, looking for themes and patterns and discarding what is not necessary. 2) Data Description, the presentation of data in this research is in the form of descriptions, tables and diagrams. 3) Verification, research results are expressed in short, clear and easy to understand sentences. The criteria for the success of this research is success based on the results of learning the science content on energy changes or the final test. Learning outcomes are said to be successful if each research cycle experiences an increase and the students' learning completion criteria meet the classically determined targets, namely 80% and obtain a score of ≥ 75.

3 RESULT AND DISCUSSION

This classroom action research was conducted at MI Al Khoiriyah Depok, Jalan KH.I.Djarnuji Rt.02/04, Tapos sub-district, Tapos sub-district, Depok City, West Java. There are 11 teaching and educational staff at MI Al Khoiriyah consisting of; 1 Principal as the person in charge is assisted by teaching staff consisting of 7 class teachers, 1 scout teacher, 1 deputy principal, and 1 administrator. The MI Al Khoiriyah building consists of 7 classrooms, 1 teacher and principal room, 1 library room, 2 toilets. The researcher took class IV as the subject of this research with a total of 21 students. The research was conducted in the even semester of 2022/2023, namely from 19 May 2023 to 17 June 2023.

3.1 Sub Results

Initial information obtained from the class IV teacher at MI Al Khoiriyah stated that the percentage of scores obtained by students was still low in science subjects, especially Energy Changes material. The results of the learning test from a total of 21 students only 5 got scores above the Minimum Completeness Criteria (KKM) and the remaining 16 got scores below the KKM standard. So, from the percentage of learning test results, only 24% of the scores meet the KKM. The average for the science test was only 57.38. Even though the minimum completion criteria for the Energy Change competency standard at MI Al Khoiriyah is 75.

Cycle I

Table 1. Completeness of science learning results on cycle I energy changes material

Completeness	Number of students	Percentage
Complete	15	71%
Incomplete	6	29%

The second data obtained is observation data or the results of collaborative observations between teachers and students. Observation data in cycle I of teachers showed 76%, while the results of observations of students showed 82%. So there are still many things that have not been done well by teachers during research, including; teachers do not motivate students to be active in participating in learning activities, teachers have not conducted questions and answers with students about the material discussed, teachers have not been able to manage the class well, teachers have not actively responded to students' activities. Likewise, there are still many students who cannot follow the lessons well, cannot work together in groups, and are still reluctant to ask questions. This means that learning in cycle I has not run optimally.

Table 2. Data on teacher and student activities in science learning material on energy changes in cycle I

Observation	Percentage
Teacher Activities	76%
Student Activities	82%

Based on the results obtained in the initial conditions and cycle I in terms of student results and in terms of the learning process it was not in accordance with the indicators of achievement, the researchers and observers made a decision to carry out improvements in the next cycle, namely cycle II.

Cycle II

In cycle II, two data can be obtained, namely observation data and research data. Observation data in cycle II regarding teacher activities and student activities showed 100%. It can be seen from students who can pay attention to the teacher's explanations during the lesson, teachers are good at responding to students and good at managing the class, students can also work together with groups, and student learning outcomes increase. Research data or learning outcome data as the main component in this research has reached 100%. Thus, there was an increase in learning outcomes from cycle I by 29%. Based on the results of tests carried out in cycle II, the average score obtained by students was 89.28 with the percentage of many students who completed 100%, namely 21 students who completed. From the results above, it shows that the target achievement has been met. Therefore, the research is considered successful and cycle II is the final cycle in this research and there is no need to continue to the next cycle.

Table 3. Completeness of science learning results on cycle II energy changes material

Completeness	Number of students	Percentage
Complete	21	100%
Incomplete	0	0%

Table 4. Data on teacher and student activities in science learning material on energy changes in cycle II

Observation	Percentage
Teacher Activities	100%
Student Activities	100%

3.2 Discussion of Research Results

This classroom action research uses the demonstration method with visual aids to prove the process of energy changes in science charges. So that students are interested and not

bored because they experience learning and can clearly see how the process of energy changes occurs. Researchers use props in the demonstration process so that students can know how to make these props. In the learning process, students are also invited to produce their own teaching aids which are demonstrated by making them together as a group.

Researchers who conducted learning using the demonstration method turned out to be able to improve student learning outcomes. The results of observations before the action carried out in class IV at MI Al Khoiriyah Depok stated that the learning outcomes for science content in energy change material were still low or did not meet the Minimum Completeness Criteria (KKM). The reason is because the teacher delivers the material using inappropriate methods so that students are not interested in paying attention.

The learning process before action shows low learning outcomes for students. The data obtained showed that of the 21 students, only 5 participants or 24% met the KKM, with the highest score being 90 and the lowest 30. After taking action in cycle I, the students' learning outcomes had increased, of the 21 students, 15 participants or 71% had got a score above the KKM with the highest score being 95 and the lowest being 60. Furthermore, in cycle II the scores that met the KKM were 21 participants or 100% with the highest score being 100 and the lowest being 75. Apart from the increase in the number of students who met the KKM, it was also seen in the increase in the average score. average class attained by students. In the pre-cycle the average was 57.38, then in the first cycle it increased to 77.61, and in the second cycle the class average value reached 89.28.

As a result of observing teacher activities in the pre-cycle, the teacher carried out learning using the lecture method. Then in cycle I the teacher had implemented the components of the demonstration method in the science content on energy changes, but not all aspects of the assessment could be carried out well. So the resulting percentage only reaches 76%. In cycle II, the actions taken by the teacher in implementing the components of the demonstration method achieved the expected results, because the percentage results reached 100%.

The results of observations of student activities in the pre-cycle showed that there were still many students who did not pay attention to the teacher's explanation of the material. Then, after conducting research in cycle I using the demonstration method on science content on energy changes, students were more enthusiastic about paying attention, but were still reluctant to ask questions and were not able to work well with their fellow group members. So the resulting percentage only reaches 82%. In cycle II, the results of student observations had achieved the expected results, because the percentage results reached 100%.

There are also findings in cycle II, namely; 1) All students are enthusiastic so they pay attention to the teacher's explanation. 2) Almost all students are active in asking questions during the learning process. 3) Students can work together in groups, help each other, and not be selfish. 4) All students are able to name forms of energy and examples of energy changes in everyday life. 5) Students enjoy learning using the demonstration method.

Based on the results of data analysis and research findings, learning science content on energy change material using the demonstration method in class IV MI Al Khoiriyah can improve learning outcomes. This is because learning using the demonstration method can increase student enthusiasm, provide opportunities for students to be active and try to achieve learning goals. Thus, it can be stated that after learning in two cycles, students' learning outcomes in the science content material on energy changes in class IV MI Al Khoiriyah Tapos Depok increased according to predetermined criteria.

4 CONCLUSION

Based on the results of classroom action research in class IV at MI Al Khoiriyah Depok, even semester of the 2022/2023 academic year, it can be concluded that the application of science learning material on energy changes using the demonstration method can have

a positive effect and can improve student learning outcomes. Based on observations before and during research activities accompanied by analysis in the discussion of the research results above, the data shows that student learning outcomes increase each cycle.

The impact of research results on students includes the following: Students can name forms of energy, they quickly understand the process of changing energy, they can mention examples of energy changes, and they can even make teaching aids about changing heat energy into motion energy. also changes electrical energy into light energy. On the other hand, students are becoming more confident, their interest and motivation for learning is increasing, they enjoy studying in groups both at school and even at home, both parents are increasingly paying attention to their sons and daughters, providing adequate learning facilities.a.

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