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RESEARCH ARTICLE OPEN ACCESS

THE INFLUENCE OF THE PBL MODEL THROUGH YOUTUBE ON THE LEARNING OUTCOMES OF STUDENTS OF SDN BANYUAJUH 4

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Abstract: This study aims to determine the influence of *the Problem Based Learning* (PBL) model through YouTube Education on the learning outcomes of grade IV students of SDN Banyuajuh 4. The research problem is motivated by the low learning outcomes of students due to teacher-centered learning so that learning activity and independence are not developed. The study uses a quantitative approach with *a One Group Pretest-Posttest experimental design*. The research sample amounted to 9 students who were selected using the saturated sample technique. Data were collected through pretest and posttest tests, then analyzed using descriptive statistics, Shapiro-Wilk normality test, and *Paired Sample t-Test*. The results showed that the average student score increased from 36.22 to 88.22 with a significance value of 0.000 (<0.05). It was concluded that PBL through YouTube Education has a significant effect on student learning outcomes. Further studies are recommended using larger samples and control groups.
Keywords: Problem Based Learning, YouTube Education, Learning Outcomes, IPAS Learning.

Abstract: Penelitian ini bertujuan untuk mengetahui pengaruh *model Problem Based Learning* (PBL) melalui YouTube Education terhadap hasil belajar siswa kelas IV SDN Banyuajuh 4. Masalah penelitian dilatarbelakangi oleh rendahnya hasil belajar siswa akibat pembelajaran yang berpusat pada guru sehingga aktivitas belajar dan kemandirian tidak berkembang. Penelitian ini menggunakan pendekatan kuantitatif dengan *desain eksperimental One Group Pretest-Posttest.* Sampel penelitian berjumlah 9 mahasiswa yang dipilih menggunakan teknik sampel jenuh. Data dikumpulkan melalui tes pretest dan posttest, kemudian dianalisis menggunakan statistik deskriptif, uji normalitas Shapiro-Wilk, dan *Paired Sample t-Test*. Hasil penelitian menunjukkan bahwa rata-rata nilai siswa meningkat dari 36,22 menjadi 88,22 dengan nilai signifikansi 0,000 (<0,05). Disimpulkan bahwa PBL melalui YouTube Education memiliki pengaruh yang signifikan terhadap hasil belajar siswa. Studi lebih lanjut direkomendasikan menggunakan sampel dan kelompok kontrol yang lebih besar.
Keywords: Pembelajaran Berbasis Masalah, Pendidikan YouTube, Hasil Pembelajaran, Pembelajaran IPAS.

INTRODUCTION

Improving learning in elementary schools is important because this period is a crucial period in the formation of the foundation of students' knowledge, skills, and attitudes. Good quality learning in the early stages of education is able to encourage optimal cognitive development and character of children, so that it becomes a strong provision for the next level of education. There are still many elementary schools that record student learning outcomes below the expected standards. Learning outcomes are an indication of the success achieved by students, each activity carried out can cause specific changes (Nanda, et al. 2023).

The problem that often occurs is that learning is very *teacher-centered or teacher-centered learning*. This kind of learning model hinders the development of students' independence and creativity (Saleh, et al. 2024). To address this, a learning approach that emphasizes student activeness is needed, such as project-based learning, group discussions, and cooperatives. The learning model remains a key factor in determining the success of the learning process. The PBL model is an approach that has been proven to be effective in increasing student activity and engagement. The PBL model also instills a sense of responsibility for learning, as students must be directly involved in the process of finding answers to a problem. This model makes authentic problems as the beginning of learning that encourages students to actively build knowledge through investigation. (Safira & Handayani, 2025). Students' activeness in the classroom increases significantly when they feel that the learning material has a direct connection to the context of daily life. In order to improve students' understanding of the lesson, this step aims to help teachers determine the most appropriate learning for individual students (Anggriani et al., 2022).

The PBL model is often combined with digital technologies such as YouTube to support the learning process. The incorporation of information technology, especially the YouTube Education platform, has a very important role (Irianingtyas, et al. 2026). The use of digital technology in learning not only makes it easier to access information, but also provides various forms of presentation of various materials, ranging from educational videos, tutorials, simulations, to experimental documentation. The combination of innovative learning models with digital media is able to create an effective, fun, and adaptable learning environment to educational technology developments (Estuhono, et al. 2023). YouTube media has proven to be effective in conveying information visually and audibly in an attractive way, making it easier for students to understand the material (Azidha et al., 2025).

The novelty in this study lies in the application of the *Problem-Based Learning* (PBL) model combined with the use of YouTube-based learning media as the main source in the

basic education environment, especially at SDN Banyuajuh 4. This aspect of novelty arises because of the different context of its implementation, namely in elementary schools in areas that have not been studied much before. Providing new insights into the effectiveness of synergy between PBL and digital media in improving student learning achievement at the primary education level.

METHOD

This study uses a quantitative approach with the experimental method and the design of One Group Pretest-Posttest. This design involves a class of experiments that are given an initial test (pretest), then treatment (treatment), and ended with a final test (posttest) to determine the effect of the treatment given without using a control class or comparator:

$$O_1 \quad x \quad O_2$$

Description:

O1: The initial test (*pre-test*) is carried out before the learning process takes place and before the application of the treatment.

X: PBL (*Problem-Based Learning*) treatment through Youtube is applied.

O2: *Post-test* after the learning process is completed and after receiving PBL (*Problem-Based Learning*) treatment via Youtube.

This research was carried out at SDN Banyuajuh 4 located in Bangkalan Regency, East Java, in the Even Semester of the 2026/2027 Academic Year. The research population is all fourth grade students of SDN Banyuajuh 4. The sampling technique uses saturated samples so that the entire population is used as a research sample. Data was collected through learning outcome tests in the form of multiple-choice questions given before (pretest) and after the treatment (posttest) of Problem Based Learning (PBL) learning through YouTube Education. The instrument was first tested for validity, reliability, difficulty, and differentiating power. Data were analyzed using descriptive and inferential statistics, including normality tests and hypothesis tests with the Paired Sample t-Test or Wilcoxon Signed Rank Test to determine the effect of PBL through YouTube Education on student learning outcomes.

RESULTS AND DISCUSSION

Based on data from the pretest and posttest, an analysis can be carried out to see an overview of the development of students' learning outcomes after being given certain treatments or interventions. In the pretest, the highest score of students was 73, the lowest score reached 13. This shows that there is a fairly wide range in the achievement of learning outcomes before treatment is given. In addition, the average score on the pretest of 36 indicates that overall, the student's initial ability is relatively low and is below the middle or median of the maximum score range of 100. This condition gives an idea that many students still need to gain increased knowledge or skills in the material being tested. Furthermore, the results of the posttest showed significant changes. The highest score on the posttest increases to 100, which means that there are students who manage to achieve perfect scores after undergoing the learning process. The lowest score in the posttest also increased, to 67, indicating that even the students with the lowest scores have experienced significant progress compared to their initial condition in the pretest. In addition, the average score on the posttest reached 88, a figure that shows a drastic improvement in the quality of learning. This high average proves that the majority of students are able to absorb the material well so that the learning results are much more optimal after following the learning process given.

The comparison between pretest and posttest scores shows a significant increase in both the highest score, the lowest score, and the average score. This means that learning strategies or methods have succeeded in improving students' understanding and abilities as a whole. With the lowest score rising from 13 to 67, there are indications that the gap between high- and low-performing students is starting to narrow, although it cannot be definitively concluded without looking at more detailed grade distribution data. Meanwhile, the increase in the average score from 36 to 88 shows that not only students with good abilities are contributing, but also other students are experiencing consistent development. Overall, the data presented provide a positive picture of the effectiveness of the learning carried out. The increase in grades both from the highest and average sides confirms that students are able to master the targeted competencies. In addition, the lowest grade increase showed that efforts to improve the quality of learning succeeded in touching groups of students who previously had difficulties. These results are the basis for evaluation to continue using the same method or as a reference for the development of better learning strategies in the future. In the evaluation of the learning process, the success shown through the comparison of pretest and posttest scores proves that the material delivered during teaching and learning activities is

effective in helping students achieve competency goals. These results are in line with Sibarani et al. (2024) who show that the PBL model can significantly improve both activities and student learning outcomes. In addition, the use of YouTube media as a learning tool has also been proven to encourage students' motivation and understanding of the material taught (Hita et al., 2024). However, further analysis is needed, including statistical testing to evaluate the significance of grade improvement and observations of various other factors that can affect learning outcomes, such as student motivation, learning environment conditions, and the role of teachers.

Based on the data obtained from the pretest and posttest, an analysis can be carried out to see the picture of the development of students' learning outcomes after being given certain treatments or interventions. In the pretest, the highest score obtained by students was 73, while the lowest score reached 13. This shows that there is a fairly wide range in the achievement of learning outcomes before treatment is given. In addition, the average score on the pretest of 36 indicates that the overall initial ability of students is relatively low and far below the maximum score that can be achieved. This condition gives an idea that most students still need to improve their knowledge and skills in the material studied.

Posttest results show significant changes. The highest score in the posttest increased to 100, there were students who were able to achieve perfect scores after following the learning process. The lowest score in the posttest increased to 67, indicating that previous students who obtained low scores also made quite good progress. In addition, the average posttest score reached 88, showing that the majority of students were able to understand the learning material better after being given treatment. The increase in the average score from 36 to 88 shows that there is a very good development of learning outcomes after the learning is implemented. These findings are in line with Faiza et al. (2023) who show that the use of PBL models supported by YouTube videos improves students' understanding of concepts and learning achievement. On the other hand, Novianti et al. (2020) also revealed that the PBL Model has a positive impact on improving the learning outcomes of elementary school students. These findings are in line with Marlinda et al. (2025) who show that the use of YouTube in learning can improve students' motivation and critical thinking skills. The same findings were also reported by Musfiza et al. (2025) stating that the use of YouTube videos as a means of learning supports improving student educational outcomes.

The comparison between pretest and posttest scores shows a considerable increase in both the highest score, the lowest score, and the average score. This indicates that learning strategies or media are applied to improve overall student understanding. The increase in the

lowest score from 13 to 67 also shows that learning not only impacts students with high ability, but also helps students who previously had learning difficulties. Thus, the descriptive results provide an initial idea that the applied learning is running effectively.

Table 1 Descriptive Statistical Results of Pretest and Posttest

		Red	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	36.22	9	17.341	5.700
	Posttest	88.22	9	10.281	3..427

Source: Output SPSS

Based on the descriptive statistical output in Figure 4.1, it is known that the mean pretest is 36.22 with a standard deviation of 17.341, the average posttest score is 88.22 with a standard deviation of 10.281. These results showed an average increase of 52 points after students received the learning treatment. The standard deviation of the posttest is smaller than the pretest shows that the learning outcomes of students after learning become more even.

To strengthen the results of the descriptive analysis, the normality test was carried out as a condition for hypothesis testing to find out whether the data was normally distributed. This study used the Shapiro-Wilk test because the number of samples was less than 50 (N = 9), with the criteria of normal distributed data if the significance value (Sig.) > 0.05.

Table 2 Normality Test Results

	Kolmogrov- Smirnov2			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest	.192	9	.200	.931	9	.488
Posttest	.230	9	.184	.906	9	.286

*. This is a lower bound of the true significance

a. Lillifors Significance Correction

Source: Output SPSS

The results of the normality test showed the significance value of the Shapiro-Wilk pretest was 0.488 and the posttest was 0.286. Because both are greater than 0.05, the pretest and posttest data are declared to be normally distributed. The assumption of normality is met, the research data is suitable for analysis using a parametric test, namely the Paired Sample t-Test. Once it is known that the data is normally distributed, the next step is to conduct a hypothesis test using the Paired Sample t-Test to find out if there is a significant difference between learning outcomes before and after the learning treatment.

Table 3 Paired Sample T-Test Test Results

	Paired Differences							
	Red	Std. Deviation	Std. Error Mean	95 % Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 pretest-posttest	-52.000	11.446	3.815	-60.798	-43.202	-13.630	8	.000

Source: Output SPSS

Based on the output of the Paired Sample Statistics in Figure 4.3, it is known that the average pretest is 36.22, the average posttest is 88.22. These results show that there is an increase in student learning outcomes after being given learning treatment. Furthermore, based on the output of the Paired Sample Test, a t-value of -13.630 with a degree of freedom (df) of 8 and a significance value of Sig. (2-tailed) of 0.000.

Interpretation of Paired Sample T-Test Results

A significance value of 0.000 < 0.05 indicates a significant difference between the pretest and posttest scores. The average difference of -52,000 indicates that posttest scores are higher, so the treatment given has a positive effect on student learning outcomes. These findings are in line with Marlinda et al. (2025) who stated that YouTube-assisted PBL can improve students' critical thinking skills and learning motivation, as well as research by Fanilasari & Usman (2023) which shows improved learning outcomes through the integration of YouTube videos in problem-based learning. The results of this study are in line with Wahyuningtyas & Kristin (2021) stating that the Problem Based Learning model is able to improve student learning outcomes through Motivation. In addition, Handayani and Koeswanti (2021) also reported that the implementation of PBL has a significant influence on improving the learning outcomes of elementary school students.

Hypothesis Test Conclusion

The results of the normality test showed normal distributed data (Sig. > 0.05), while the Paired Sample t-Test produced a significance value of 0.000 < 0.05. These results prove that there is a significant difference between learning outcomes before and after treatment

The increase in the average score from 36.22 in the pretest to 88.22 in the posttest shows that the media or learning method applied is able to increase students' understanding of the

material taught. Thus, the learning carried out can be declared effective in improving student learning outcomes.

Hypothetical Decision

Based on the Paired Sample t-Test, a value of Sig. (2-tailed) of 0.000 < 0.05 was obtained, so that H_0 was subtracted and H_1 was accepted. These results show that the learning media used has a significant and effective effect in improving the learning outcomes of grade IV students of SDN Banyuajuh 4.

CONCLUSION

It was concluded that the application of the PBL model combined with YouTube Education had a significant impact on the learning achievement of grade IV students at SDN Banyuajuh 4. It is proven that there has been an increase in the average score of students from 36.22 in the pretest to 88.22 in the posttest, which means an increase of 52 points. In addition, the highest score increased from 73 to perfect at 100, while the lowest also experienced a significant increase from 13 to 67, indicating that almost all students experienced an improvement in their learning outcomes.

Normality analysis using the Shapiro-Wilk test showed that the pretest and posttest results had a normal distribution with significance values of 0.488 and 0.286 (because the Sig. > value was 0.05). Then, the results of significance testing with the Paired Sample t-Test showed a p value of 0.000 < 0.05 so that the null hypothesis (H_0) was rejected and the alternative hypothesis (H_1) was accepted. This shows that there is a significant difference between student learning outcomes before and after the application of the PBL model through YouTube Education media. Thus, it can be concluded that the application of the Problem Based Learning (PBL) model through YouTube Education is effective and has a positive influence in improving the learning outcomes of science subjects for grade IV students of SDN Banyuajuh 4. This learning model is suitable as an alternative innovative strategy to improve students' understanding of concepts and activeness, as well as improve overall learning outcomes at the elementary school level.

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