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# The Influence of Implementing the Problem Based Learning (PBL) Model Assisted with Wordwall Media on Cognitive Learning Outcomes in Indonesian Language in Class IV Students of SD Negeri 2 Karangmalang

Putri, Adinda Kadwi Laela<sup>1</sup> & Fajrie, Nur<sup>2\*</sup>

<sup>1</sup>Muria Kudus University, 59327 Central Java, INDONESIA

\*Corresponding Author: [nurfajrie@umk.ac.id](mailto:nurfajrie@umk.ac.id)

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**Abstract:** Learning outcomes are student output from the teaching and learning process. The problem is that student learning outcomes are low and the majority of teachers rarely use varied models and media when teaching. The aim of this research is to determine whether or not there is an influence of the use of the Problem Based Learning learning model on Indonesian cognitive learning outcomes in class IV of SD Negeri 2 Karangmalang. This research includes quantitative research with the Pre-Experiment Design method using One Group Pretest-Posttest Design. The population used in this research were all class IV students at SD Negeri 2 Karangmalang. The research sample was class IV students with a total of 15 students. Data collection in this research used tests, observation and documentation. Technique Data analysis techniques use prerequisite tests and hypothesis testing Paired Sample T-test. Based on the paired sample t-test table, the sig value. (2-tailed) between pretest and posttest is 0.016. Sig value criteria. (2-tailed)  $0.016 < 0.05$ , then  $H_0$  is rejected and  $H_a$  is accepted. So, it can be concluded that there is an influence of the application of Problem Based Learning assisted by Wordwall media on the cognitive learning outcomes of Indonesian elementary school students.

**Keywords:** Problem Based Learning, Wordwall, Learning Results, Indonesian

## 1. Introduction

Education is an effort to make the nation's life more intelligent by shaping the character and developing the potential abilities of students so that they can have advanced knowledge that is useful for life in society. In line with Sitompul (2021) who explains that education is an effort to improve the quality of human energy sources, even physical, mental or spiritual. A developed country will be seen from its people who have a level of knowledge.

Learning is a process of gaining knowledge and knowledge through teaching and learning activities provided by educators so that students will gain insight, creativity and attitude formation. According to Indriyani, the learning process can be said to be effective if students are actively involved in learning and educators create fun learning according to the subject. Learning Indonesian is becoming increasingly difficult to achieve because there are no new innovations in the subject. According to (Farhurohman, 2017), Indonesian is very important because it is directly related to learning Indonesian as a unified language, one of Indonesia's national identities. Indonesian language lessons also develop students' social, emotional and intellectual abilities. Languages can also help or increase students' chances of success in learning in all areas of study (Al-Khreshah, Khaerurrozikin & Zaid, 2020; Rose et al., 2019).

Learning outcomes are changes in behavior obtained by students after experiencing learning activities (Sulasm, 2022; Sakir & Kim, 2020). Acquiring these aspects of behavior change depends on what the student learns. Learning outcomes in this research are defined as the results of students' cognitive tests obtained in learning Indonesian through the application of wordwall media. The creation of success in learning can be created by having a more appropriate learning approach or model (Pashler et al., 2008).

The paradigm of teachers and students has changed as a result of the use of information and communication technology in the field of education. Currently, teachers must continue to learn and adapt to become familiar with technology-based learning tools and applications. Along with the rapid development of technology, teachers need to

increase their competence in using digital media during learning activities. The use of increasingly sophisticated information and communication technology will improve the quality of learning (Sayaf et al., 2021; Al-Rahmi et al., 2020). The technology-based learning media used must be in accordance with the learning objectives, teaching material to be delivered, and the capacity of the students' intelligence level. This is done to ensure that maximum learning outcomes are achieved. Achieving optimal learning outcomes depends on the application of learning models and the use of media. According to Khoerunnisa & Aqwal (2020), learning models include patterns or plans that can be used to create a curriculum (learning plan) and improve learning activities.

Based on the results of observations and interviews with class IV teachers, it shows that teachers rarely use varied models and media during learning. Teachers only use technology-based media such as learning videos on YouTube. The learning model applied is monotonous, namely the lecture method. So students are less enthusiastic about participating in learning activities which causes students to not understand what the teacher says. As a result, the learning outcomes obtained are also less than satisfactory. In this kind of situation, changes must be implemented in innovative learning activities to improve Indonesian language learning outcomes.

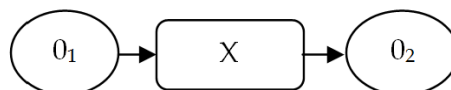
The problem-based learning model is a learning model that provides students with problems related to everyday life which can help students' understanding of learning material (Dita et al., 2021). Students learn real problems that exist in the home, school and community environments as a basis for acquiring knowledge and concepts through abilities and skills in critical thinking to solve problems (Permatasari et al., 2020). Apart from that, the Problem Based Learning (PBL) model also has advantages. One of them is making students more active, so that the learning process is not monotonous. Meanwhile, one of the game-based learning applications designed to help with the PBL learning model is *Wordwall*.

*Wordwall* application is a web-based digital gamification application that has various game features and quizzes that can be used by teachers to evaluate the material that has been taught. This application has free and paid features, but free features are more interesting if paid. Therefore, the application can be used for educators who want to use their learning methods to evaluate their learning. This model and media is expected to suit the students because children of Primary School age are still very involved in active and fun games. In addition, according to Firman, Mirnawati and Aswar (2021), generation Z may be more interested in things based on the internet and technology.

In line with research conducted Kahraman (2020) stated that there was an influence because the pretest results of more than 50% of students got a learning outcome score below the criteria for achieving learning objectives (KKTP), especially in the Indonesian language subject load, namely 75. After being given treatment in the form of using the Problem Based Learning learning model, the posttest results It was obtained that 100% of students scored above the KKTP, especially in the Indonesian language subject content. Apart from that, Syawaluddin, Rachman and Khaerunnisa (2020) show that the snakes and ladders learning media on social studies appear to be valid and practical and can effectively improve elementary school students' interest and learning outcomes. Based on this description, this research aims to improve student learning outcomes using the *Problem Based Learning* (PBL) learning model assisted by *Wordwall* media. Thus, researchers are interested in studying more deeply the "**Effect of the Application of the Problem Based Learning (Pbl) Model Assisted by Wordwall Media on Indonesian Language Cognitive Learning Outcomes in Class IV Students of SD Negeri 2 Karangmalang**".

## 2. Methodolgy

Research is quantitative with *Pre-Experimental type One Group Pretest-Posttest Design*. Experimental research is research that explores the causal relationship between the independent variable and the dependent variable by deliberately controlling and manipulating the independent variable (Abraham & Supriyati, 2022). *Pre-Experimental design* has the characteristic that the class sample is not chosen randomly and the group used is only one class and does not have a control class. This research design contains two treatments, namely pretest and posttest. The population and sample in this research were class IV students at SD Negeri 2 Karangmalang, totaling 15 students. Data collection techniques in this research are observation, tests and documentation. The data analysis technique for this research uses analysis prerequisite tests and hypothesis testing. The analysis prerequisite test is used to test whether the data from the *pre-test* and *post-test* are normal or not using the *Kolmogorov Smirnov formula* with the help of SPSS.



**Fig 1: One-Group Pretest-Posttest Design Paradigm**

Information:

O<sub>1</sub> = Pretest before treatment

O<sub>2</sub> = Posttest after treatment

X = Problem Based Learning (PBL) treatment assisted by Wordwall media

## 3. Result

This research aims to determine whether there is an influence of the application of the *Problem Based Learning model assisted by Wordwall* media on students' cognitive learning outcomes in Indonesian. The data analyzed was obtained

from the pretest and posttest scores carried out by students so that the following cognitive learning results were obtained. The Table 1 shows the results that the class average has increased from 65 (pretest) to 86 (posttest). The value data will then be processed using a normality test to determine the normality of the data and a paired sample t-test as a hypothesis test.

**Table 1: Student Learning Results**

Min pretest value	58
Max pretest value	100
Pretest average	78
Min posttest value	65
Max posttest value	100
Posttest average	86

### 3.1 Normality Prerequisite Test

Based on the results of calculations using SPSS version 21.0, the following results were obtained. The normality test is carried out to determine whether the research data is normally distributed or not. The normality test used was the Shapiro-Wilk Test of Normality because the sample size was less than 50 students (Windasari & Sofyan, 2019). Data is said to be normally distributed if the significance value  $\alpha$  is  $> 0.05$ . Conversely, if the significance value  $\alpha < 0.05$  then the research data is not normally distributed. Based on the normality test table using SPSS version 21.0 above, the normality test results are obtained as follows. The pretest value has a significance value of  $0.86 > 0.05$  and the posttest value has a significance value of  $0.123 > 0.05$ . From these two data, the significance value  $\alpha > 0.05$ , which means the data is normally distributed.

**Table 2: SPSS Normality Test Output Results**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
Pretest	.158	15	.200*	.897	15	.086
Posttest	.152	15	.200*	.907	15	.123

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

### 3.2 Hypothesis testing

Hypothesis test calculations using paired sample t-test can be carried out using SPSS version 21.0 provided that the prerequisite tests and data can be distributed normally. The Table 3 below contains a description of the results of the hypothesis test.

**Table 3: Test using Paired Sample T-Test**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	77.67	15	15,375	3,970
	Posttest	85.67	15	11,932	3,081

**Table 4: Paired Sample T-Test Hypothesis Test Calculation Results**

The paired sample t-test is used to determine the hypothesis of a treatment or experiment. The basis for making decisions on Hypothesis testing is as follows.

Ho = there is no effect of implementing the Problem Based Learning model assisted by *Wordwall* media on the cognitive learning outcomes of Indonesian elementary school students.

Ha = there is an influence of the application of the *Problem Based Learning* model assisted by *Wordwall* media on the cognitive learning outcomes of Indonesian elementary school students.

		Paired Differences				t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
					Lower	Upper		
Pair 1	Pretest – Posttest	-8,000	11,326	2,924	-14,272	-1,728	-2,736	.016

Significant level ( $\alpha$ ) = 0.05.



Criteria:

If the *Sig value. (2-tailed)*  $> 0.05$ , then  $H_0$  is accepted and  $H_a$  is rejected

If the *Sig value. (2-tailed)*  $< 0.05$ , then  $H_0$  is rejected and  $H_a$  is accepted

From the output table above, the *sig value is known. (2-tailed)* between pretest and posttest is 0.016. Sig value criteria. (2-tailed)  $0.016 < 0.05$ , then  $H_0$  is rejected and  $H_a$  is accepted. So it can be concluded that there is an influence of the application of *Problem Based Learning assisted by Wordwall* media on the cognitive learning outcomes of Indonesian elementary school students.

#### 4. Discussion

*Problem Based Learning* learning model is carried out by conducting a pretest before the treatment is carried out to determine the student's initial score. After the pretest, *Problem Based Learning with the help of Wordwall* media was implemented with SPOK material. The provision of material is carried out according to the achievements and competencies of the learning outcomes to be achieved. After implementing the *problem based learning model*, students are given a posttest to find out the final results after the treatment. Obtaining data from pretest and posttest scores shows the influence of the *Problem Based Learning learning model assisted by Wordwall* media on students' cognitive learning outcomes. The average scores before and after treatment show a difference in that there is an increase in cognitive learning outcomes from the *problem based learning model treatment*. When learning, teachers use wordwall media to increase students' understanding and memory level.

The research was conducted on class IV students at SD Negeri 2 Karangmalang, totaling 15 children. Based on the results of observations made with the class IV homeroom teacher at SD Negeri 2 Karangmalang, the low learning outcomes in Indonesian were also seen in class IV students at SD Negeri 2 Karangmalang. Where the results of the pretest that have been carried out, there are students who get the lowest score of 58. One of the causes of a score that is too low is that they are lagging behind in learning material. Using the *Problem Based Learning model* can help students work together to understand the learning material being taught.

Based on data analysis and hypothesis testing using the SPSS program, it can be seen in table 4 that the student learning outcomes obtained a *sig. (2-tailed)* between pretest and posttest is 0.016. Sig value criteria. (2-tailed)  $0.016 < 0.05$ , then  $H_0$  is rejected, and  $H_a$  is accepted. So it can be concluded that there is an influence of the application of *Problem Based Learning assisted by Wordwall* media on the cognitive learning outcomes of Indonesian elementary school students. In research that has been carried out with pretest results, more than 50% of students got a learning outcome score below the criteria for achieving learning objectives (KKTP), especially in Indonesian language subjects, namely 75. After being given treatment in the form of using the *Problem Based Learning learning model*, the results posttest obtained 100% of students scored above the KKTP, especially in the Indonesian language subject content. The hypothesis test carried out in this research was to determine whether or not there was an influence of the use of the *Problem Based Learning learning model* on student learning outcomes in the Indonesian language subject SPOK material in class IV SDN 02 Karangmalang using the *paired sample t-test*.

In line with previous research conducted by Firman et al. (2021) with the title "How to improve Indonesian language learning outcomes at Madrasah Tsanawiyah through the Talking Stick learning model". The research results obtained the value of student learning outcomes class VII MTs Negeri Palopo in the first cycle of 20 students, there are ten students or 50% who meet the minimum completeness criteria, whereas in cycle II it increased from 20 students there were 16 students or 80% who met the minimum completeness criteria. From the statement above, it can be concluded that the *Problem Based Learning (PBL) learning model* has an influence on Indonesian language learning outcomes for class IV students at SD Negeri 02 Karangpandan for the 2023/2024 academic year.

Based on the explanation above, providing appropriate learning models in the teaching and learning process greatly influences student learning outcomes. All teachers want the teaching and learning activities to be in accordance with the hopes and desires achieved after the teaching and learning process ends (Djonomiarjo Teacher of Pohuwato State Vocational School & District, 2018). In order for what is hoped to be successful, there needs to be changes in the learning process so that teaching is of good quality.

#### 5. Conclusion

Based on the results of research and data analysis, it shows that the learning outcomes of class IV students in Indonesian SPOK material at SD Negeri 2 Karangmalang improved by using the problem-based learning model assisted by wordwall media. This was determined using a paired t-test which showed that the average pretest score was 78, while the average posttest score was 86. From the results of the learning outcomes test, it appeared that the posttest average was higher than the pretest average. Next, the t-test hypothesis was tested, namely the paired t test obtained at a significance level of 0.05 showing a sign of significance of 0.016. Because the sig value (2-tailed)  $< 0.05$ , namely  $\text{sig} = 0.016 < 0.05$ , it means that  $H_0$  is rejected and  $H_a$  is accepted. So it can be said that the hypothesis in this research states that there is an influence of the assisted *Problem Based Learning learning model Wordwall* media on the cognitive learning outcomes of Class IV Indonesian language students at SD Negeri 2 Karangmalang was accepted because its validity had been tested.



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## Conflict of Interest

The authors declare no conflicts of interest.

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