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The Effectiveness of Problem-Based Learning Assisted by Powtoon Media on the Activeness and Learning Outcomes of Pancasila Education in 4th-Grade Elementary School Students

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Abstract

Low learning outcomes and student engagement result from ineffective learning models and media in actively involving students. This study analyzes the effectiveness of the problem-based learning (PBL) model combined with Powtoon media in enhancing student participation and learning outcomes. A quantitative method with a quasi-experimental design was used, involving 4th-grade elementary students divided into an experimental class (IV A, 33 students) and a control class (IV B, 30 students) using a conventional model. Engagement data were collected through observation, and learning outcomes were assessed via evaluation tests. Data analysis used SPSS 26 with normality, homogeneity, t-test, N-Gain, and engagement score tests. The results showed a significant t-test value of 0.000 < 0.05, indicating a significant difference in engagement and learning outcomes between the two groups. The N-Gain percentage was 61% (moderately effective) in the experimental class and 43% (less effective) in the control class. The highest engagement category in the experimental class was visual activities (87.87%), while in the control class, it was mental activities. These findings demonstrate that the PBL model combined with Powtoon media effectively enhances student engagement and learning outcomes.

Keywords: *problem-based learning, powtoon media, activeness, and learning outcomes.*

Abstrak

Rendahnya capaian pembelajaran dan keterlibatan siswa disebabkan oleh model dan media pembelajaran yang kurang efektif dalam melibatkan siswa secara aktif.

Penelitian ini menganalisis efektivitas model pembelajaran berbasis masalah (PBL) yang dipadukan dengan media Powtoon dalam meningkatkan partisipasi dan capaian pembelajaran siswa. Metode kuantitatif dengan desain quasi eksperimen digunakan, melibatkan siswa SD kelas 4 yang dibagi menjadi kelas eksperimen (IV A, 33 siswa) dan kelas kontrol (IV B, 30 siswa) dengan menggunakan model konvensional. Data keterlibatan dikumpulkan melalui observasi, dan capaian pembelajaran dinilai melalui tes evaluasi. Analisis data menggunakan SPSS 26 dengan uji normalitas, homogenitas, uji-t, N-Gain, dan skor keterlibatan. Hasil penelitian menunjukkan nilai uji-t signifikan sebesar 0,000 < 0,05, yang menunjukkan adanya perbedaan yang signifikan dalam keterlibatan dan capaian pembelajaran antara kedua kelompok. Persentase N-Gain sebesar 61% (cukup efektif) pada kelas eksperimen dan 43% (kurang efektif) pada kelas kontrol. Kategori keterlibatan tertinggi pada kelas eksperimen adalah aktivitas visual (87,87%), sedangkan pada kelas kontrol adalah aktivitas mental. Temuan ini menunjukkan bahwa model PBL yang dikombinasikan dengan media Powtoon efektif meningkatkan keterlibatan dan hasil belajar siswa.

Kata kunci: *pembelajaran berbasis masalah, media Powtoon, keaktifan, dan hasil belajar.*

INTRODUCTION

Education is a human effort to shape individual character to be in line with the values prevailing in society, as well as a step to participate in developing and improving students' knowledge, skills, values, attitudes, and behaviors that are useful in everyday life (Nasution et al., 2022). Education can also be said to be a learning process that aims to optimize individual potential, including cognitive, affective, and psychomotor aspects (Sholekah, 2020). In addition to teaching understanding of the material, education is also used to build character, social skills, and student competence in facing life's challenges. In this case, effective learning is able to provide meaningful experiences that support the development of students' thinking.

Law No. 20/2003 on the National Education System seeks to cultivate students' potential to become individuals who are devoted to God Almighty, possess noble character, are healthy, knowledgeable, skilled, creative, independent, and capable of being democratic and responsible citizens. Education is designed to equip students with insight, understanding, and awareness of national values and social norms that apply in community life. Meanwhile, Regulation of the Minister of Education and Culture No. 22/2016 on Process Standards for Primary and Secondary Education mandates that learning in the school environment must take place in an interactive, inspiring, and fun way to be able to challenge and motivate students to participate actively. Furthermore, learning should also offer ample opportunities for students to demonstrate initiative and creativity and foster independence in line with their talents, interests, and psychological growth. These guidelines clearly show that the government prioritizes an interactive and enjoyable learning process designed to stimulate students' critical thinking, creativity, and innovation. As a result, the learning experience becomes more meaningful and effective in shaping a competent and competitive generation.

In this 21st-century era, technology has become an important component that touches various fields of life, including in the realm of learning and instruction. The integration of technology in education can be implemented directly during the learning process in schools. Technology has a big role in supporting an effective learning process. Effective learning is

appropriate learning, where learning can be said to be effective if the learning objectives have been achieved (Ponidi et al., 2021). The utilization of technology in teaching and learning activities provides opportunities for students to create learning experiences that are more interactive, interesting, and in accordance with the characteristics of today's digital generation (Chastanti et al., 2017). Technology integration in learning at school can be applied, one of which is in the subject of Pancasila Education, where students can understand national values through more interactive and contextual media. Therefore, the use of technology in learning not only boosts student engagement but also helps create a more enjoyable and relevant learning environment that caters to students' needs.

Pancasila as the foundation of the state will not be altered as long as the Unitary State of the Republic of Indonesia (NKRI) exists (Salam, 2021). This suggests that Pancasila plays a crucial role in the daily lives of the Indonesian people. The teaching of Pancasila at the elementary school level holds significant importance in shaping the character and fundamental values of national life for the younger generation. As Indonesia's state ideology, Pancasila serves as a guiding principle that reflects attitudes of mutual respect, tolerance, and unity in diversity (Kamdani et al., 2025). Introducing Pancasila at an early age will help students understand and internalize the noble values contained in its five principles, enabling them to grow into individuals with good personalities, responsibility, and love for their country (Daffa et al., 2025). Furthermore, Pancasila education at the elementary level also plays a role in strengthening nationalism and national identity, which are vital in facing the challenges of globalization and the changing times (Angul, 2024). By instilling an understanding of Pancasila from an early age, it is expected that children will grow into citizens who recognize their rights and responsibilities and play an active role in society, the nation, and the state.

The purpose of Pancasila education at the elementary level is not only to teach the text or formulation of Pancasila but, more importantly, to internalize the values contained in each principle of Pancasila into real-life practices (Pertiwi et al., 2021). In this context, Pancasila serves as the foundation for instilling positive attitudes such as tolerance, mutual cooperation, social justice, and respect for human rights. This becomes even more relevant amidst technological advances and globalization, which influence children's thinking patterns, social interactions, and behaviors. Without a strong moral foundation, the younger generation may become caught in the currents of values that do not align with the nation’s culture and may erode national identity.

Through Pancasila education, children are expected to develop positive attitudes such as mutual respect, valuing differences, cooperation, and social responsibility (Muhibbin & Sumarjoko, 2016). Therefore, Pancasila education becomes an effective means to instill noble values that will shape the younger generation to be not only intellectually capable but also resilient and integral in character. This is especially important in facing the challenges that Indonesia will encounter in the future. In the long run, Pancasila education at the elementary level will contribute to the creation of an Indonesian society that is harmonious, just, and capable of competing globally without losing its national identity. The teaching of Pancasila should be designed in such a way that it develops students' potential and shapes their character in line with the noble values of Pancasila (Pratama et al., 2023).

However, the reality in the fourth-grade class at SDN Gisikdrono 02 indicates that there are major obstacles in the learning process, particularly the insufficient encouragement to help students improve their cognitive skills. The learning tends to focus on memorizing information rather than encouraging students to think critically. Students are more directed to remember material without truly understanding it or relating it to real-life situations or problems (Jensen et al., 2019). As a result, although students have sufficient theoretical understanding, they have difficulty in applying this knowledge in everyday life (Junaedi, 2019).

In addition, in teaching and learning activities at school, there are still many students who show a low level of activeness during teaching and learning activities and learning outcomes that are not optimal or still fall short of the minimum competency standards. This situation results from learning models or approaches that fail to actively engage students and do not capture their interest (Imawati et al., 2022). Therefore, it is necessary to select learning models and media that are more efficient and applicable for students in today's digital era. The goal is to improve student understanding of learning materials and encourage active student involvement in learning (Ansori et al., 2024).

The selection of appropriate learning models and media has a significant role in determining the success of the learning process, because it can encourage students' active involvement in learning activities. In addition, the use of appropriate models and media can also increase student motivation, so they are more enthusiastic in facing various challenges during the learning process (Wulandari et al., 2023). However, in reality, the fourth-grade teachers at SDN Gisikdrono 02 still lack variety in using teaching models and media. Teachers more often use lecture methods, which causes students to be less active in the learning process. Teachers also make limited use of technology in utilizing learning media for students. Teachers have a crucial role in determining learning models that are aligned with student characteristics. Understanding the learning environment and the ability to apply the appropriate approach are needed so that learning objectives can be achieved effectively and efficiently as expected (Kurniawati, 2022). On the other hand, the use of appropriate learning media has a positive impact on students' psychological development in the learning process. Psychologically, learning media makes it easier for students to understand the material, because it can change abstract concepts to be more concrete and easy to understand (Andriani et al., 2024).

The learning model is a series of approaches or strategies designed to support the learning process while ensuring the smoothness and achievement of the quality and learning objectives that have been set (Polii & Polii, 2022). The learning model acts as a guide for educators or teachers in designing learning activities, allowing teachers to organize steps and prepare various needs that support the learning process (Hibatullah Anbiya, 2023). Another role of the learning model is to help students acquire knowledge, skills, mindsets, and learning strategies to realize targeted goals (Asyafah, 2019). Teachers need to improve their skills in understanding and applying learning models and media effectively (Ramadhani et al., 2016). One of the effective learning models to increase students' attention and focus in classroom learning activities is the Problem-based Learning (PBL) learning model.

Problem-based Learning (PBL) is a learning approach that focuses on the process of collaborative problem solving and is more relevant to the current era. The PBL model is

closely related to students' daily lives. This model provides opportunities for students to learn through experience about problems that they usually face in their everyday livesyday lives (Handayani & Koeswanti, 2021). Learning with the PBL model is able to encourage students to take responsibility for their tasks (Syifa et al., 2023). This PBL model requires careful preparation, good intellectual abilities, and high enthusiasm so that students can participate in learning activities well. The PBL model also requires students to think critically and creatively so that students will be more motivated to participate in learning activities (Silmi et al., 2022). In addition to the learning model, learnplays a significant role in the learning process by serving as a means to convey information or subject matter more efficiently andng able to attract students' interest and attention (Wulandari et al., 2023).

The definition of learning media is a tool used to make learning activities more efficient and maximized (Fadilah et al., 2023). In this digital era, teachers are not only required to master traditional learning media but also to master more modern learning media (Nsafe et al., 2023). Various research results also reveal that the use of media has a positive impact on learning in the classroom, so that learning media becomes an important part of teaching and learning activities in the classroom or the main method in the course of learning (Hasan et al., 2021). Learning media has a very crucial role in modern education. Media not only functions as a means of conveying information but also actively involves students in the learning process (Dany, Rifan, & Suryandari, 2024). Learning media can also overcome boredom in the student learning environment (Awalia et al., 2019). Technology-based media can improve the quality of learning because it has many advantages, such as being able to capture students' interest and encouraging them to engage more actively in the teaching and learning process.

Powtoon is an online platform-based software application that allows its users to create presentations or interactive animated videos effectively and efficiently with the ability to modify objects, add images, or insert music and record the user's voice (Nina, 2019). Powtoon offers a wide variety of templates for creating visually appealing learning materials (Alonemarera, 2024). With Powtoon, users can create interesting animations to deliver to students. With the many templates available, teachers will find it easier to use Powtoon to create interesting and effective visualizations in delivering material to students.

Previous research revealed that learning with the PBL model can improve students' average learning outcomes (Abdurrahman et al., 2023). Another study also revealed that learning with the PBL model can enhance critical thinking skills and improve students' average learning outcomes (Uliyandari et al., 2021). Previous research revealed that the PBL model can affect student learning outcomes in Pancasila and Citizenship Education subjects (Rahayu & Ramadan, 2024). Other research shows that the PBL model combined with Powtoon media can improve Pancasila Education learning outcomes (Noor et al., 2023). Research (Nurrohim et al., 2023) has proven that the PBL model optimizes student learning activeness in civics subjects, leading to this conclusion. Other research also indicates that the application of PBL can increase student activeness in civics learning (Langitasari et al., 2021).

Based on the research, the use of the PBL model and Powtoon media can help improve student engagement and learning outcomes in the subject of Pancasila Education. The novelty of this study is found in the research location, which was conducted at SD Negeri Gisikdrono 02, and the research is focused on the variables of learning outcomes and student engagement in the Pancasila Education subject for fourth-grade students.

Given this explanation, the researcher is motivated to carry out a study with the title "The Effectiveness of Problem Based Learning Model Assisted by Powtoon Media on Activeness and Learning Outcomes of Pancasila Education for Grade IV Students of Gisikdrono 02 State Elementary School, Semarang City". This research is important to do so that student activeness and learning outcomes can be improved through the PBL learning model assisted by Powtoon media.

METHODS

The study adopts a quantitative approach. The research method employed is experimental, utilizing a quasi-experimental design with a non-equivalent control group pattern. Experimental research is a methodological approach aimed at evaluating the effects of a specific treatment on the outcomes that emerge as a results of its implementation (Arib et al., 2024).

In this study, two groups were given different treatments over the course of four learning sessions. The first group, serving as the experimental class, received instruction through a PBL model supported by Powtoon media. Meanwhile, the second group, the controll class, was taught using a conventional learning approach. Data collection techniques in this study included test to assess learning outcomes and observation sheets to evaluate student engagement. Before receiving treatment, both classes were first given a pretest to assess students' initial abilities. Then, after undergoing treatment for four sessions, a posttest was administered to evaluate their condition after the treatment. The experimental design used in this study is shown in Table 1.

Table 1. Nonequivalent Control Group Design

Group	Pretest	Treatment	Posttest
Control	O_1	X_1	O_2
Experiment	O_3	X_2	O_4

The data in Table 1 indicates that this research utilized a quasi-experimental design with a nonequivalent group design type. The sampling method used in this study was non-probability sampling, specifically the saturation sampling technique, where all members of the population were included as samples (Sugiyono, 2015). The subjects of the study were fourth-grade students at Gisikdrono 02 State Elementary School, Semarang City, with all 65 students being selected as the sample. This approach was chosen due to the relatively small population size. The experimental and control groups were determined, with class IV A serving as the experimental group with 33 students, and class IV B as the control group with 30 students.

The measuring instruments used in this study were pretest and posttest questions to assess student learning outcomes. The measuring instrument to measure student activeness is an observation sheet. Before measuring learning outcomes, the question instrument was tested first on class IV C students of Gisikdrono 02 State Elementary School, Semarang City with 33 students. After administering the test items, the next step is to assess the validity and reliability of the question instrument using SPSS version 26. The instrument analysis involves a validity test using the Product Moment Correlation formula and a reliability test employing the Conbach's Alpha formula. The validity test was carried out using the Product Moment

Correlation formula, and the results obtained were 25 questions declared valid out of 30 questions tested. So that 25 questions are used as pretest and posttest.

RESULTS AND DISCUSSION

The data description in this study includes the pretest and posttest scores of students who were given different treatments, namely the use of the PBL model assisted by Powtoon media in the experimental class and the use of conventional models in the control class. Descriptive data analysis is used to present research data which includes the amount of data, highest score, lowest score, average score, and standard deviation. Descriptive analysis of data obtained with the help of SPSS 26 is presented in the following table.

Table 2. Descriptive Analysis of Learning Outcomes Data

Class	N	Range	Minimum	Maximum	Mean	Std. Deviation
Pretest Experiment	33	36	40	76	57.76	10.604
Posttest Experiment	33	32	68	100	83.52	7.124
Pretest Control	30	44	28	72	51.87	12.272
Posttest Control	30	32	56	88	73.03	7.552
Valid N (listwise)	30					

Referring to the data in Table 2, the experimental class comprised 33 valid samples. The pretest scores varied between a minimum of 40 and a maximum of 76, with an average score of 57.76 and a standard deviation of 10.604. In the posttest, scores improved, ranging between 68 and 100, with an average of 83.52 and a standard deviation of 7.124. Meanwhile, the control class consisted of 30 valid samples. The pretest scores in this group varied from 28 to 72, with a mean of 51.87 and a standard deviation of 12.272. After the posttest, scores ranged from 56 to 88, with an average of 73.03 and a standard deviation of 7.552. A hypothesis test was carried out to assess the differences and effectiveness of implementing the PBL model integrated with Powtoon media in enhancing student engagement and learning outcomes. Before conducting the hypothesis test, prerequisite tests, including the normality and homogeneity tests, were performed. The normality test aims to determine whether the research data follows a normal distribution or not. If the data is normally distributed, parametric statistical methods are applied, whereas nonparametric statistical methods are used for data that deviates from normality. The table below presents the results of the normality test on learning outcome data using SPSS 26.

Table 3. Normality Test

Dependent Variable	Class	Kolmogrov-Smirnov			Sapihro.Wilk		
		Statistic	Df	Sig.	Statistic	f	Sig.
Learning Outcomes	Pretest Experiment	124	33	.200*	.954	33	.174
	Pretest Control	.096	30	.200*	.963	30	.364
	Posttest Experiment	127	33	.194	.952	33	155
	Posttest Control	.118	30	.200*	.974	0	.364

The table 3 presents the results of the normality test, indicating that the Kolmogorov-Smirnov significance value for the pretest in the experimental class is 0.200, with the same

value observed in the control class at 0.200. For the posttest, the significance value in the experimental class is 0.194, while in the control class it is 0.200. These results suggest that the student learning outcome data from both the pretest and posttest in both the experimental and control classes follow a normal distribution, as the significance values are above 0.05. Therefore, parametric statistical methods were applied.

The homogeneity test aims to assess whether the two groups have similar properties or come from similar variances. The decision-making for the homogeneity test is based on the significance value (sig). If the sig value is less than or equal to 0.05, H0 is rejected and Ha is accepted, indicating that the variances of the two groups are not equal or not homogeneous. If the sig value is greater than 0.05, then H0 is accepted and Ha is rejected, meaning that the variances of the two groups are equal or homogeneous. The results of the pretest homogeneity test using SPSS 26 are shown in the following table.

Table 4. Pretest Value Homogeneity Test Results

	Statistics Parameters	Lavene Statistic	df1	df2	Sig.
Learning Outcome	Based on Mean	.298	1	61	.587
	Based on Median	.313	1	61	.578
	Based on Mean and Median	.313	1	59.429	.578
	Based on trimmed mean	.301	1	61	.585

The information contained in table 4 indicates that the significance value (Sig.) based on the average is 0.587. Since 0.587 > 0.05, it can be concluded that the pretest scores of the experimental and control classes come from populations with similar variances or the data is homogeneous.

The following table shows the results of the homogeneity test of the posttest scores of the experimental and control classes conducted using SPSS 26.

Table 5. Posttest Value Homogeneity Test Results

	Statistics Parameters	Lavene Statistic	df1	df2	Sig.
Learning Outcome	Based on Mean	.146	1	61	.704
	Based on Median	.143	1	61	.707
	Based on Mean and Median	.143	1	60.881	.707
	Based on trimmed mean	.126	1	61	.724

Referring to Table 5, the significance value (Sig) based on the mean is 0.704. Since 0.704 is greater than 0.05, it can be inferred that the posttest data from both the experimental and control classes originate from a population with homogeneous variance.

For data that has passed the normality and homogeneity tests, hypothesis testing is required at the next stage. In this study, hypothesis testing was conducted using the Independent sample t-test. The purpose of the Independent sample t-test is to determine if there is a significant difference between the learning outcomes of students in the experimental and control classes. This test is employed when comparing two independent data sets, such as between two groups with different sample sizes and varying treatments, methods, or models.

The results of the independent sample t-test, analyzed using SPSS 26 for Windows, are shown in the following table.

Table 6. Results of N-Gain Analysis of Learning Outcomes

Statistics Parameters		Levene's Test for Equality of Variances		t-test for Equality of Means					
								95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Learning Outcome	Equal variances assumed	.146	.704	.650	61	.000	10.448	1.849	6.751	14.146
	Equal variance not assumed			5.634	59.571	.000	10.448	1.854	6.738	14.159

The data in Table 6 reveals that the significance value of Sig (2-tailed) in the Equal Variances Assumed column is 0.000. In making decisions with the independent sample t-test, a Sig (2-tailed) value < 0.05 leads to rejecting H_0 and accepting H_a, which suggests a significant difference. Conversely, if Sig (2-tailed) > 0.05, H_0 is accepted and H_a is rejected, indicating no significant difference. The independent sample t-test results show a Sig (2-tailed) value of 0.000 < 0.05, meaning H_0 is rejected and H_a is accepted. This demonstrates a significant difference in the mind mapping process within the project-based learning paradigm and its impact on student learning outcomes. This conclusion is further supported by the higher average score of the Pancasila Education posttest in the experimental class, using the mind mapping method in the project-based learning model, which is 79.74, compared to the control class, which used conventional methods, with an average score of 62.95.

The next data analysis is the N-Gain test. The N-Gain test was conducted to determine the effectiveness of changes in student learning outcomes before and after being given certain treatments by calculating the difference in posttest and pretest scores, then divided by the ideal maximum score minus the pretest score. The decision in the N-Gain analysis is based on the interpretation of the N-Gain score, which is divided into three categories: High (high) if g> 0.7. Medium if 0.3 ≤ g ≤ 0.7. Low if g < 0.3. To validate effectiveness, the N-Gain percentage obtained from the N-Gain score multiplied by 100 was used. Decisions based on the N-Gain percentage are divided into four categories: ineffective (<40%), less effective (<40%), and ineffective (<40%). effective (40%-55%), moderately effective (56%-75%), effective (>76%). Analysis of the N-Gain test using Microsoft Excel assistance can be seen in the following table.

Table 7. Results of N-Gain Analysis of Learning Outcomes

Class	Mean	N-Gain Score	Interpretation	N-Gain Percentage	Category
Pretest	57,75	0.6166	Medium	61%	Simply

Experiment					effective
Posttest	83,51				
Experiment					
Pretest Control	51,86	0.4292	Medium	42%	Less
Posttest Control	73,06				effective

According to the N-Gain results in table 7, the experimental class achieved a percentage score of 61%, which falls into the moderately effective category. In contrast, the control class had an N-Gain score of 42%, placing it in the less effective category. The calculations of the N-Gain test indicate that the average increase in learning outcomes in the experimental class is greater than that in the control class. This difference in the average increase in learning outcomes between the two groups highlights that the application of the PBL model combined with Powtoon media is more effective in improving learning outcomes in Pancasila Education for fourth-grade students at Gisikdrono 02 State Elementary School.

The next analysis is student activeness. The instrument used to measure student activeness is an observation sheet. The student activeness observation sheet is prepared based on the categories proposed by Paul B. Diedrich in Sardiman (2010: 101), classifies student activity in learning into seven categories, namely (1) visual activity, (2) oral activity (3) listening activity, (4) writing activity, (5) motor activity, (6) mental activity, and (7) emotional activity. Student activity is influenced by internal factors from the individual as well as external factors that come from the surrounding environment. Each category has 4 indicators with a score of 1-4.

Based on the research that has been done, the score results obtained in class IV of Gisikdrono 02 State Elementary School, Semarang City experimental and control classes on Pancasila Education subjects with the following table.

Table 9. Students Activity Score

Category	**Score**	
	Experiment	**Control**
Visual Activities	87,87%	50,83%
Oral Activities	79,54%	45,83%
Listening Activities	88,63%	44,16%
Writing Activities	87,12%	51,66%
Motor Activities	87,87%	49,24%
Mental Activities	83,33%	63,33%
Emotional Activities	81,81%	59,16%

The results of the score calculation above use the following formula.

$$\text{Score} = \frac{total\ score}{score\ maximum} \text{ x } 100$$

The criteria that have been obtained from the observation sheet can be grouped into three categories, namely good, sufficient, and less. The criteria for student learning activeness in this study can be shown in the following table.

Table 10. Activity Score Category

Score	Category
76 – 100%	Good
61 – 75%	Simply
< 60%	Less

According to the final calculation of student engagement in Table 9, the experimental class shows the highest scores in the Visual Activities and Motor Activities categories, both with a score of 87.87%. The lowest score in the experimental class was in the Oral Activities category, at 79.54%. In the control class, the highest score was in the Mental Activities category, with a score of 63.33%, while the lowest score in the experimental class was in the Listening Activities category, with a score of 44.16%. These results indicate that using a problem-based learning model supported by Powtoon media in Pancasila Education lessons can enhance student engagement in Class IV at Gisikdrono 02 State Elementary School, Semarang City.

This study aimed to investigate the differences and effectiveness of the PBL model supported by Powtoon media in improving student engagement and focusing on learning outcomes in Pancasila Education for fourth-grade students at Gisikdrono 02 State Elementary School, Semarang City. The research involved 33 students from class IV A, acting as the experimental group, and 30 students from class IV B, acting as the control group. The data collection methods included tests and observations. The test method involved pretest and posttest questions to assess learning outcomes, while observation was used to evaluate student engagement during lessons. The research took place over four meeting sessions in each class.

Learning in the experimental class was carried out with the PBL model assisted by Powtoon interactive video media. Powtoon media allows the delivery of complex material to be more fun and easy for students to understand. Students are given real problems that are relevant to the learning material as an initial step in the PBL model. Students then work collaboratively in groups to analyze the problem and find solutions based on their knowledge. The teacher acts as a facilitator, providing guidance and directing the discussion without providing direct solutions. Powtoon is used as a supporting medium in presenting problems or additional material with the aim that students get a more enjoyable learning experience so that it can encourage students to actively participate in learning activities.

The data analysis results reveal that the independent sample t-test produced a significance (2-tailed) value of 0.000 < 0.05. As a result, H0 is rejected, and Ha is accepted, indicating a significant difference between learning with the PBL model integrated with Powtoon media and traditional learning methods. The N-Gain score for the experimental class was 0.64, while the control class scored 0.36, both categorized as moderate. The experimental class achieved an N-Gain percentage of 64%, placing it in the moderately effective range, while the control class had 36%, which is considered ineffective.

The N-Gain score for the experimental class was 61.65%, classified as moderately effective, while the control class scored 43.32%, categorized as less effective. These N-Gain results show that the experimental class experienced a larger average improvement in learning outcomes compared to the control class. The difference in the average improvement between

the two groups highlights that learning through the PBL model supported by Powtoon media is more effective in enhancing student learning outcomes in Pancasila Education.

In accordance with previous research, the PBL model effectively improves student learning outcomes (Rahman, et al, 2024). The application of problem-based learning models not only aims to understand and solve problems, but also allows students to explore their knowledge and skills independently (Astuti, et al: 2023). In addition to improving learning outcomes, PBL also makes students think critically in its application (Pradana: 2024). This is because, in the PBL learning process, students need critical thinking skills to solve problems (Dakabesi & Luoise, 2019). The PBL learning model is able to improve student learning achievement by encouraging them to develop abilities and skills in applying knowledge, solving problems, thinking critically, and directing and reflecting on themselves in the learning process (Widyasari & Miyono, 2024).

The results of data analysis regarding student activeness show that the highest score in the experimental class is in the visual activities category. In this category there are four indicators, namely students reading books and paying attention to the teacher's explanation, students who read books but do not focus on the teacher's explanation, students who are busy reading books without paying attention to the teacher, and students who carry books but do not pay attention to the teacher. Student activeness in this category illustrates students' visual involvement in learning activities, where students participate in directly engaging with the material through reading activities, although the level of attention to the teacher varies. This proves that the application of a problem-based learning model with Powtoon media can increase students' visual activity, especially in the indicator of reading a book while paying attention to the teacher. This increase in visual activity indicates that students are not only passively involved, but also active in understanding and absorbing the material presented during the learning process. The PBL model is able to improve critical thinking, problem solving, independence in learning, and social skills that encourage students to be active in acquiring knowledge independently (Harokah et al., 2024).

The use of the PBL model combined with Powtoon media is proven to be able to significantly increase student learning activeness. Powtoon media, as an animation-based interactive media, provides visual appeal and increases student interest in learning, especially when used in project activities. Students who learn using PBL and Powtoon show a higher increase in learning activeness than conventional methods (Nugraha et al., 2022). This can be seen from students' activities in discussing, collaborating, and producing technology-based creative works. In addition, the results of previous research also show that the use of Powtoon as a supporting medium for PBL makes students more actively involved in the exploration process and project presentation, because Powtoon's attractive appearance can visualize concepts in a way that is easy to understand (Wulandari & Santoso, 2023). Other research also shows that students who take part in learning with the PBL model combined with Powtoon media can improve student learning outcomes (Armiati et al., 2024). The combination of PBL and Powtoon not only increases learning activeness, but also supports students in honing 21st century skills, such as critical thinking, creativity, and communication. The 21st-century skills are important to be applied in learning (Care et al., 2018).

CONCLUSION

The results of the research show a significant difference in outcomes with the implementation of the PBL model learning models combined with Powtoon media and conventional learning models in increasing student activeness and achievement or learning outcomes in Pancasila Education subjects. Based on the N-Gain results obtained, it also shows that learning with the Powtoon-assisted PBL model is proven to be more effective than conventional learning models. In general, this study emphasizes that the selection of the PBL model assisted by Powtoon media has a significant impact and higher effectiveness in achieving learning objectives, especially in terms of student activeness and learning outcomes. This research is expected to be a recommendation for schools to be able to provide support for the application of more varied learning models, one of which is Problem Based Learning for all subjects. Future researchers are advised to add a focus on development of other competencies, such as critical thinking skills, collaboration skills, and student creativity. In addition, research can combine the PBL model with other approaches.

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