

## **THE EFFECT OF PROBLEM BASED LEARNING (PBL) MODEL ON THE STUDENT'S VOCABULARY MASTERY ASSISTED *EDUCAPLAY* MEDIA**

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### **Abstract**

This research aims to examine the effect of Problem Based Learning (PBL) Model and *Educaplay* Media on student's Vocabulary Mastery at grade X of SMA Negeri 2 Kisaran in 2024/2025 academic year. Using a quantitative method with a pre-test and post-test experimental design, this research involves the students in class X-1 and X-2 who are selected through a random sampling technique. Student's Vocabulary Mastery was assessed through pre-test and post-test results to determine the effectiveness of the PBL model and *Educaplay* Media in improving their understanding Vocabulary. The results show a significant increase in Vocabulary Mastery, with an average score increase of 9,2% in one group and 16.2% in the other group. Data analysis using the t-test revealed that the increase was significant, as evidenced by the t-scores value exceeding the critical value at the 0,05-significance level. With degrees of freedom (df) 70 and a significance level of 0,05, the t-scores value was obtained of 8,54 which was greater than the t-table, which was 1,667 ( $8,54 > 1,667$ ). These results indicated that the alternative hypothesis ( $H_a$ ) is accepted, which confirms the effectiveness of the PBL model and *Educaplay* Media in improving student's Vocabulary Mastery.

**Keywords:** Effect, *Educaplay* Media, PBL Model, Vocabulary Mastery.

### **INTRODUCTION**

Vocabulary mastery is important in learning English. To improve their abilities, the use of the *Educaplay* effect is very appropriate to be applied in schools. Writer feels that this application can improve the quality of students in understanding vocabulary. This is proven by three previous studies, namely, (Tarigan, Arifin, and Matematika 2025), (Batitusta and Hardinata 2024), (Rifaldin et al. 2024), therefore the writer is interested in this research to be carried out in schools, because in addition to building vocabulary, students also enjoy using *Educaplay*.

According to Nugroho in (Haeri 2019) English, as a universal language for communication, plays a vital role in fostering international interaction. In Indonesia, it is included in the curriculum from elementary schools to universities, equipping students with the skills to access advancements in science, technology, and the arts, which are essential for both education and personal development.

According to (Hilmi, Hurriyati, and Lisnawati 2019) English differs significantly from Indonesian in structure, pronunciation, and vocabulary, causing students to forget learned words and struggle to express ideas. Vocabulary is crucial in learning English, as it supports skills like speaking, listening, reading, and writing. Harmand and Stork describe it as a collection of words, while Brainy Media sees it as a list of words. Hindmarsh highlights vocabulary as essential for effective communication.

According to (Mayasari 2018) Vocabulary is essential for English learners, as it enables effective expression of ideas, understanding tasks, and engaging in conversations. According to (ANANDA MUHAMAD TRI UTAMA 2022) highlights that vocabulary enhances learners' overall verbal abilities, as words are fundamental to language and sentences. Wilkis, quoted by Scott Thornbury, emphasizes that while grammar aids teaching, vocabulary is indispensable for conveying ideas. With sufficient vocabulary, students can communicate effectively through writing and speaking.

Several previous studies have shown that Reading comprehension is a complex cognitive process requiring readers to stay attentive and monitor word meanings (Tarigan, Arifin, and Matematika 2025). This challenges teachers to use engaging learning media to deepen students' essay-writing skills (Batitusta and Hardinata 2024). Technology-based tools like *Educaplay* can address low student interest in learning. Sison's opinion (2021) highlights that *Educaplay* enhances various aspects of student learning, including understanding, skills, reflection, argumentation, and teacher-student interaction (Rifaldin et al. 2024).

Therefore, the writer is interested in choosing this title because there are several problems found in English learning process, especially in vocabulary mastery. These problems were lack of the students' interesting in English learning, their understanding of vocabulary mastery is very low, and seldom to use *Educaplay* method by teachers to improve students' vocabulary mastery. This method is believed to provide more interesting and effective approach in helping students enrich their vocabulary. Therefore, the writer feels it is important to raise this topic in order to find the right solution to improve the quality of English learning.

This study aims to examine the lack of enthusiasm of students learning English related to low vocabulary mastery and minimal use the *Educaplay* method. This condition is one of the main obstacles in the education process, thus impacting the limitations of students' ability in developing language competence, especially in the aspect of vocabulary mastery which is a fundamental element in communication skills.

This study will be conducted using the Problem-Based Learning (PBL) model, which focuses on engaging students in learning through the exploration of real-world problems, allowing them to acquire concepts and skills through practical problem-solving experiences. This method emphasizes active student participation,

collaboration, and the application of knowledge to address real-life challenges, aligning with the benefits of using *Educaplay* as a learning medium.

The writer examines *Educaplay*'s potential to enhance the vocabulary learning among 10th grade students, focusing on its impact on vocabulary acquisition, motivation, and learning effectiveness in the context of technology-driven education.

This research explores the impact of *Educaplay*, a technology-based learning platform, on the vocabulary mastery of grade X students, contributing to the development of innovative and interactive learning methods.

The benefits of this study are to provide new insights into the effectiveness of using technology in improving language skills, especially for enrich the words terms of vocabulary. In addition, the results of this study can be a reference for teachers in designing more interesting learning strategies that are in accordance with the needs of students in the digital era, as well as helping students enrich their vocabulary in a more fun and interactive way.

Based on the background above, the writer finally used *Educaplay* to improve students' vocabulary skills, and the title of the research that the writer study is "The Effect of Using Problem Based Learning (PBL) on The Student's Vocabulary Mastery Assisted *Educaplay* Media of Class X Students of SMA Negeri 2 Kisaran in 2024/2025 Academic Year."

## METHOD

This study employed an experimental design to investigate the impact of using *Educaplay* interactive media on enhancing students' interest and participation in learning vocabulary at the Grade X level. Two groups of students were involved: the experimental group, which was taught using *Educaplay* media, and the control group, which received conventional teaching methods. Both groups underwent a pre-test and post-test to measure the outcomes. The design framework follows the model proposed (Sugiyono 1967:69)

**Table 1. Two Groups Pre-test Post-test**

Group	Types	Experiment	Types
Control Class Group	Pre-test	X	Post-test
Experimental Class group	Pre-test	Y	Post-test

**Note:**

X : Using Conventional way

Y : Using Problem Based Learning (PBL) Model and *Educaplay* Media

The data collection techniques are a fundamental aspect of research strategy, as the primary goal of research is to obtain data. Without understanding the appropriate methods for collecting data, researchers cannot acquire the information needed to meet the essential requirements of their study (Sugiyono, 2018:224)

## 1. Pre-test

A pre-test is administered prior to conducting a treatment. During data collection, the writer visited the classroom and provided a matching test consisting of 20 items. This test was given to both the experimental and control groups, with all items designed to have the same level of difficulty. Each correct answer was scored 5 points, while incorrect answers received 0 points.

## 2. Treatment

The next stage is treatment. At this stage, the writer conducted *Educaplay* for experimental and conventional classes in the control class in teaching vocabulary. There are three stages in implementing *Educaplay* in the teaching process, namely:

## a. Pre-Activity

The writer starts the class by taking the following steps:

a. Greeting

b. Praying

c. Taking attendance list

d. Delivering the material and objectives of the material

## b. While Activity

## 1) Observing

a. the writer taught the students with a particular topic for example, the topic of kinds of things

b. the writer asked the students what the meaning of the words (the words become examples before applying the *Educaplay*).

## 2) Elaborating

a. Before starting the game, the writer divided the students into several groups.

b. The writer provided material on vocabulary, namely nouns (profession, transportation, school equipment) and verbs (daily activities).

c. The students were instructed to study and memorize the words, supported by a strategy known as *Read It, Hide It, Spell It!*

1. Begin by focusing on the word and ensuring its pronunciation is correct.

2. Next, the students were asked to read, spell, and memorize the vocabulary presented.

3. After covering the material, the writer introduced *Educaplay* and explained the rules of the game.

4. The students were then divided into groups.
5. The writer displayed a picture and tasked each group with arranging letters to form a word that matched the image, including its correct meaning.
6. Each group was given time to find the answer. The group that completed the task first could raise their hand and provide the answer. Correct answers earned the group points, while incorrect answers allowed other groups a chance to respond.
7. The writer proceeded to show additional pictures, continuing the game. The group accumulating the highest points was declared the winner.

### 3) Confirmation

After completing the *Educaplay* game, the writer provided reinforcement and summarized the lesson.

The topics covered focused on vocabulary, including nouns (such as professions, transportation, and school supplies) and verbs (related to daily activities).

### 3. Post-test

The last step was post-test. In this step, the writer gave a matching test that consists of 20 items. The test given was the same as the form of the pre-test. Each item had the same level difficulties. The scoring of the item is point 5 per item for a correct answer and point 0 for an incorrect answer.

### 4. Scoring Test

Data analysis involves processing research findings, and the t-test was employed as the primary technique. To perform the t-test, the writer calculated both the mean and standard deviation of the pre-test and post-test scores.

To find out the students' individual score, the writer used a formula as follows:

$$\text{Score} = \frac{\text{The number right answer}}{\text{The number of items}} \times 100$$

**Table 2. Scoring Students' criteria and percentage**

Score	Classification
96-100	Excellent
86-95	Very Good
76-85	Good
66-75	Fairly Good
56-65	Fair
36-55	Poor
00-35	Very Pour

According to Sugiyono (Sugiyono, 2018:102), a research instrument is a tool used to measure a variable, either in the form of natural or social phenomena, in certain aspects. In this study, data will be collected using a vocabulary test using

the Problem Based Learning model and *Educaplay* Media. The test used is a matching test, consisting of 20 questions, where each question has the same score weight, namely 5 points for each correct answer. All questions are designed with the same level of difficulty.

## RESULTS AND DISCUSSION

The result of the students' test can be seen on the following table score.

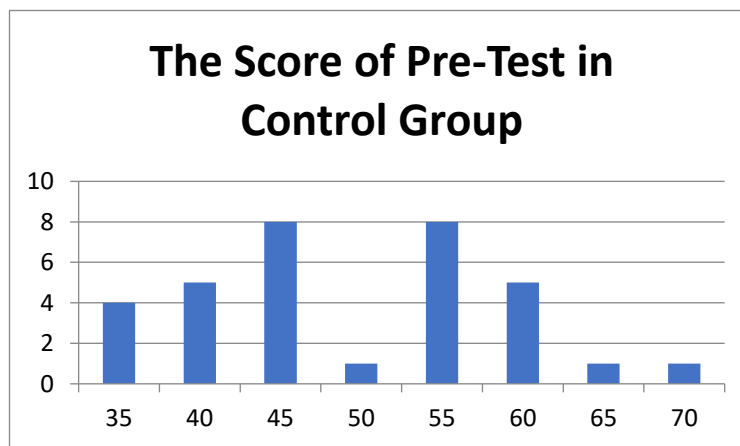
**Table 4. The Sore of Pre-test and Post-test in Control Group**

No	Initial Name	Score of Pre-test (X)	Score of Post-test (Y)	X <sup>2</sup>	Y <sup>2</sup>	XY
1	ASBM	35	45	1225	2025	1575
2	ASK	55	60	3025	3600	3300
3	ANRM	30	40	900	1600	1200
4	AA	45	55	2025	3025	2475
5	AAM	65	65	4225	4225	4225
6	ADMS	55	60	3025	3600	3300
7	AZS	60	60	3600	3600	3600
8	CAM	45	55	2025	3025	2475
9	CBT	30	45	900	3600	1350
10	CNP	60	60	3600	3600	3600
11	FUB	45	60	2025	3600	2700
12	FJ	50	55	2500	3025	2750
13	FME	40	45	1600	2025	1800
14	GPLS	40	50	1600	2500	2000
15	GKT	45	60	2025	3600	2700
16	HA	40	45	1600	2025	1800
17	HDEM	55	60	3025	3600	3300
18	JAH	70	70	4900	4900	4900
19	KAAP	55	60	3025	3600	3300
20	MM	35	60	1225	3600	2100
21	MBB	55	65	3025	4225	3575
22	MAI	35	60	1225	3600	2100
23	MFA	45	60	2025	3600	2700
24	MFA	45	70	2025	4900	3150
25	MKM	60	65	3600	4225	3900
26	MN	55	65	3025	4225	3575
27	MRA	55	55	3025	3025	3025
28	NIF	35	60	1225	3600	2100
29	NIN	45	55	2025	3025	2475
30	PAH	40	40	1600	1600	1600
31	RAT	60	70	3600	4900	4200

32	RHS	55	55	3025	3025	<b>3025</b>
33	RPM	40	65	1600	4225	<b>2600</b>
34	SMN	45	50	2025	2500	<b>2250</b>
35	TKBS	60	60	3600	3600	<b>3600</b>
36	WPA	35	45	1225	2025	<b>1575</b>
<b>Total</b>		$\Sigma X =$ <b>1720</b>	$\Sigma Y =$ <b>2050</b>	$\Sigma X^2 =$ <b>85950</b>	$\Sigma Y^2 =$ <b>120675</b>	$\Sigma XY =$ <b>99900</b>

From the data above, it's shown that the highest and the lowest score in the pre-test. In addition, the data could be presented at the chart below.

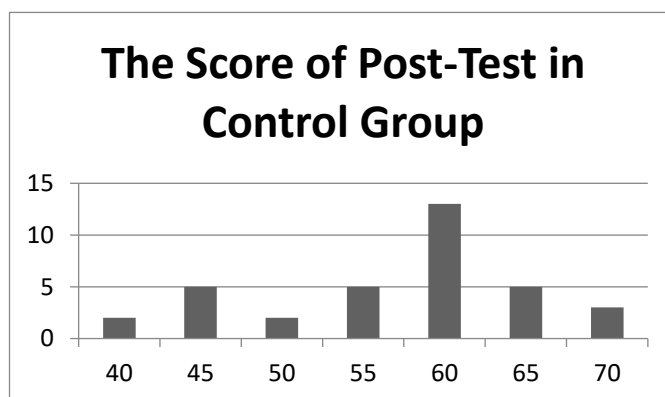
**Figure 1. The score of pre-tests in control group**



Based on the figure above, the data indicates that many students scored low in each indicator. Specifically, one student scored 70, one student scored 65, five students scored 60, eight students scored 55, one student scored 50, eight students scored 45, five students scored 40, and four students scored 35.

From the data above, it's shown that the highest dan the lowest score in the post-test. In addition, the data could be presented at the chart below.

**Figure 2. The score of post-tests in control group**



Based on the figure above, the data indicates that many students scored low on each indicator. Specifically, three students scored 70, five students scored 65, thirteen students scored 60, five students scored 55, two students scored 50, five students scored 45, and two students scored 40.

The data above indicates that students' pre-test scores were lower than their post-test scores in the control class. The average pre-test score was 47,7 and after receiving instruction through conventional learning, the average post-test score increased to 56,9 reflecting a 9,2% improvement,

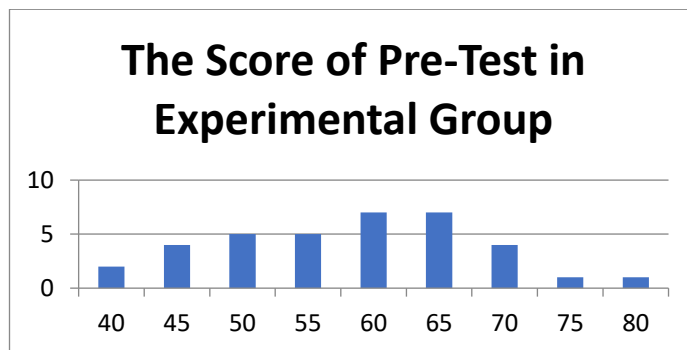
**Table 5. The Sore of Pre-test and Post-test in Experimental Group**

No	Initial Name	Score of Pre-test (X)	Score of Post-test (Y)	X <sup>2</sup>	Y <sup>2</sup>	XY
1	AF	65	80	4225	6400	5200
2	AM	60	70	3600	4900	4200
3	CM	75	85	5625	7225	6375
4	CEB	65	85	4225	7225	5525
5	DAM	55	70	3025	4900	3850
6	DS	65	80	4225	6400	5200
7	FFM	60	75	3600	5625	4500
8	FA	60	75	3600	5625	4500
9	FBG	45	65	2025	4225	2925
10	GS	70	80	4900	6400	5600
11	JAS	55	70	3025	4900	3850
12	JN	50	80	2500	6400	4000
13	JKIS	55	70	3025	4900	3850
14	M	60	75	3600	5625	4500
15	MFRH	80	90	6400	8100	7200
16	MHAT	45	55	2025	3025	2475
17	MIDH	50	85	2500	7225	4250
18	MNA	60	80	3600	6400	4800
19	MRDA	40	55	1600	3025	2200
20	NFS	50	65	2500	4225	3250
21	NC	40	55	1600	3025	2200
22	NVR	65	85	4225	7225	5525
23	NP	45	60	2025	3600	2700
24	NPT	70	80	4900	6400	5600
25	NTR	50	70	2500	4900	3500
26	NCR	50	65	2500	4225	3250
27	RZS	55	70	3025	4900	3500
28	RAP	65	85	4225	7225	5525
29	RP	65	80	4225	6400	5200



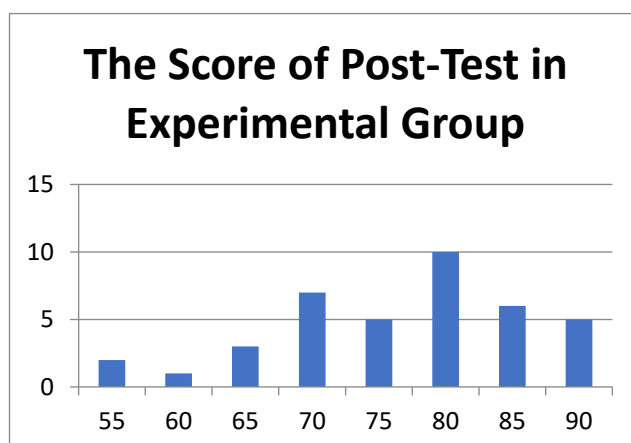
30	RS	70	85	4900	7225	<b>5950</b>
31	RES	65	80	4225	6400	<b>5200</b>
32	SAL	70	80	4900	6400	<b>5600</b>
33	SPS	60	75	3600	5625	<b>4500</b>
34	SNR	65	80	4225	6400	<b>5200</b>
35	TFS	45	75	2025	5625	<b>3375</b>
36	WP	55	70	3025	4900	<b>3920</b>
<b>Total</b>		<b><math>\Sigma X =</math> 2100</b>	<b><math>\Sigma Y =</math> 2685</b>	<b><math>\Sigma X^2 =</math> 125950</b>	<b><math>\Sigma Y^2 =</math> 203225</b>	<b><math>\Sigma XY =</math> 158995</b>

From the data above, it's shown that the highest dan the lowest score in the pre-test. In addition, the data could be presented at the chart below



Based on the figure above, the data indicates that many students received lower scores across each indicator. Specifically, one student scored 80, one student scored 75, four students scored 70, seven students scored 65, seven students scored 60, five students scored 55, five students scored 50, four students scored 45, and two students scored 40. From the data above, it's shown that the highest dan the lowest score in the post-test. In addition, the data could be presented at the chart below.

**Figure 4. The score of post-tests in experimental group**



Based on the figure above, the data indicates that many students received relatively low scores in each indicator. Specifically, five students scored 90, six students scored 85, ten students scored 80, five students scored 75, seven students scored 70, four students scored 65, one student scored 60, and two students scored 55.

The data indicates that students' scores in the pre-test were lower than in the post-test for the experimental class. The average pre-test score was 58.3, and after implementing the Problem-Based Learning model with *Educaplay* media, the average post-test score increased to 74.5, reflecting a 16.2% improvement.

## CONCLUSION

This study examines the impact of the Problem-Based Learning (PBL) model, supported by *Educaplay* media, on students' vocabulary skills. Conducted with class X students from SMA Negeri 2 Kisaran in the 2024/2025 academic year, the research followed a quantitative method with random sampling. It involved a pretest, treatment, and post-test, each consisting of 20 vocabulary questions in word order and multiple-choice formats. While the control class used conventional methods, the experimental class applied the PBL model with *Educaplay*. The results showed that students were actively engaged and motivated, as the interactive platform made learning more enjoyable and effective.

The discussion confirms that the alternative hypothesis ( $H_a$ ) is accepted, indicating that the Problem-Based Learning (PBL) model significantly improves students' reading comprehension of narrative texts. This highlights the importance of background knowledge in vocabulary mastery and shows that PBL, combined with *Educaplay* media, creates a more engaging learning environment, boosting student motivation and participation. Before using *Educaplay*, students' vocabulary test scores were low, but post-test results showed significant improvement. *Educaplay* played a crucial role in enhancing students' understanding of words and supporting their overall vocabulary development.

## THANK-YOU NOTE

I am deeply grateful to Allah SWT, the Almighty, for His countless blessings, guidance, opportunities, good health, and mercy, which have enabled me to complete this thesis. My sincere prayers and salutations go to the noble Prophet Muhammad SAW, who has illuminated humanity with the light of truth. The completion of this thesis would not have been possible without the support of many individuals. I extend my heartfelt appreciation to my advisor, Hamidah Sidabalok, for her invaluable guidance, direction, and dedication in assisting me throughout this process. My gratitude also goes to my beloved family, friends, and colleagues for their unwavering support, prayers, and encouragement. May all the kindness and assistance I have received be rewarded abundantly by Allah SWT. I hope this thesis contributes both to my personal growth and to the advancement of knowledge.

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