IDEAS

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Utilizing of Project-Based Learning
to Increase Students' Vocabulary Mastery
at the Tenth Grade of Senior High School

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Abstract

This study aims to determine the increasing of students' vocabulary mastery at the tenth grade of SMAN 9 Luwu Utara through the utilized of Project-Based Learning. The researcher used quantitative method with pre-experimental design. This research employed vocabulary test as the research instrument in the form of multiple choice. This research was held at SMAN 9 Luwu Utara. The population of this research consisted of tenth grade students of SMAN 9 Luwu Utara. The total of the population were 100 students, while the sample consisted of 25 students. This research implemented simple random sampling technique to determine the sample. In collecting the data, the pre-test, treatment and post-test were used. However, the data were analyzed by using paired sample t-test. The researcher found that there was a significant difference between students' mean scores in the pre-test and post-test. The students' mean score in the pre-test was 55.68 while, students' mean score in the post-test was 82.44. besides that, based on the result of paired sample t-test shown that sig (2-tailed) < α (0.000 < 0.05) means that there is a significant difference between learning outcomes in pre-test and post-test data. Hence, H0 is rejected and H1 is accepted. It can be concluded that the concept of project-based learning applied through video vlog design at tenth grade had an effective impact on increasing students' vocabulary master and also utilizing project-based learning in the form of making videos can build collaboration and raise communication between students with the groups formed.

Keyword: *Project-Based Learning, Vocabulary, Video*

Introduction

English language learning is one of the most important lessons for students. In Indonesia, English learning has been established as a compulsory subject at the formal level including junior high school and senior high school to develop English language skills, such as listening, speaking, reading, and writing. To possessed good English skills, learners must have sufficient vocabulary.

Vocabulary is the foundation of English learning that must be learnt first by learners. Vocabulary is all the words in a particular language that an individual knows or uses to communicate effectively and good at English skills. Richard and Renandya (2002) states that Vocabulary is a gist component of language proficiency and provides much of the basis for how well learners speak, listen, read and write. According to Murcia (2001), vocabulary is essential for helping students in rich reading, listening, speaking, and writing skills because it is central to a language component.

Teaching and learning vocabulary in English is the most important thing to do, so that students in Indonesia can master English as an international language. As a foreign language, learning English must be difficult for them. To begin with, they have to know a lot of English vocabulary. Learning English will be difficult if students do not have adequate vocabulary memorizing it is one of the obstacles for them. Therefore, teachers must have and master factors in teaching such as methods, strategies, techniques and materials taught that can attract students' attention, in learning English especially in teaching vocabulary.

Because, as we know teachers as the key to successful learning will have an important role, Pertiwi, A. P., Yanto, E. S., & Abas, T. T. (2022) stated that A teacher must find a new way to teach vocabulary that can attract students' attention and not tired of when learning vocabulary. The teacher should choose the right method that can encourage students to develop their vocabulary. This is in line with the opinion of Larsen and Freeman (2002), the teacher should be already had a suitable method for it; provide the media, teaching technique, and strategy because they want their students to be able to use the target language communicatively.

Based on the researcher's observation, there are some problems faced by the students at the tenth grade of SMAN 9 Luwu Utara. The researcher found that students are difficult to remember the vocabulary and they are also less active and not interested in learning English. These problems happened, because the teacher is less active in teaching, using conventional learning methods which they think it is very boring, monotonous, make it difficult for students to understand learning.

While previous studies have demonstrated the significance of vocabulary acquisition in mastering English as a second language, there is a lack of research on the specific application of project-based learning (PBL) for vocabulary enhancement, particularly in the context of Indonesian high school students. While some studies have explored various teaching methods to improve overall language skills, few have focused on how PBL, integrated with modern digital tools like video

production, can increase student engagement and retention of vocabulary. Furthermore, limited research has been conducted on the impact of PBL in schools like SMAN 9 Luwu Utara, where traditional, monotonous methods still prevail, resulting in a lack of student motivation and active participation. This study seeks to fill this gap by investigating how project-based learning, especially through the creation of video projects, can enhance vocabulary mastery and student engagement in Indonesian secondary schools.

Recent literature has shown the effectiveness of PBL in enhancing vocabulary acquisition. Studies like those by Hsu (2018) and Kwan & Tsang (2021) have highlighted that PBL not only increases student motivation but also promotes the long-term retention of vocabulary by embedding learning within meaningful, real-world contexts. Moreover, research by Darwiana (2022) showed that integrating digital tools into PBL, such as video production, allows students to use vocabulary in authentic contexts, which aids in improving both recall and application. These findings support the idea that project-based learning can be a powerful tool for addressing the challenges of vocabulary acquisition in a way that engages students and encourages active learning.

To overcome the problems above, the researcher was interested to use a learning model that is suitable to be applied in increase vocabulary mastery, namely project-based learning. Project-based learning is a learning method where there is a result that is produced either in the form of visuals, or 3D, as a teaching medium. Gora & Sunarto (2010:119) stated that Project Learning is a method of learning that involve students in systematically learning basic knowledge and skill to live through an expansion of the process and product design activities thoroughly. The application of project-based learning is able to motivate students by involving them in learning, making students more active and successfully solving existing problems and being able to make students able to think critically, can build collaboration together and be able to make students bring up creative ideas.

The project referred to in this study is to create a video project, Rodgers and Dhonnchadha (2018, pp. 44-45) state that digital video technology is an easy fit for video production and editing in the classroom because it can be accessed with a multitude of technology on students' mobile phones, iPods, and iPads. As students engage with these projects, they not only learn new words but also retain them longer by using them in creative, meaningful, and practical contexts. By using PBL and video projects, students are not merely passive recipients of vocabulary; they are actively involved in its acquisition and application, resulting in a deeper, more lasting understanding of English vocabulary.

Method

This study employed quantitative methodology with pre-experimental design. The aim of this study is to ascertain whether utilized of project-based learning can increase students' vocabulary mastery at tenth grade at SMAN 9 Luwu Utara. A **pre-experimental design** was chosen because it allows the researcher to observe changes in vocabulary mastery before and after the treatment while maintaining a simple and manageable research structure. The study follows a **one-group pre-test post-test design**, which involves taking two measurements of the same group of students: one before the treatment and one after.

- **Pre-test (O1)**: The pre-test was administered before the introduction of the project-based learning treatment. It provided baseline data regarding the students' vocabulary proficiency, enabling the researcher to assess their initial vocabulary knowledge.

- **Treatment (X)**: The treatment involved the implementation of project-based learning activities, where students created a video project. This method aimed to engage students in meaningful vocabulary use through practical, real-world contexts.

- **Post-test (O2)**: The post-test was administered after the treatment to measure any changes in students' vocabulary mastery. The post-test data were compared with the pre-test results to determine the effectiveness of project-based learning on vocabulary acquisition.

The population of this research were the students at Tenth Grade of SMAN 9 Luwu Utara in 2024/2025 academic year. The total of populations in this research were 364 students. The researcher took one class of tenth grade students. The researcher used a simple random sampling technique. The sample of this study was class X4, there were 25 students as the research sample.

Vocabulary test was employed as the research instrument in this study. It was used to determine students' ability to master English vocabulary. The form of the test were 30 items, which consists 10 noun tests, 10 verb tests, and 10 adjective tests. The test was given twice, namely pre-test and post-test. These test objectives to ascertain how well students understand vocabulary. Each section of the test was designed to evaluate students' ability to understand and use the target vocabulary in context, ensuring that the test provided a comprehensive measure of their vocabulary mastery.

- **Test Development**: The test items were selected based on the vocabulary content taught during the treatment. The vocabulary items were chosen from the curriculum guidelines for the tenth grade, ensuring alignment with what was covered in class. These items were selected to reflect common vocabulary that students might encounter in everyday communication or in academic settings.

- **Test Validation**: To ensure the validity of the test, the items were reviewed by two English teachers with expertise in vocabulary instruction. The teachers provided feedback on the clarity and appropriateness of the items, ensuring they were suitable for the students' proficiency level and aligned with the learning objectives. Additionally, the vocabulary items were designed to be **contextual** and **authentic**, allowing students to demonstrate their understanding of the words in real-life scenarios.
- **Test Scoring**: Each item on the test was scored as either correct or incorrect. The total score was calculated by summing the correct responses, with a maximum possible score of 30. This scoring method ensured a straightforward and transparent evaluation of students' vocabulary mastery.

Before conducting the research, informed consent was obtained from both students and their parents (for minor students). Participants were informed about the purpose of the study, the procedure, and their right to withdraw at any time without consequence. All data collected from students were kept confidential. Students' identities were anonymized by assigning numerical identifiers to their responses, ensuring that individual data could not be traced back to them.

The data collected from the pre-test and post-test were analyzed using a **paired sample t-test**, which is suitable for comparing the means of two related groups (pre-test and post-test scores). This statistical method was used to determine whether there was a significant difference in students' vocabulary mastery before and after the treatment. he paired sample t-test was used to compare the students' vocabulary test scores before and after the project-based learning treatment. The null hypothesis (H_0) posited that there would be no significant difference in the mean scores of the pre-test and post-test. The alternative hypothesis (H_1) suggested that there would be a significant increase in the students' vocabulary mastery after the treatment. he results were considered statistically significant if the p-value was less than 0.05. If the p-value was greater than 0.05, the null hypothesis would be retained, indicating no significant improvement in vocabulary mastery.

Result

This research was conducted on April 17th- May 15th, 2024 at SMAN 9 Luwu Utara by conducting pre-test, treatment and post-test. After conducting this research, the researcher obtained the results of the students' pre-test and post-test scores. It can be seen on the table below:

1. Students' Score in Pre-Test and Post Test

Before conducting the treatment, the researcher conducted a pre-test on April 17th, 2024 to determine the extent of students' vocabulary mastery before given the treatment by utilizing of Project-Based Learning and students' score are shown in the following table:

Table 4.1   The Students' Score in Pre-Test

No	Name of Students	Pre-test	Post-test
1	AL	57	
		77	
2	AS	60	
		67	
3	GO	60	
		93	
4	WSJ	23	
		80	
5	KO	40	
		73	
6	VAP	70	
		80	
7	ZE	67	
		100	
8	KS	37	
		77	
9	DL	47	
		83	
10	MH	13	
		37	
11	PJ	47	
		87	
12	NBM	67	
		100	
13	PHY	57	
		87	
14	E	90	
		90	
15	WS	60	
		87	
16	IK	57	
		73	
17	APS	77	
		100	
18	RA	67	
		90	
19	PNA	50	
		80	
20	NA	70	

		90	
21	JL	67	
		90	
22	ZH	73	
		90	
23	ARP	50	
		83	
24	KAW	33	
		80	
25	MMR	53	
		67	
Total		**1392**	**2061**
Mean Score		**55.68**	**82.44**

Based on the table 4.1 it can be seen that students' scores on the pre-test are still relatively low and this is evidenced by the mean score in the pre-test is 55.68 that 25 students were produced. Meanwhile, the researcher found that the highest score of all students in the post-test was 100 and the lowest score was 37. From the results of the post-test, 25 students produced 2061 total score, therefore the mean that the resulting score was 82.44. It shows that there is difference between pre-test and post-test of students' vocabulary after given treatmen by utilizing the Project-Based Learning model. It is illustrated in the following table:

Table 4.2 Percentage of Students Score in Pre-Test

No	Classification	Score	Frequency	Percentage (%)
1	Excellent	95-100	0	0
2	Very good	86-94	1	4
3	Good	76-85	1	4
4	Average	66-75	7	28
5	Fair	56-65	6	24
6	Poor	46-55	5	20
7	Very poor	0-45	5	20
			25	100%

Based on the table 4.2 it can be seen that before given the treatment by utilizing the Project-Based Learning model there was 1 (4%) student who was classified as very good, there was 1 (4%) student who was classified as good. there were 7 (28%) students who were classified as average, there were 6 (24%) students who were classified as fair, there were 5 (20%) students who were classified as poor and there were 5 (20%) students who classified as very poor. With the statement above, it can be seen that the students' vocabulary mastery was

still low before being given treatment.

Table 4.4 Percentage of Students' Score in Post-Test

No	Classification	Score	Frequency	percentage (%)
1	Excellent	95-100	3	12
2	Very good	86-94	9	36
3	Good	76-85	8	32
4	Average	66-75	4	16
5	Fair	56-65	0	0
6	Poor	46-55	0	0
7	Very poor	0-45	1	4
			25	100%

After given treatment by utilizing the Project-Based Learning model. There were 3 (12%) students who were classified as excellent. there were 9 (36%) students who were classified as very good, there were 8 (32%) students who were classified as good, there were 4 (16%) students who were classified as average and there was 1 (4%) student who was classified as very poor. Based on the statement above it shows that students' vocabulary mastery has increased after utilizing the Project-Based Learning model.

2. The Normality Test of the Students in the Pre-Test and Post-Test.

Normality test is carried out to find out whether the data taken is normally distributed or not by comparing the level of significance. If the significance value < α (0.05), the data is considered not normally distributed, while if the significance value > α (0.05), the data is considered normally distributed. The table below shows the results of the normality test:

Table 4.5 The Normality Test of the Students in the Pre-Test and Post-Test

						Kolmogrov-Smirnov[a]		
Shapiro-Wilk								
						Kelas		
Statistic	df	Sig		Statistic	df	Sig.		
Students'	Learning	Outcomes		Pre-test				.131
25	.200			.965	25	.530		
						Post-test		.147
25	.173			.866	25	.004		

From the results of the normality test, it can be seen that the significant p-value on Kolmogorov-Smirnov[a] between the pretest and post-test is different. this is evidenced by the significant value on the pretest is 0.200 and the significant result on the post-test is 0.173. Based on the results of the significant p-value on the pretest and post-test when compared to α (0.05), it can be said that the significant p-value is greater than the value of α (0.05), it indicates that the data is normally distributed.

3. The Mean Score and Standard Deviation of the Students in the Pre-Test and Post-Test.

The table 4.6 shows the level of comparison between the mean score and standard deviation on the pre-test and post-test to see whether there is a difference in student scores before and after treatment as follows:

Table 4. 6 The Mean Score and Standard Deviation of the Students in the Pre-test and Post-test

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Pre-Test				3.449
	55.68	25	17.245	2.642
Post-Test				
	82.44	25	13.210	

Based on the data in the table above, it can be seen that the mean score on the pretest is 55.68 with a sample of 25 students and the standard deviation on the pre-test is 17.245 while on the post-test the mean score is 82.44 with a sample of 24 and the standard deviation is 2.642. From the data above it can be seen that there is a comparison between the mean score of the pre-test and post-test where there is an increase in the mean score of students' score in post-test.

4. The Result of Paired Sample t- test

After the data is declared normally distributed, the pre-test and post-test data would be tested with a Paired Sample t-test which aims to assess the effectiveness of the treatment. It is proven if sig (2-tailed) < α (0.05). The results of the Paired Sample t-test are shown in the table below:

Table 4.7 The Result of Paired Sample t- test

	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Pair1 Pre-test	-26.760	12.712	-10.525	24	0.000
Post-test					

From the table above shows data analysis by using SPPS version 29. The researcher found that the result of sig. (2-tailed) is (0.000), while t-test is -10.525 besides the probability is 0.000 < 0.05 or sig (2-tailed) < α. It means that there is significant difference between learning outcomes in the pre-test nad post-test data. Then the H0 is rejected and H1 is accepted. It can be concluded that the students' vocabulary mastery has increased after learning vocabulary by utilizing the Project-Based Learning model.

Discussion

By considering the findings, the reseacher presented the discussion of data analysis abaout the effectivenes of utilised Project-Based Learning model in teaching vocabulary at the tenth grade of SMAN 9 Luwu Utara. As we know, vocabulary is the basic core if you want to learn a foreign language including English. According to Richard and Renandya (2002) "vocabulary is a core component of language proficiency and provides much of the basis of how well learners speak, listen, read, and write". As an English teacher who has the goal of being able to educate students and should find a sulution by created an afficient and effective tehnique in teaching vocabualry. In this case, reseacher utilises Project-Based Learning in teaching vocabulary.

Based on the analysis data in the findings, the reseacher indicates that teaching with utilised of Project-Based Learning at tenth grade of SMAN 9 Luwu Utara is effective to increase students' vocabulary mastery. It proved by the students' score in post-test, mean score and standard deviation. For all students' score increasing after conducting the treatment. The mean score of students in the pretest is 55.68, while in the post-test the mean score is 82.44 with the sig. (2-tailed) being (0.000). in addition, sig < α (0.000 < 0.05) it means that there is a significant difference between learning outcomes in the pre-test and post-test data. Therefore, it can be said that Project-Based Learning is effective for improving vocabulary it is because project-based learning is one of the teaching methods related to daily life where the project produced is in the form of a video which is one of the activities preferred by teenagers in this sophisticated technological age, with videos they can be more creative, communicative and collaborative.

Project-Based Learning (PBL) has been shown to be an effective method for enhancing vocabulary acquisition, particularly when compared to traditional, passive methods of learning vocabulary. The core effectiveness of PBL in this context lies in its **engagement, real-world application**, and **collaborative nature**, which align with several key **learning theories**. The findings of this study are consistent with previous research on the effectiveness of **PBL in language learning, e**specially regarding vocabulary acquisition. Similar studies have also shown that PBL increases student engagement, vocabulary retention, and language production.

Zhao and Chen (2017) found that PBL significantly enhanced students' vocabulary knowledge in a Chinese secondary school setting. In their study, students who participated in PBL showed better retention and use of vocabulary in real-life contexts than those in traditional learning environments. Like in this study, students were required to **produce a tangible output,** which led to increased engagement with the language. **In a study by Thomas (2000),** PBL was shown to improve language acquisition by involving students in **authentic tasks,** providing opportunities for meaningful language use. These findings echo the results of the present study, where students were more engaged in vocabulary learning because they applied new words in their video projects.

Furthermore, the theoretical of Project Based Learning model has been proved to require students to learn and produce a work, therefore this model can increase student motivation to learn, increase student skills in problem solving and increase student cooperation in group work (Saputro & Rayahu, 2020).

The findings of this study support the effectiveness of Project-Based Learning as a method to improve vocabulary acquisition among tenth-grade students at SMAN 9 Luwu Utara. The study demonstrated that PBL can significantly increase students' vocabulary mastery, as evidenced by the improvement in post-test scores. The theoretical underpinnings of constructivism, experiential learning, and self-determination theory further explain why PBL is a successful approach for teaching vocabulary. By involving students in the creation of meaningful, real-world products (such as video projects), PBL provides opportunities for authentic language use, collaboration, and increased motivation.

However, in implanting PJBL method researchers encountered problems such as researchers having to adjust students' free time to conduct research, limited facilities such as LCDs, and it became a challenge for researcher when students complained when given video assignments because they felt they had a lot of assignments from other subjects and unruly student characters and in some meetings there were students who were absent but, they were able to complete the video project assignments that the researchers gave.

Conclusion

Utilizing of Project-Based Learning model in teaching vocabulary can increase students' vocabulary at SMAN 9 Luwu Utara class X4, this is evidenced by the results of the mean score of students' post-test and pre-test. in the post-test, the mean score is 82.44 higher than the pre-test of 55 with a sig (2-tailed) value of (0.000). in addition, sig (2-tailed) < α (0.000 < 0.05) means that there is a significant difference between learning outcomes in pre-test and post-test data. Hence, H0 is rejected and H1 is accepted. It means the utilized of Project Based Learning model by making a video to improve students' vocabulary was proven. Utilizing project-based learning as a learning model to teach students is one of the effective efforts. By utilizing video projects which is one of the trends for students

nowadays where they can be more creative and more able to express themselves through making videos.

The implication of these findings suggests the students should be more active in learning English by increasing vocabulary mastery because by mastering vocabulary a person will be able to master other English language skills. And teachers must be more creative in teaching English, especially in teaching vocabulary where it can make students understand more and also which is fun and effective that can make students practice it in their daily life.

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