

The Effect of Problem-Based Learning (PBL) Model Assisted by Learning Videos on the Learning Outcomes of Science and Technology Students in Class V SD Inpres 2 Talise



Dian Rahmawati Amtaris¹, Herlina², Sisriawan Lapasere³, Nashrullah⁴, Sri Wahyuni⁵

^{1,2,3,4,5}Tadulako University

ABSTRACT: This study aims to determine the effect of using the Problem-Based Learning (PBL) model supported by instructional videos on the learning outcomes of fifth-grade students in IPAS (Integrated Science) at SD Inpres 2 Talise. This research employed a quasi-experimental method with a one-group pretest-posttest design. The research population consisted of all fifth-grade students at SD Inpres 2 Talise, with a sample of 20 students selected using saturated sampling technique. Data collection instruments included multiple-choice tests to measure students' learning outcomes. The data analysis results indicated a significant improvement in student learning outcomes after the application of the PBL model supported by instructional videos. The pretest average score was 38.40, while the posttest average score increased to 81.65, with a t-test significance value of 0.000 (<0.05). These findings demonstrate that the use of the PBL model supported by instructional videos has a positive and significant impact on students' IPAS learning outcomes. Thus, this approach can be considered an effective teaching strategy to enhance student learning in primary schools.

KEYWORDS: Problem-Based Learning, Instructional Video, Learning Outcomes, IPAS.

I. INTRODUCTION

Education is very crucial in a person's life. With education a person can continue to experience changes both cognitively, affectively, and psychomotorically. The purpose of education is to develop the potential to shape the nation's character and educate the nation's life. Developing the potential possessed by students to become human beings of faith and piety. In achieving educational goals, there needs to be support in all aspects. One of the supporters of achieving educational goals is the curriculum. Curriculum is an important component of learning at every level of education. Indonesia's learning system has experienced curriculum changes since 1947, with a very simple curriculum, to the 2013 curriculum, despite the growth of a very digital era (Muhsam et al., 2021). Although changing the curriculum is none other than the aim of correcting the curriculum first, one of the latest forms of curriculum improvement from the ministry of education and culture of technological studies is the independent curriculum. The Merdeka Curriculum was born during the transition period due to the emergence of COVID-19. The core of the Merdeka Curriculum focuses on the essence of learning that adapts to the talents and interests of each student. At the beginning of its implementation, only a few selected schools implemented it, especially driving schools. Over time, the Merdeka Curriculum was developed so that it could be applied at all levels of education according to the readiness and conditions of each school (Rahayu et al., 2022).

Another distinctive feature of the Merdeka Curriculum is the merging of Natural Science (IPA) and Social Science (IPS) subjects into Natural and Social Sciences (IPAS) at the primary school level. The merger is based on the consideration that students at primary school age tend to see everything as a whole and integrated. In addition, they are still in the concrete/simple, holistic and comprehensive but not detailed thinking stage (Purnawanto, 2022). So that the merging of science and social studies subjects is expected to trigger students to be able to manage the natural and social environment in one unit.

However, IPAS learning methods in elementary schools still face various obstacles, such as the lack of active interaction in the learning process due to the use of conventional methods, such as lectures and memorization. This approach often results in students being passive and not directly involved in the exploration of IPAS concepts, resulting in low concept understanding and critical thinking skills. Therefore, it is necessary to innovate learning methods that can increase student motivation, involvement, and learning outcomes. One of them is the application of the Problem Based Learning (PBL) model with the help of video media.

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The PBL model is a problem-solving-based learning approach where students are encouraged to find solutions to real-world problems through the process of investigation and group discussion. Research shows that PBL can improve students' learning independence and critical thinking skills (Phungsuk et al., 2017). On the other hand, the use of video media in IPAS learning can help students visualize abstract concepts, clarify material that is difficult to understand, and improve their memory and engagement in learning. Some previous studies have shown that combining PBL and video media in IPAS learning can significantly improve students' learning activities and academic outcomes (Ramadhani et al.).

Although there are many studies that prove that PBL models have a positive impact on student learning outcomes and critical thinking skills, research that specifically discusses the effect of video-assisted PBL in IPAS learning at the elementary school level is still limited. Most research works still focus on the use of PBL without additional media or only discuss the effectiveness of video media in conventional learning without integrating it into PBL. In addition, the existing research is mostly conducted at the intermediate or high level, while research on elementary school students, especially grade 5, is still rare. Therefore, this study aims to fill the gap by examining the effect of applying the Problem Based Learning (PBL) model supported by video media on the learning outcomes of IPAS of grade V elementary school students, so that it can contribute to the development of more effective and innovative learning methods.

Based on the results of interviews conducted with teachers at SD Inpres 2 Talise, the learning outcomes of IPAS students are currently still low. This can be seen from the learning outcomes of students who are still low or do not reach the KKM. A student is said to have understood IPAS learning if an individual absorption is obtained at least 70% and is said to have completed learning in general for all students in one class if a percentage of more than one or equal to 70% is obtained. The teacher explained that students find it difficult to understand IPAS learning materials and are not active in the learning process if students are given tasks individually. In contrast to students who if they are formed in small groups, their learning activities will be more active and easier to understand a concept in the learning material. Therefore, in any subject, varied learning methods and models are needed to improve students' understanding of concepts in learning.

Based on observations made at SD Inpres 2 Talise, it was found that in the learning process, teachers mostly use conventional methods, namely by delivering material in front of the class by lecturing. As a result, learning tends to involve less student participation and the classroom atmosphere becomes monotonous. This has an impact on students' understanding of the material, which in turn affects their learning outcomes. Learning outcomes, especially in IPAS subjects as seen in the UTS score list, are still many students who have not reached the minimum completeness criteria (KKM) set at SD Inpres 2 Talise.

Based on the above problems, one solution that can be used is to apply a learning model that is fun, meaningful, and involves students more to increase student interest and activeness in participating in the learning process. The learning model that will be used by researchers is the PBL model. One of the benefits of the PBL model is a learning model that can present contextual problems to encourage students to learn, and requires them to work in teams to solve problems that exist in everyday life (Nurmala 2018).

Based on the description above, the researcher is interested in conducting research through "The Effect of Problem Based Learning (PBL) Model Assisted by Learning Videos on IPAS Learning Outcomes of Grade V Students of SD Inpres 2 Talise" With this PBL learning model, it is hoped that students will be enthusiastic in participating in the learning process.

II. LITERATURE REVIEW

The PBL model is a learning approach that focuses on solving the problem at hand. According to Khoiri (2013) problem-based learning involves the use of various intelligences needed to deal with new things and existing complexities. Learning video media combines visual and auditory elements so as to increase student involvement in the learning process. With the combination of images, sound and animation, learning videos can help students understand the material more effectively than conventional methods such as lectures or written text (Ruswatie, 2020). "Learning outcomes are changes that make people change in their attitudes and behavior, these changes refer to the taxonomy of teaching objectives which include cognitive, affective, and psychomotor aspects". (Deisye et al., 2023)

III. METHOD

In this study using quantitative methods. This type of research is a quasi-experiment with the research design used in the form of One Group Pretest-Posttest design where there is only an experimental class without a control class.

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Table 1. Research Design Quasi Experimental Design

Pre-test	Treatment	Post-test
O1	X	O2

Description:

O1 = Assessing Pre-test (before treatment)

X = Problem Based Learning learning model

O2 = Post-test value (after treatment)

The sample in this study were fifth grade students of SD Negri Inpres 2 Talise, totaling 20 students consisting of 9 boys and 11 girls. Data sources in this study were obtained from primary and secondary data. The data collection techniques used were tests, observations, interviews. The test instrument in the form of multiple choice questions that have been done by students during the trial then tested for validation and reliability with the help of Microsoft excel and SPSS Statistics 24.

Reliability testing was carried out with the help of the SPSS Statistic 24 program.

The basis for decision making in reliability testing is:

- If the value of $r_{tabel} > 0.60$ then the research instrument is reliable
- If the r_{tabel} value < 0.60 then the research instrument tool is not reliable

Based on reliability testing with the help of the SPSS Statistic 24 program, the reliability index is 0.9061 > 0.60 , it can be concluded that the question instrument is reliable.

Table 2. Reliability Coefficient

Reliability Statistics

Cronbach's Alpha	N of Items
.898	15

Sumber: hasil olah data

There are two data analysis techniques and hypothesis testing, namely descriptive analysis And Inferential Analysis.

The test criteria are said to be normal based on the significant value, namely:

- If the significance number > 0.05 , then H_0 is accepted and the data is normally distributed.
- If the significance number < 0.05 , then H_0 is rejected and the data is not normally distributed.

The hypothesis test used is t-test (paired sample t-test) with the help of the SPSS Statistic 24 program.

The significant decision making is as follows:

- Significant value < 0.05 then H_0 is rejected and accepts H_a
- Significant value > 0.05 then H_0 is accepted and rejects H_a

IV. RESULTS

This research was conducted at SD Inpres 2 Talise to see if there is an effect of using the Problem Based Learning Model assisted by Learning Videos on IPAS Learning Outcomes, especially the material "Human Respiratory System" 5th grade students of SD Inpres 2 Talise. Student learning outcomes are obtained using an instrument totaling 15 valid and reliable questions in the form of multiple choice. The results of the analysis of each validation test item

Table 3. Problem Instrumem Validity Analysis Results

No Soal	R-tabel	R-hitung	Kesimpulan
Soal 1	0.422	0.345	Tidak Valid
Soal 2	0.422	0.724	Valid
Soal 3	0.422	0.539	Valid
Soal 4	0.422	0.510	Valid
Soal 5	0.422	0.701	Valid
Soal 6	0.422	0.667	Valid
Soal 7	0.422	0.500	Valid
Soal 8	0.422	0.693	Valid
Soal 9	0.422	0.600	Valid

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Soal 10	0.422	0.422	Tidak Valid
Soal 11	0.422	0.325	Tidak Valid
Soal 12	0.422	0.671	Valid
Soal 13	0.422	0.632	Valid
Soal 14	0.422	0.634	Valid
Soal 15	0.422	0.715	Valid
Soal 16	0.422	0.529	Valid
Soal 17	0.422	0.499	Valid
Soal 18	0.422	0.290	Tidak Valid
Soal 19	0.422	0.394	Tidak Valid
Soal 20	0.422	0.545	Valid

Source: data processing results

Based on the results of the validity test with the help of SPSS version 24 for windows, the value (r table) with 22 respondents is 0.422, meaning that if the Validity Test Requirements if r count > from r table or Sig value < 0.05 then the question is declared Valid. There are 15 questions that are declared valid because the sig value is < 0.05 and seen from the valid questions there are easy and easy question variations so that the question is valid. While 5 invalid questions are number 1, 10, 11, 18, and 19 because the sig value is > 0.05, and it looks like the 7 questions are too easy to do so the question is not said to be valid.

The data from the test reliability test results with SPSS Statistic 25 can be seen in table 4.2 below:

Table 4. Results of Research Instrument Reliability Test

Reliability Statistics	
Cronbach's Alpha	N of Items
.898	15

Source: data processing results

The results of the descriptive analysis using the SPSS Statistic 25 application. The results of class V pretest data are seen in the following table:

Table 5. Results of Pre-test and Post-test Data Analysis

	Minimum	Maximum	Mean	Std. Deviation
Pretest	20	53	38.40	9.242
Posttest	66	93	81.65	8.400

Source: data processing results

Based on the data in table 4.3, it can be seen that the initial ability of student learning outcomes in the experimental class, can be seen from the average value of grade V students as an experimental class of 38 the results of the experimental class pretests obtained the highest value of 53 and the lowest value of 20. While the results of posttest data analysis in the experimental class, can be seen from the average value of grade V students as an experimental class of 81 The results of the experimental class posttest obtained the highest value of 93 and the lowest value of 66.

Based on the results of the above analysis, it can be concluded that the use of the Problem Based Learning model assisted by learning videos can affect student learning outcomes in IPAS learning in class V of SD Inpres 2 Talise. The difference in the increase in average scores on the pretest and posttest in the experimental class shows that the Problem Based Learning model assisted by learning videos is effective for improving student learning outcomes. The results of the data normality test for the experimental class can be seen in the following table:

Table 6. Normality Test Results

Kelas	Shapiro-wilk		
	Statistic	df	Sig
Pre-Test Eksperimen	.937	20	.210
Post-test Eksperimen	.915	20	.081

Source: data processing results

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Based on the table above, it shows that the significant value. Shapiro-wilk in class V on the pretest is 0.210 greater than the level a set ($0.210 > 0.05$). This indicates that the pretest data is normally distributed and the Shapiro-wilk value in class V on the posttest is 0.081 greater than the level a set ($0.081 > 0.05$). This shows that the pretest and posttest data are normally distributed, because the data are normally distributed, the Paired Sample T-test hypothesis testing was carried out with the help of the SPSS Statistic 24 program to obtain the following.

Table 7. Paired Sample T-Test Hypothesis Test Results

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
			Std. Error	95% Confidence Interval of the Difference				
				Mean	Lower			
Pair 1 pretest - posttest	-43.250	6.568	1.469	-46.324	-40.176	-29.447	19	,000

Source: data processing results

Based on the results of the analysis above, it can be seen that the Sig value. (2-tailed) is $0.000 < 0.05$. Based on these results it can be concluded that H_0 is rejected and accepts H_a . Based on this data, it can be concluded that the hypothesis test has an effect on the use of video media on student learning outcomes in IPAS subjects in Class V of SD Inpres 2 Talise.

V. DISCUSSION

This study is a quasi-experimental study with a one-group pretest-posttest design that aims to determine the effect of using the PBL model assisted by learning videos on IPAS learning outcomes on the material "human respiratory system" in class V SD Inpres 2 Talise. Before being used in research, the questions were first validated by experts. After that, the instrument was tested at SDN 2 Talise to test its validity and reliability. The selection of schools for this trial was based on the assumption that the students' abilities in the two schools were relatively similar. The results of the instrument trial showed that 15 questions were declared valid, while 5 que.

After testing the validity of the questions, the researcher then conducted a pretest. The pretest results showed that the average score obtained by students was 38.40. Based on these data, it can be said that the average value of this pretest has not yet reached the Criteria for Achieving Learning Objectives (KKTP). This can be seen from the standard deviation which shows that student scores are still relatively low, with a range of scores that tend to be close to the average, which is between 38.40. From the pretest data, it was found that none of the students had achieved mastery. Therefore, an action is needed to improve the learning outcomes of fifth grade students of SD Inpres 2 Talise. In this study, researchers applied the use of PBL models assisted by learning videos to student learning outcomes.

After conducting the posttest, it was found that there was a significant difference between the minimum and maximum scores of students. For example, there are students who in the pretest obtained a score of 40, but after participating in learning by using the PBL model assisted by learning videos, the posttest score increased to 93. When viewed from the minimum and maximum results of the posttest, it can be seen that some students have improved learning outcomes and achieved

In addition to the pretest and posttest results, observations of teacher and student activities were also made. On the observation sheet, the level of implementation of teacher and student activities reached around 85%. In the second phase of learning, it was found that many students still needed additional guidance from the researcher, especially in less effective activities, such as the question and answer process and filling out the Learner Worksheet (LKPD). To overcome this, in the next meeting the researcher tried to create a more comfortable learning environment so that students were more enthusiastic in asking questions without fear of being wrong. In addition, in filling out the LKPD, students are allowed to discuss with classmates and provide input to each other. As a result, in the second meeting there was a significant improvement, where students were more active in asking questions and discussing, and filling in the LKPD was done with better understanding.

Furthermore, to analyze the difference between pretest and posttest results, a normality test was conducted, which is presented in Table 4.5 The test results show that the data is normally distributed. Because the requirements for normal distribution have been met, hypothesis testing was carried out using the Paired Sample T-Test with the help of SPSS software version 24 for Windows. The analysis results show a significance value of $0.000 < 0.05$, which means that the alternative hypothesis (H_a) is accepted. In other words, there is a significant effect of using the PBL model assisted by learning videos on the learning outcomes

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of IPAS of fifth grade students of SD Inpres 2 Talise.

The use of digital media consists of six phases. In the second phase, researchers tried to encourage students' courage to be more active in asking questions and expressing opinions. In addition, a discussion system accompanied by giving yells was applied to build student activeness during learning. The results of this study are in line with the findings presented by Udrikal Muna (2023), which showed that the use of PBL models assisted by learning videos can improve teacher activity, student activity, and student learning outcomes.

Based on the results of the research that has been conducted, it can be concluded that the use of PBL models assisted by learning videos has an effect on improving student learning outcomes. Therefore, the use of this PBL model can be considered as an alternative in learning at the elementary school level. The use of this PBL model not only helps teachers in the learning process, but also provides opportunities for students to find their own understanding, thus increasing students' enthusiasm and activeness in learning. Thus, learning becomes more fun and less boring. In addition, this learning model is able to attract students' attention, train cooperation, facilitate understanding of the material, and increase student activeness, which ultimately has an impact on improving their learning outcomes.

CONCLUSION

Based on the results and data analysis of the research that has been done, it can be concluded that there is an effect of using PBL mode assisted by learning videos on the learning outcomes of IPAS class V students of SD Inpres 2 Talise. This can be seen from the final score or Posttest in class V in learning IPAS using the PBL model assisted by learning videos obtained an average score of 81.65. Based on the results of data analysis, it can be concluded that in the analysis of the Paired Sample T- Test hypothesis test, a significance value of 0.000 was obtained because the significance value of $0.000 < 0.05$ so that the H_0 hypothesis was rejected and H_a was accepted. This shows that there is an effect of using the PBL model assisted by learning videos on the learning outcomes of fifth grade students of SD Inpres 2 Talise.

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