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THE EFFECTS OF PROBLEM BASED LEARNING (PBL) ASSISTED BY THE POWTOON APPLICATION TO IMPROVE STUDENTS' LEARNING OUTCOMES

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Abstract. Teachers play an important role in using appropriate learning strategies, so that they can improve student learning outcomes. This research aims to find out differences in economic learning outcomes using learning models *problem based learning* media assisted *Powtoon* with conventional learning for class XI students at SMA Pertiwi 1 Padang. This type of research is research *quasi experimental design*. The research population consisted of all 244 students in class Data collection techniques using observation, tests and documentation. Data analysis techniques use normality tests, homogeneity tests and hypothesis tests. The research results show mark *posttest* learning model *problem based learning* media assisted *powtoon* of 80.11 and value *posttest* conventional learning is 68.11 with a difference of 12. And also learning models *problem based learning* media assisted *powtoon* influence on student learning outcomes. It was concluded that there were differences in student learning outcomes who used the learning model *problem based learning* media assisted *powtoon* with conventional learning.

Keywords: Problem based learning; powtoon; learning outcomes

I. INTRODUCTION

The world of education today cannot be separated from the rapid progress of information technology. Along with the development of education, technology has become a very important reference for developing more varied internal learning (Hanif, 2020; Sari et al., 2020; Susilawati, 2018). In general, learning today is very different from learning in general. Teachers have an important role in using appropriate learning strategies to improve student learning outcomes (Wahid, 2018; Harahap et al., 2021). According to Minister of Education and Culture Regulation Number 22 of 2016, it is stated that the learning process in educational units is carried out in an interactive, inspiring, fun, challenging manner, motivates students to participate actively, and provides sufficient space for initiative, creativity and independence in accordance with talents, interests and development. physical and psychological of students (Sudanese, 2018). Teachers should strive to apply appropriate models, media and learning strategies for educational success. Learning strategy is one of the factors

that can influence learning objectives. If not used properly it can hinder the achievement of learning objectives.

Abadi, 2020; Dakhi, 2020). Learning outcomes are the final results obtained by students from learning activities through assessments that can measure students' abilities after participating in learning activities (Prayitno, 2022; Tabroni & Indrayani, 2022).

However, in reality, class XI economics learning activities at SMA Pertiwi 1 Padang show that student activity is not yet satisfactory. Where students' activeness in the learning process is less visible, such as from the question and answer process students are not active in asking questions to the teacher, do not dare to ask questions related to the material being studied and do not dare to express opinions in front of the class so that this has an impact on the learning outcomes they obtain. This happens because the learning process that has been used by teachers is still monotonous. Some of the problems identified as the cause of low economic learning outcomes are that learning is still teacher-centered (*teacher centered*) and students' lack of physical activity in studying (Donohue et al., 2020; Nurrokhmani et al., 2016;

Rachmadhatullah et al., 2020). The student learning outcomes can be seen in table 1 as follows:

TABLE 1.
 Economic Values And Percentage Of Completion Of The Final Even Semester Examination For Class Xi Sma Pertiwi 1 Padang Academic Year 2023/2024

Class	the number of students	Tuntas		Tidak Tuntas		KKM
		the number of students	percentage	the number of students	Percentage	
X MIPA 1	36	19	52,8 %	17	47,2 %	79
X MIPA 2	36	21	58,3%	15	41,7%	79
X MIPA 3	36	9	37,5%	15	62,5%	79
X IPS 1	35	12	33,3%	24	66,7%	79
X IPS 2	38	16	48,4%	17	51,5%	79
X IPS 3	39	11	35,4%	20	64,6%	79

Source: Economics Subject Teacher, 2023

The success of the teaching and learning process is determined by the learning model, namely how the teacher conveys the material to be taught (Djonomiarjo, 2020). Furthermore, the development of teacher variation in teaching is very much needed (Hasanah & Hariyadi, 2021). However, currently one of the variations in the use and development of learning media has not been implemented optimally. Most teachers only use books in the learning process, the books used still have many shortcomings and there is very little material in them and the presentation is also less interesting. Apart from that, the lack of teacher creativity and innovation is also an obstacle in developing media that suits students' characteristics. There are various efforts that can be made to improve students' economic learning outcomes, one of which is using active and innovative learning models.

Based on the problems above, it is necessary to innovate the learning system implemented in the classroom. The learning system should be designed in such a way that the learning process can take place in a conducive manner so that there is an increase in student learning outcomes, especially in Economics subjects. To be able to apply learning well, contextual learning is needed which can improve the quality of thinking, thinking attitudes, personal qualities and the ability to apply concepts in everyday situations. One learning model that can be used is the learning model Problem Based Learning (Marwah & Mahajani, 2021).

Model Problem Based Learning (PBL) is a learning model that gives students problems relevant to everyday life (Sari et al., 2020; Handayani, 2023). Application of the model Problem Based Learning is one of the efforts to improve Economics learning outcomes, this is because Problem Based Learning raises problems at the beginning of learning so that students can integrate new knowledge. With this learning model, students can understand subject matter not only through theory but are confronted directly with real world problems related to the material being studied. The learning stage begins with posing a problem, continues with identifying the problem, students hold discussions to equate perceptions about the problem, then design solutions and

targets to be achieved at the end of learning. The next step is for students to collect as many sources of knowledge as possible from books, the internet, and even observation. In this case the teacher acts as a facilitator because learning is student-centered (Kristina & Radia, 2021).

Apart from learning models, learning media is one of the intermediaries used by educators to develop experiences that help students understand learning material more easily (Dwijayani, 2019; Dwiranata et al., 2019). One of the media that instructors can use to plan this is learning videos, including learning media based on the Powtoon application. Media Powtoon designed to present something abstract to something concrete (Tiwow et al., 2022). This media is very effective in attracting students' attention or interest in face-to-face learning, so it is hoped that it can improve student learning outcomes. This is in line with research conducted by (Lativa et al., 2020) which shows that the use of animation-based media powtoon has a very good influence in increasing students' interest in learning.

The application of the Problem Based Learning (PBL) learning model has been carried out with the help of various applications and can improve learning outcomes, students' ability to think critically, ability to collaborate, interest in learning, and learning motivation. Several applications are used through the application of the Problem Based Learning (PBL) Learning Model such as LBK Application (Yusuf et al, 2020), mentimeter (Anggriani et al., 2022; Ahmad & Subekti, 2021), kahoot (Inayah et al., 2021; Taesotikul et al., 2021; Kartika, 2023), and Powtoon (Asmaniah, 2023; Purbaningrum, 2023).

However, only 2 studies have applied the Problem Based Learning (PBL) learning model with the Powtoon application, namely in mathematics lessons in elementary schools (Asmaniah, 2023) and history lessons in junior high schools (Purbaningrum, 2023). In line with this information, no research has been conducted to determine the effectiveness of the Problem Based Learning (PBL) learning model with the Powtoon application in economics lessons in high school. So, this research needs to be carried out because it can provide information about how to improve the economic learning outcomes of high school students through

the Problem Based Learning (PBL) learning model with the Powtoon application. The advantage of this research lies in the cases used in the research which were created by the researchers themselves and integrated into the Powtoon application so that they are more relevant, interesting and integrated. Therefore, this research aims to improve the economic learning outcomes of high school students through the Problem Based Learning (PBL) learning model with the Powtoon application.

II. METHODS

The research used in this research is a type of experimental research. More precisely in the form of a quasi-experiment (Almost experiment) because not all variables (symptoms that appear) and experimental conditions can be measured and controlled strictly (Madadzadeh, 2022; Miller et al., 2020). Study conducted at SMA Pertiwi 1 Padang in class XI, when the research was carried out in the odd semester of the 2023/2024 academic year. The total population was 224 students and the sample was 36 experimental class students and 36 control class students. The technique used to take samples is engineering purposive sampling. And to determine the experimental class and control class random sampling.

TABLE 2.
 Sample Distribution Of Each Treatment

Teaching Model	Kelas	Jumlah
<i>Problem Based Learning (PBL) berbantuan Media Powtoon</i>	XI MIPA 2	36
<i>Konvensional</i>	XI MIPA 1	36
Total Sampel		72

Data collection techniques using observation, tests and documentation. Before being distributed to research samples, a validity test, reliability test, difficulty level test and distinguishing power test were carried out. Data analysis techniques use normality tests, homogeneity tests and hypothesis tests. Hypothesis testing in this research uses the Independent Sample t-test and the Paired Sample t-test.

III. FINDINGS AND DISCUSSION

Data interpretation is grouped to analyze the learning process using three stages in analyzing this research data, namely data description, testing analysis prerequisites, and hypothesis testing. The recapitulation of the results of calculating the scores for both classes can be seen in Table 3. These results showed that the average of the experimental group was higher than the average of the control group. Apart from that, to test a hypothesis, what needs to be done is a prerequisite test. The prerequisite tests carried out are the normality test and homogeneity test.

TABLE 3.
 Summary Of Descriptive Analysis Of Learning Results In The Experimental Group And Control Group

Experiment				Control			
Pretest		Posttest		Pretest		Posttest	
Mean	Standar Deviasi	Mean	Standar Deviasi	Mean	Standar Deviasi	Mean	Standar Deviasi
52,44	6,512	81,78	5,929	51,67	7,306	73,78	7,495

Apart from that, to test a hypothesis, what needs to be done is a prerequisite test. The prerequisite tests carried out are the normality test and homogeneity test.

Table 4.
 Normality Test Results
 Tests of Normality

Class	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
PretestExperiment	.140	36	.071	.961	36	.227
PosttestExperiment	.146	36	.052	.936	36	.038
PretestControl	.129	36	.135	.960	36	.218
PosttestControl	.144	36	.056	.951	36	.115

The normality test results are based on table 4. It can be seen that all variables pretest and posttest experimental class as well pretest and posttest the control class has a significance value greater than $\alpha = 5\%$ (0.05), so it can be

concluded that all variables pretest and posttest experimental class as well pretest and posttest the control class is normally distributed.

TABLE 5.
 Pretest Homogeneity Test Results
Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Economics Learning Outcomes	Based on Mean	.305	1	70	.582
	Based on Median	.289	1	70	.592
	Based on Median and with adjusted df	.289	1	69.698	.592
	Based on trimmed mean	.255	1	70	.615

TABLE 6.
 Posttest Homogeneity Test Results
Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Economics Learning Outcomes	Based on Mean	1.709	1	70	.195
	Based on Median	1.168	1	70	.283
	Based on Median and with adjusted df	1.168	1	65.122	.284
	Based on trimmed mean	1.696	1	70	.197

Based on the table above, it can be seen that the homogeneity test on the Pretest experimental class and control class is 0.582, while the significance value of the Posttest experimental class and control class is 0.195. From this explanation, it can be seen that all significance values are greater than 0.05. So it can be concluded that the population has a homogeneous variance or the data comes from a population with the same variance, so it meets the requirements for carrying out a t-test.

powtoon and students taught with conventional learning at SMA Pertiwi 1 Padang. This can be seen from the results of the t-test calculation, namely Independent Sample t-test to determine differences in student learning outcomes between groups. The results of the t-test on economic learning outcomes for the experimental class and control class are known values Sig (2-tailed) of 0.000. Thus, a significance value smaller than $\alpha = 5\%$ (0.05) means H_0 rejected and H_a accepted. It can be concluded that there are differences in student learning outcomes who use the learning model problem based learning media assisted powtoon with conventional learning.

From the results of hypothesis testing, it can be seen that there are significant differences in economic learning outcomes between students who are taught using the learning model problem based learning media assisted

TABLE 7.
 Independent Sample T-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Economics Learning Outcomes	Equal variances assumed	.053	.819	-19.709	70	.000	-29.333	1.488	-32.302	-26.365
	Equal variances not assumed			-19.709	69.031	.000	-29.333	1.488	-32.302	-26.364

Based on the results of hypothesis testing, there is a significant difference between the economic learning outcomes of class XI students at SMA Pertiwi 1 Padang who

follow the learning model. problem Based Learning media assisted Powtoon with students who follow conventional learning models. Model Problem Based Learning media

assisted Powtoon those featured in this research were proven to be more effective in improving student learning outcomes. The findings of differences in achievement of Economics learning outcomes can be explained theoretically between media-assisted PBL learning models Powtoon with conventional learning, where both have different characteristics in terms of learning syntax. In the PBL learning model there is a syntax starting from the stage First, student orientation to problems related to everyday life, second organize students for learning related to the problem presented, third guiding individual and group investigations, fourth develop and present work results, and stages fourth analyze and evaluate the problem solving process (Widyastuti & Airlanda, 2021; Nurbaya, 2021; Aprilianingrum & Wardani, 2021).

The effectiveness of the PBL learning model with media Powtoon helps students more easily understand learning material, and the effectiveness of the learning model and media used can be seen from students' cognitive learning outcomes. The existence of this model and media increases student learning outcomes in Economics learning. The use of learning media can then arouse students' desire and motivation to learn (Mutia et al., 2018). This is because learning media is presented well and can attract students' attention without reducing the benefits of learning media (Moreno-Guerrero et al., 2020). The use of video media in educational experiences can provide an elective way for students to be inspired to study harder (Prananda, 2020).

This finding is strengthened by previous findings stating the application Powtoon in making learning recordings and when delivering material that is more real and attracts students' learning interest so that students are enthusiastic about learning (Wulandari et al., 2020). Video-based learning media Powtoon can be used in the learning process to improve learning outcomes (Meianti, 2018; Anggita, 2021; Asih & Ujiti, 2021). This learning media is also able to create an imaginative learning atmosphere which is often carried out using oral techniques. In this way, video media Powtoon can help instructors understand the learning material and create a pleasant atmosphere. Implications of PBL-based learning models powtoon It is hoped that what is created can be used in educational experiences, help students understand learning material, increase interest in learning in face-to-face learning conditions, and of course have the option to further develop student learning outcomes. It was concluded that the use of learning models problem based learning help powtoon can have a positive influence on student learning outcomes. This is shown by the difference in the average scores of the experimental class and the control class. The average score of the experimental class was higher than the average score of the control class. Thus, the economic learning outcomes of the experimental class are higher than those of the control class.

IV. CONCLUSION AND SUGGESTIONS

There are significant differences in learning outcomes between students who take part in learning using the learning model Problem Based Learning media assisted

Powtoon with students who follow conventional learning. Average learning outcomes of students who take part in learning using the learning model Problem Based Learning media assisted Powtoon higher than the learning outcomes of students who take conventional learning. It was concluded that learning uses a learning model Problem Based Learning media assisted Powtoon can improve the learning outcomes of class XI students at SMA Pertiwi 1 Padang.

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