

Application of the PBL Model with Multimedia in Improving Class IV Social and Science Learning Result at SDN Nglandung 2

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ABSTRACT: Teachers still face various challenges in implementing learning in the classroom. Some of them are students who are less active, lack of use of technology, lack of use of concrete objects, and students' social and science learning outcomes that have not yet reached the criteria for achieving learning objectives. The research entitled "Application of the PBL Model with Multimedia in Improving Class IV Social and Science Learning Result at SDN Nglandung 2" aims to describe the steps for implementing the PBL model with multimedia in improving Class IV Social and Science learning result and identify whether the PBL model with multimedia can improve learning result class IV. The Problem Based Learning (PBL) model is a learning model whose application uses concrete problems to develop problem solving and critical thinking skills so that it can improve student learning outcomes. Multimedia can attract students' attention and make learning more enjoyable. This research was carried out at SDN Nglandung 2. The classroom action research procedure used refers to the Action Research methodology, namely 1) Planning, 2) Action (Implementation of Action), 3) Observation (Observation), 4) Reflection (Reflection), which is carried out in 2 cycles. Learning evaluation is carried out after the material is presented to find out to what extent students can understand the material being taught. The evaluation results show that there is an increase in learning outcomes, namely in cycle I it was 40%, up 20% to 60% and cycle II, namely 60%, up 40% to 100%. From this Classroom Action research it can be concluded that the application of the Problem Based Learning (PBL) model with multimedia can improve social and science learning for class IV at SDN Nglandung 2.

Keywords: PBL, Multimedia, Learning outcomes, Class IV

INTRODUCTION

The development of education in Indonesia changes along with developments and changing times [1]. The curriculum is dynamic, which means there are always changes and developments that follow the era in which the curriculum was created. These changes and developments must be carried out systematically, directed and not haphazardly [2].

The Merdeka Curriculum is the result of changes from the previous curriculum, namely the 2013 curriculum. In the 2013 Curriculum there are science (natural science) and social studies (social science) subjects. Science is a subject that deals with facts, the reciprocal relationship between humans and nature [3]. Meanwhile, social studies is a subject that discusses social life and society [4]. The Merdeka Curriculum combines these two subjects into the Science and Social Sciences (Natural and Social Sciences) subject. The Science Subject is a combination of the Natural Sciences (Natural Sciences) and Social Sciences (Social Sciences) subjects. The combination of these two subjects is the development of scientific thinking skills.

Based on the results of observations that have been made, there are still several problems in the field related to student activity, use of technology, and lack of presentation of real problems in the classroom. Student learning outcomes in social and science subjects are also still relatively low,



because there are still many students who have not reached the criteria for achieving learning objectives. There are 4 students who have reached the (75) or 40%, while the students who have not reached the are 6 students or 60%, with the highest score for students being 85 and the lowest score for students being 48.

One effort that can be made to improve student learning outcomes is by implementing alternative Problem Based Learning (PBL) learning models. The Problem Based Learning (PBL) model is a learning model that emphasizes problems, critical thinking, collaboration and is an innovative learning approach that provides learning for students to be active in it in the form of teams or groups [3].

Learning will be more effective and enjoyable if you use media assistance. This Problem Based Learning (PBL) model is also suitable when applied with the help of multimedia. Multimedia means a combination of at least two input or output media. This media can be in the form of images, video, text, graphics, animation, audio (sound, music) [5]. Multimedia is a combination of various formats in the form of text, video, sound and animation with the aim of increasing student interaction so as to provide information or messages to users [6].

The advantage of multimedia is that it can present a concept more attractively to users by combining several formats including interesting images, sounds and animations, thereby reducing students' boredom regarding learning [7]. Other advantages of multimedia are: (1) Makes it easier to store and display a document, (2) Speeds up information to be obtained, (3) Minimizes the loss of a document, (4) Saves time and cost [8].

This study is pertinent to research that demonstrates how the media can support the Problem Based Learning (PBL) model by encouraging students and teachers to engage in more activities that lead to better learning outcomes for students [9]. Studies reveal that the Problem Based Learning (PBL) approach can enhance students' abilities, attitudes, and cognitive capacities [10]. Research explaining how the Problem Based Learning (PBL) paradigm can affect students' science process skills is another pertinent body of work [11].

The present study aims to explicate the process of incorporating the Problem Based Learning (PBL) model with multimedia in order to enhance the social and science learning outcomes of Class IV students at Nglanduk 2 State Elementary School. Specifically, the research will focus on improving the learning outcomes related to energy material and its modifications.

RESEARCH METHODS

This research is a type of classroom action research. Classroom Action Research is a type of research that discusses the causes and effects of an action in the classroom [12]. Implementation of Classroom Action Research consists of 4 stages, namely planning, implementation, observation and reflection [13]. The Classroom Action Research model is spiral and continuous, if the target results have not been achieved then it will continue with the next cycle. The Kemmis and Mc Taggart model of Classroom Action Research (CAR) design is as shown in Figure 1.

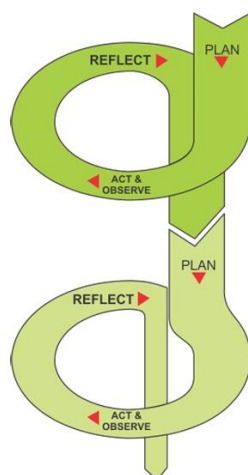


FIGURE 1. Action Research Model

This research was carried out in May 2024. The research took place at SD Negeri Nglandung 2 which is located at Jl. Field No.17, Watulesu, Nglandung, Kec. Wungu, Madiun Regency, East Java. The subjects in this research were all class IV students at SD Negeri Nglandung 2, totaling 10 students consisting of 7 boys and 3 girls. All students can participate in learning well because there are no students with disabilities.

This research was designed in 2 cycles where each cycle consisted of 4 activity stages, namely planning, implementation, observation and reflection. In this planning stage, an action plan is prepared to improve student learning outcomes through the Problem Based Learning (PBL) model with the help of multimedia. This action planning includes coordinating with teachers and observers to ensure research time, creating teaching modules, media, LKPD, evaluation questions that will be used for learning, and preparing observation and interview sheets.

The implementation stage is the stage where the researcher applies the Problem Based Learning (PBL) model with the help of multimedia. At the observation stage, the observer fills in an observation sheet that has been prepared by the researcher regarding the application of the Problem Based Learning (PBL) model with the help of multimedia. At this stage, it is carried out to measure students' achievement in achieving learning objectives which will be used as material for reflection in preparing further action plans. The reflection stage is the analysis stage related to learning carried out over two cycles and determining the achievements of the researchers that have been carried out. Based on the results of the reflection, all research performance indicators have been achieved, so the research is said to be successful and is stopped in cycle II.

The data collection technique used in this research is non-test techniques and test techniques. The non-test technique is observation. Observation is a data collection technique by direct observation in the classroom during a lesson [14]. Researchers carry out observations by directly observing learning in the classroom to determine the problems in the research.

The observation sheet used to measure learning implementation is in accordance with the steps of the Problem Based Learning (PBL) model with multimedia. Measurements are carried out using a rating scale in the form of a 0-4 benchmark with a description. After the data is collected in percentage form, the data is then converted into a letter scale format.

The test technique used in this research functions to measure improvements in student learning outcomes. This evaluation activity includes multiple choice questions, fill-in-the-blanks and descriptions of energy materials and their changes. The material used in this research is energy and its changes. This cognitive assessment includes multiple choice questions, short answers and descriptions. Cognitive assessment based on a grid, to measure students' abilities in learning.

The success or failure of research is determined by research performance indicators. The indicator that needs to be achieved in this research is 85% measured based on observations in applying the Problem Based Learning (PBL) model with multimedia in learning and evaluation test results with 75.

RESULT AND DISCUSSION

Pre-Action Data

This Classroom Action Research was carried out at Nglandung 2 Elementary School, Wungu District, Madiun Regency, East Java. The subjects of this research were class IV, totaling 10 students consisting of 7 boys and 3 girls. Before conducting the research, the researcher conducted interviews and observations of class IV teachers and students which showed that class IV students still tended to be passive in learning, lacked the use of technology and social and science learning outcomes still had not reached the Learning Goal Achievement Criteria of 75 there are still 6 students or 60%.

Based on the pre-action data, the Problem Based Learning (PBL) learning model is the solution to this problem. The Problem Based Learning (PBL) model will make students more active in learning. Apart from that, the use of learning media is also very important. So, researchers use the Problem Based Learning (PBL) model with multimedia to provide a solution. Multimedia will attract students' attention and make learning more fun.

It is hoped that this research can improve the learning outcomes of class IV students on energy and its changes so that they reach the target indicator, namely 85%. Researchers conducted a pretest before implementing the action which aims to determine students' initial abilities. 10 students participated in the cycle I pretest, which was held on Tuesday, May 7 2024. The results of the cycle I pretest are in Table 1.

Based on the pre-action data and pre-test results presented in Table 1, action is needed to improve learning outcomes for students. Researchers will carry out Classroom Action Research using the Problem Based Learning (PBL) model with multimedia starting from cycle I with the hope of improving the learning outcomes of class IV students at SD Negeri Ngladuk 2.

TABLE 1. Frequency Distribution of Cycle I Pretest Scores

Score	Cycle I		Information
	f	(%)	
85-94	1	10	Complete
75-84	3	30	Complete
65-74	4	40	Not Complete
55-64	1	10	Not Complete
45-54	1	10	Not Complete
<45	-	-	Not Complete
Quantity of Student	10	-	
Highest Score	86	-	
Lowest Score	50	-	
Average	69,4	-	
Complete	4	40	
Not Complete	6	60	

Results of Cycle I Actions

Action planning in cycle I, the researcher coordinated with teachers and observers to ensure research time, created teaching modules, media, LKPD, evaluation questions that would be used for learning, and prepared research instruments. Cycle I was held on Tuesday, May 7 2024 with a time allocation of 70 minutes and was attended by all class IV students at SDN Ngladuk 2, totaling 10 students. The material in cycle I is about potential energy and its changes.

The initial activity is carried out within approximately 10 minutes. Learning begins with opening greetings, checking students' attendance, praying together, asking about news, class conditioning and singing the national song. Researchers give pretest questions to students before learning begins. Then, the researcher provided motivation to students and provided an explanation of the learning objectives that would be achieved at the meeting in cycle I.

This core activity is carried out over a period of 45 minutes. Researchers apply the Problem Based Learning (PBL) model with multimedia. The first step taken by researchers was problem orientation using multimedia in the form of videos of children playing on trampolines. Researchers give trigger questions to students. The second step is to organize students into 3 groups consisting of 3-4 students and provide several questions to be discussed in the form of a group discussion. The next step is for researchers to guide and direct students to carry out investigations. The experiment carried out was observing a candle that had been lit using a match. The fourth step is to present the results of the discussion and the researcher directs other groups to respond to the results of the discussion that have been submitted by the presenting group.

The final activity takes approximately 15 minutes. At this stage, researchers carry out analysis and evaluation of learning using the multimedia used. The researcher discusses the results of the discussion and makes a conclusion about the potential energy material and its changes together with the students. Then, the researcher provided reinforcement for the material that had been taught. After that, students work on the evaluation questions given. Researchers reflect on the material that has been studied and follow up at the next meeting. The learning activity ended with praying together and closing greetings.

Observation activities are carried out by peers and teachers. At this stage, observers observe learning activities using the Problem Based Learning (PBL) model with multimedia. Observers assess using the observation sheet and looking at the observation sheet assessment rubric. The observation results are described in Table 2.

Based on Table 2, the observation results show that the average obtained has not yet reached the achievement indicator, namely 83.75%. All stages in cycle I are included in the good category. This is evident from the first step, namely that the researcher has given students the opportunity to ask questions and convey a real and clear problem. In the second stage, organize the students into three groups. Most of the students have formed groups in an orderly manner and listened to the instructions

for working on the LKPD. In the third stage, namely guiding and directing students to investigate, most students have carried out focused investigations so that the classroom atmosphere is conducive to learning. In the fourth stage, namely developing and presenting the results of the discussion, students have the courage to present the results of the discussion to the class and dare to express opinions in response to the results of discussions from other groups who are presenting. In the fifth stage, analysis and evaluation, students can work on evaluation questions smoothly.

TABLE 2. Observation results of the application of the Problem Based Learning (PBL) model with multimedia in cycle I

Step	Researcher	Student
	Cycle I (%)	Cycle I (%)
Problem orientation	81,25	81,25
Organizing students	87,5	87,5
Guide and direct students to investigate	81,25	81,25
Develop and present discussion results	81,25	81,25
Analysis and evaluation	87,5	81,25
Average	83,75	82,5

Based on the explanation above regarding the observation results, all steps are good, but improvements still need to be made so that each step can achieve the maximum target of 85%.

The social and science learning outcomes of class IV students regarding energy and its changes were measured using an evaluation test which was carried out after completing the lesson. The test results with 75 are presented in Table 3.

TABLE 3. Social and Science Learning Results Cycle I

Score	Cycle I		Information
	f	(%)	
85-94	2	20	Complete
75-84	4	40	Complete
65-74	3	30	Not Complete
55-64	1	10	Not Complete
Quantity of Student	10	-	
Highest Score	90	-	
Lowest Score	62	-	
Average	77,6	-	
Complete	6	60	
Not Complete	4	40	

Based on Table 3, it can be concluded that the average learning outcome for class IV cycle I students is 77.6. The percentage of completeness in cycle I was 60%. This shows that the complete learning outcomes of class IV students have not yet reached the target percentage of 85%, so the researchers are planning improvements in the next cycle.

At the reflection stage, overall the learning steps using the problem based learning (PBL) model with multimedia were appropriate, but there were still several steps that were not optimal in implementation. In the first step, the researcher had carried out the stages well, namely asking trigger questions, but the students were still not active in mentioning examples of other real problems according to the material being taught. In the second stage, the researcher had organized the students well, but there were still some students who were difficult to organize into groups. In the third stage, students are already good at carrying out experiments and can collaborate with each other. In the fourth stage, there were still some students who lacked confidence in presentations. In the fifth stage, students can work on evaluation questions smoothly.

The increase in social and science learning outcomes regarding energy and its changes in cycle I can be seen in Table 4. Based on the Table 4 showed that in cycle I the target performance indicator had not been achieved, namely 85%. Based on these statements, researchers carried out research towards the next cycle, namely cycle II. Researchers carry out follow-up on students who have not yet completed by carrying out remedial studies and providing enrichment questions to students who have completed. The implementation of learning in cycle I certainly still has several obstacles. The following

is a description of the obstacles faced during the implementation of learning in cycle I can be seen in Table 5.

TABLE 4. Increase in the Percentage of Completion of Cycle I Social and Science Learning Results

Score	Cycle I		Information
	Pretest	Posttest	
85-94	1	2	Complete
75-84	3	4	Complete
65-74	4	3	Not Complete
55-64	1	1	Not Complete
45-54	1	-	Not Complete
Completion Percentage	40%	60%	

TABLE 5. Cycle I Constraints and Solutions

Constraint	Solution
Students are less active in responding to their friends who are presenting and ask less questions during learning.	Motivate students to be active in learning and provide additional value for active students
Students pay less attention to learning in the classroom	Provide ice breaking so that students can focus more
Students are still noisy when forming groups	Guiding and providing firmness to students when forming groups

Results of Cycle II Actions

The actions in cycle II were carried out in one meeting on Tuesday, May 14 2024 with a time allocation of 70 minutes, which was attended by all class IV students at SDN Ngladuk 2, totaling 10 students. The material in cycle II is about kinetic energy and its changes. Before learning activities begin, the researcher conducts a pretest first to determine the students' initial abilities. The pretest results in the second cycle are presented in the following Table 6.

TABLE 6. Frequency Distribution of Cycle II pretest scores

Score	Cycle II		Information
	f	(%)	
85-94	3	30	Complete
75-84	3	30	Complete
65-74	3	30	Not Complete
55-64	1	10	Not Complete
45-54	-	-	Not Complete
<45	-	-	Not Complete
Quantity of Student	10	-	
Highest Score	90	-	
Lowest Score	64	-	
Average	77,5	-	
Complete	6	60	
Not Complete	4	40	

Action planning in cycle II is analyzing and evaluating the implementation of actions that have been carried out in the previous cycle, coordinating with teachers and observers, and compiling learning instruments.

The implementation of activities in cycle II begins with an initial opening activity which takes approximately 10 minutes. Learning begins with opening greetings, checking students' attendance, praying together, asking about news, class conditioning and singing the national song. Researchers gave pretest questions about kinetic energy and its changes to students before learning began. Then, the researcher provided motivation to students and provided an explanation of the learning objectives that would be achieved at the meeting in cycle I.

This core activity is carried out over a period of 45 minutes. Researchers apply the Problem Based Learning (PBL) model with multimedia. The first step taken by researchers was problem orientation

using multimedia in the form of a video about a moving windmill. Researchers give trigger questions to students. Students conduct questions and answers related to the problems presented and students mention other problems that are similar to the problems presented, namely about kinetic energy and its changes. The second step is to organize students into 3 groups consisting of 3-4 students and provide several questions to be discussed in the form of a group discussion. In this step, students are formed into groups to carry out experiments in predetermined small groups. The next step is for researchers to guide and direct students to carry out investigations. The experiment carried out involved heat energy in a spoon that had been dipped in a glass containing hot water. The fourth step is to present the results of the discussion and the researcher directs other groups to respond to the discussion results that have been submitted by the presenting group. Then, the researcher and the students discussed the problem together properly.

The final activity takes approximately 15 minutes. At this stage, the researcher carried out the final step in the Problem Based Learning (PBL) learning model, namely analysis and evaluation of learning. The researcher discusses the results of the discussion and makes a conclusion about the potential energy material and its changes together with the students. Then, the researcher provided reinforcement for the material that had been taught. After that, students work on the evaluation or posttest questions given. The learning activity ended with praying together and closing greetings.

Observation activities are carried out by peers and teachers. At this stage, observers observe learning activities using the Problem Based Learning (PBL) model with multimedia. Observers assess using an observation sheet and looking at the observation sheet assessment rubric. The observation results are described in Table 7, namely:

TABLE 7. Observation Results of the Implementation of the Problem Based Learning (PBL) Model with Multimedia cycle II

Step	Researcher	Student
	Cycle II (%)	Cycle II (%)
Problem orientation	93,75	93,75
Organizing students	93,75	93,75
Guide and direct students to investigate	87,5	87,5
Develop and present discussion results	93,75	93,75
Analysis and evaluation	93,75	87,5
Average	92,5	91,25

Based on the Table 7, the results of observations regarding the Problem Based Learning (PBL) learning model using multimedia in cycle II are included in the very good category. All steps are included in the very good category and have reached the research target indicator of 85%. The obstacles experienced in cycle I can be corrected in cycle II.

Based on the explanation above regarding the observation results of all steps, it is very good, so it can be concluded that the application of the Problem Based Learning (PBL) model using multimedia has reached the research performance indicator target, namely 85%, so that the researchers completed this research until cycle II.

TABLE 8. Social and Science Learning Results Cycle II

Score	Cycle II		Information
	f	(%)	
95-100	1	10	Complete
85-94	4	40	Complete
75-84	5	50	Complete
65-74	-	-	Not Complete
55-64	-	-	Not Complete
Quantity of Student	10	-	
Highest Score	100	-	
Lowest Score	78	-	
Average	87,1	-	
Complete	10	100	
Not Complete	-	-	

The social and science learning outcomes of class IV students regarding energy and its changes are measured using an evaluation test or posttest which is carried out after completion of learning or at the end of learning. The results of studying social and science and technology with 75 are presented in Table 8.

Based on Table 8, it can be concluded that the average learning outcome for class IV cycle II students is 87.1. The percentage of completion in cycle II has reached the research performance indicator target, namely 85%. Based on this statement, the researcher decided to complete the second cycle of research because he had achieved the target research performance indicators.

At the reflection stage, overall the learning steps were appropriate using the problem based learning (PBL) model with multimedia. The observation results have reached the research performance indicator target, namely 85%. Researchers have carried out all the steps of the problem based learning (PBL) model very well. Based on the statement above, it can be concluded that the research has been said to be successful.

The improvement in social and science learning outcomes for class IV students regarding energy and its changes in cycle II can be seen in Table 9.

TABLE 9. Increase in Percentage of Completion of Cycle II Social and Science Learning Results

Score	Cycle II		Information
	Pretest	Posttest	
95-100	-	1	Complete
85-94	3	4	Complete
75-84	3	5	Not Complete
65-74	3	-	Not Complete
55-64	1	-	Not Complete
45-54	-	-	Not Complete
Completion Percentage	60%	100%	

Based on the Table 9 showed that the comparison of pretest and posttest scores for class IV social and science learning results on energy material and the changes in cycle II experienced a significant increase. The research has achieved the targeted performance indicator, namely 85%.

The implementation of learning in cycle II of course still has several obstacles. The following description of the obstacles and solutions faced during the implementation of learning in cycle II is presented in Table 10.

TABLE 10. Obstacles and Solutions for Cycle II

Constraint	Solution
Some students are still embarrassed to ask questions about parts of the material they don't understand	Motivate students and provide explanations so that students are more confident and not embarrassed to ask questions about material they don't understand

The implementation of the Problem Based Learning (PBL) model with multimedia and social and science learning outcomes relating energy and its changes is discussed in this research based on the findings of the analysis that was done. The stages of the Problem Based Learning (PBL) model's implementation were altered based on research: (1) Problem orientation through multimedia; (2) Student organization through multimedia; (3) Guidance and direction for students conducting investigations; (4) Development and presentation of discussion results; and (5) Analysis and evaluation [15].

Problem orientation using multimedia means that the researcher presents a problem using multimedia in the form of a learning video, then uses trigger questions which aim to determine students' abilities regarding the material to be addressed. This is in accordance that problem orientation is carried out by presenting a problem in the form of text, images or videos related to the target material [16].

Organizing students means dividing students into several small groups, then providing explanations in conducting a discussion. This is in accordance with the opinion who says that the stage of organizing students in learning is carried out by providing assistance regarding assignments and things that will be discussed to solve problems [17].

Guiding and directing students to carry out investigations or carry out experiments related to the IPAS material discussed. This experimental stage was carried out to solve the given problem. This agrees with who said that in the third stage of the Problem Based Learning (PBL) model, the teacher monitors students' activity during discussions and experiments as well as students' skills that emerge during experiments or investigations [17].

Develop and present the results of the discussion, namely that students are given the opportunity to make a conclusion in accordance with the investigation that has been carried out. Students then report back to the class on what they discussed throughout the conversation. Students draw conclusions and share the outcomes of their debate in the developing and presenting discussion results stage [18].

The last phase of the Problem Based Learning (PBL) methodology involves analysis and evaluation. At this point, students are assisted in conducting an assessment and reflection to gauge their comprehension of the information that has been covered. The analysis and evaluation stage is the stage where students are given reflection and evaluation related to the problem process given and the material obtained during learning [17].

The learning outcomes of students in class IV social and science and technology subject energy and its changes are measured based on the results of the pretest carried out before the lesson is carried out and the posttest carried out after the lesson. The purpose of carrying out this pretest is to determine students' initial abilities before learning. Meanwhile, the purpose of carrying out this posttest is to test students' understanding of the material provided and see an increase in the average student learning outcomes in accordance with research performance indicators, namely 85% with a of 75.

There is an improvement in student learning outcomes, as evidenced by the pretest and posttest scores for cycles I and II. The pretest results for cycles I and II indicate that 40% and 60% of the student learning outcomes are still in the very low and low categories, respectively, regarding the percentage of completion. By utilizing the Problem Based Learning (PBL) paradigm with multimedia on energy and its changes, researchers attempted to improve this data. The posttest findings then show a considerable increase in the learning outcomes of the students. Cycle I had a 60% completeness rate, whereas Cycle II had a 100% completeness rate. Student learning outcomes rose by 20% in cycle I and by more than that in cycle II. The posttest findings then show a considerable increase in the learning outcomes of the students. Cycle I had a 60% completeness rate, whereas Cycle II had a 100% completeness rate. Student learning outcomes increased by 20% in cycle I and by 40% in cycle II. This demonstrates that students' learning outcomes fall into the very good category after enhancing the Problem Based Learning (PBL) learning model with multimedia.

The results of this research strengthen previous research, with the title "The Influence of the Problem Based Learning Model on Science Process Skills and Cognitive Learning Outcomes in Elementary School Students" This demonstrates how using the Problem Based Learning (PBL) learning approach can improve primary school students' learning outcomes in the social and scientific subjects [19]. This justification suggests that class IV students' learning results can be enhanced by the Problem Based Learning (PBL) approach with multimedia.

CONCLUSION

Based on the research findings, it is possible to draw the following conclusions about the steps used in the Problem Based Learning (PBL) model by researchers to enhance the learning outcomes of students in social and scientific subjects: (1) Problem orientation with multimedia; (2) Student organization using multimedia; (3) Guidance and direction for students conducting investigations; (4) Development and presentation of discussion results; and (5) Analysis and evaluation. With every cycle, the Problem Based Learning (PBL) approach is applied more and more. Cycle I's average observation results for researchers were 83.75%, while cycle II's findings for students were 82.5% and 91.25%, respectively. In addition, the use of multimedia in the Problem Based Learning (PBL) paradigm might enhance students' learning results in science and social studies classes IV at SD Negeri Nglanuk 2 regarding energy and its variations. This is demonstrated by the fact that the proportion of learning outcomes for students in cycle II, which is 60%, grew by 40% to 100%, and that the learning outcomes of students, specifically in the first cycle, improved by 20% to 60%.

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