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THE EFFECTIVENESS OF PROJECT BASED LEARNING THROUGH MIND-MAPPING PROCESS TO IMPROVE STUDENTS' VOCABULARY

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ABSTRACT

Many of students require aid in order to expand and enhance their vocabulary. Conventional techniques of teaching vocabulary are sometimes difficult and uninteresting for students. The goal of this study is to evaluate how well project-based learning using a mind-mapping process improves seventh-grade students at SMP Ma'arif Tegalsambi's command of English vocabulary. A pre-experimental methodology was used in this study, with one group pre-test and post-test design. The population in this research was 61 students, while the sample were 30 students from class 7A. the data collection tools were the pre-test and post-test, which comprised 25 valid multiple-choice questions. To verify the hypothesis' accuracy, the researchers utilized SPSS software's paired sample T-test feature. The pre-test mean was 59.73, and the post-test mean was 85.73. Thus, it can be concluded that project-based learning using the mind mapping process can help boost students' excitement, so it can improve seventh-grade students' vocabulary mastery at SMP Ma'arif Tegalsambi.

Keywords: Mind Mapping, Project-Based Learning, Vocabulary

ABSTRAK

Teknik konvensional dalam mengajarkan kosakata terkadang sulit dan tidak menarik bagi siswa. Tujuan dari penelitian ini adalah untuk mengevaluasi seberapa baik pembelajaran berbasis proyek dengan menggunakan proses *mind mapping* dapat meningkatkan penguasaan kosakata bahasa Inggris siswa kelas tujuh SMP Ma'arif Tegalsambi. Metodologi pra-eksperimental digunakan dalam penelitian ini, dengan desain satu kelompok pre-test dan post-test. Populasi dalam penelitian ini adalah 61 siswa kelas 7, sedangkan samplenya 30 siswa dari kelas 7A. Alat pengumpulan data yang digunakan adalah pre-test dan post-test, yang terdiri dari 25 pertanyaan pilihan ganda. Untuk memverifikasi keakuratan hipotesis, para peneliti menggunakan fitur paired sample T-test dari perangkat lunak SPSS. Nilai rata-rata pre-test adalah 59,73, dan nilai rata-rata post-test adalah 85,73. Dengan demikian, dapat disimpulkan bahwa pembelajaran berbasis proyek dengan menggunakan proses *mind mapping* dapat membantu meningkatkan semangat siswa, sehingga dapat meningkatkan penguasaan kosakata siswa kelas tujuh di SMP Ma'arif Tegalsambi.

Kata kunci: Mind Mapping, Pembelajaran Berbasis Proyek, Kosakata

INTRODUCTION

One of the language skills that language learners should develop is their vocabulary. Acquiring vocabulary is crucial as it enables students to write, speak, and utilize words (Alfatihah & Tyas, 2022; Chiew et al., 2019; Rindu Kinasih & Olivia, 2022). Vocabulary mastery is a crucial component for effective language acquisition, students reading comprehension, writing proficiency, listening, and overall communication skills. Acquiring vocabulary is crucial as it enables students to write, speak, and utilize words. Teaching English vocabulary has some objectives. Several objectives are to enhance students' vocabulary mastery, and to help students develop the four essential elements of language, such as grammar, pronunciation, spelling, vocabulary, etc. (Albakia et al., 2023). Another advantage obtained by students who have good English skills, especially vocabulary mastery, is the ability to understand and communicate in the language (Gunawan et al., 2023) . People are able to express more ideas when they have large vocabulary. Vocabulary mastery is essential to create sentences that express ideas for social interaction (Rahmawati & Ria Utami, 2019). To put an idea into sentence, people use their vocabulary.

Many students need aid in order to increase and improve their vocabulary. When teaching vocabulary, traditional methods are frequently difficult and uninteresting for students, which can lead to boredom and sense of feeling powerless. (Rahma, 2024). Students who lack vocabulary will have difficulty because they won't be able to understand what their teacher is saying or what other people are saying. They will also have trouble understanding reading texts and listening to what they listen to because of their limited vocabulary (Pramesti et al., 2023).

Considering what was observed with an English teacher at SMP Ma'arif Tegalsambi, most of students still lack of vocabulary, which is because the learning method used is less

attractive to students and the teacher becomes the center of learning in class, thus causing students to have low vocabulary abilities and also students experience difficulties in learning English, and get bored in teaching and learning process. Traditional methods, often reliant on rote memorization, may not fully engage students on learning process.

Learning vocabulary, especially vocabulary learning strategies, are essential for improving vocabulary instruction and student vocabulary mastery (Asyiah, 2017). Students' English vocabulary will increase with the variety of interesting teaching methods used in learning. Students in the 7th grade at SMP Maarif Tegalsambi have a lot of difficulties learning English. They lack vocabulary, find it hard to memorize vocabulary, and have trouble pronouncing English words because they are not interested in learning the language. As a result, the sudents still have low vocabulary.

Considering the previous details, the teacher ought to offer engaging method to enhance the students' vocabulary-learning activities through Project-Based learning. One of method of teaching vocabulary is by using Project-Based Learning (PBL) through mind mapping technique. An innovative way to take notes that helps students learn new words more quickly is mind mapping. After finishing, the notes create a pattern of related ideas, with the main topic at the center and the details and subtopics forming branches.

Project-Based Learning (PBL) emphasizes students' engagement through real-world projects that encourage active exploration and problem solving. Students that participate in Project-based learning (PBL) conceive, develop, and build practical responses to a problem. It is one of the strategies used to give students the chance to participate in the classroom, to take ownership of their education, to help them grow as learners, and to help them understand and organize information (Ergül & Kargın, 2014).

This article aims to explain how mind mapping can be used to make vocabulary memorization easier for students. Students can utilize mind mapping to assist them organize their information. According to (Frey, 2010), while learning, mind mapping may aid the students to generate ideas and think creatively. An image or keyword represents the main themes or subject, which spread as branches extending from the subject's on center. In order to form subordinate subjects, they must be connected to higher branches. Consequently, every branch is part of an interconnected network of nodes (Buzan & Buzan, 1994).

Mind-mapping complements Project-Based Learning by providing a visual tool to organize and integrate vocabulary. Mind-mapping also can help students visualize relationship between words and contexts, supporting deeper vocabulary comprehension (C.K. Hsu et al., 2014). Using mind mapping makes it possible to compile ideas related to the primary theme. Mind-mapping is useful method for helping students organize their thoughts and remind new vocabulary. The mind mapping method worked well for helping students creates descriptive text. Not only vocabulary mastery, students' ability to write descriptive texts also can enhanced by mind mapping method, in the areas of creativity enhancement, sentence structure, and concept organization (Al- Zyoud et al., 2017); (Nurlaila, 2013).

Combining Project-Based Learning with mind mapping could enhance vocabulary mastery by making teaching-learning process more interactive and meaningful. Thus, this paper is needed to assess the effectiveness of this approach and explores the impact of integrating PBL and mind-mapping on students' vocabulary mastery. This research will provide valuable insight into the efficiency of using the mind mapping technique in project-based learning to enhance students' vocabulary mastery.

Several studies have been shown that mind mapping technique may have beneficial effects for learning English. First, the research was carried out by (Al- Zyoud et al., 2017; Le et al., 2023; Rista Harimurti, 2021) demonstrated the noteworthy relationship between vocabulary mastery and mind mapping on pupils' writing abilities. Additionally, they emphasized that mind mapping in classes demonstrates that students are thinking about the writing topics and activating their prior knowledge. Furthermore, the research carried out by (Albakia et al., 2023; Fitri et al., 2019; Hakim, n.d.) showed that the results indicated that the utilization of the mind mapping method could effectively improve vocabulary skills of students. According to (Setianingsih et al., 2018) demonstrated how teaching mind mapping could increase students' enthusiasm for learning vocabulary in English.

The present study offers a novelty contribution to vocabulary instruction by exploring the effectiveness of Project-Based Learning (PBL) integrated with Mind-Mapping technique in enhancing vocabulary mastery among 7th-grade students. This innovative methodology and contextual relevance provide new insights into vocabulary instruction, with implications for enhancing vocabulary instruction and provide a fun method in process

of teaching and learning for the students and the teacher.

Therefore, This study's goal was to ascertain how successfully mind mapping in project-based learning enhances students' vocabulary. According to the study's objectives, the research question are: 1) Is project-based learning with mind mapping resulted in a significant vocabulary improvement of 7th grade students SMP Maarif Tegalsambi? 2) How significant is the effect of project-based learning through mind mapping process on vocabulary improvement of 7th grade students SMP Maarif Tegalsambi?

METHOD

This study paid quantitative methodology, since the data were numerical. Quantitative research is the use of numbers to describe observation materials, or, to put it another way, the description and analysis of the data that was collected (Sugiyono, 2019). This research implemented a pre-experimental approach with a one group's pre-test and post-test design. Which is only includes a single class or group that is given a pre-test, treatment, and post-test without the presence of a comparison group. The pattern according to (Sugiyono, 2019) is:

O_1	X	O_2

O_1 = Pre-Test
X = Treatment
O_2 = Post-Test

The population in this research were all of 7th grade students of SMP Maarif as many as 61 students. The number of samples amounted to 30 students of 7A. The researchers set up a three-step process in this study: pre-test, treatment, and post-test. The test used in this study was based on the Merdeka Curriculum model. The pre-test was administered to the students before they received treatment, and the post-test was administered after researchers using the mind mapping technique to find out the students' level of achievement.

The treatment was carried out twice. As part of the first treatment, students were instructed to make a mind mapping with the topic describing people. The second treatment, students were instructed to create a mind mapping with the topic describing place. After they finished making mind mapping, each group presented the results of their discussion. Then, after finishing the lesson, students were asked to memorize new vocabulary to be reported in the next meeting.

The primary instrument applied for data collection is consist of 25 multiple choices questions. This test evaluated the students' vocabulary knowledge. The test consists of various aspect of vocabulary, including word meanings, synonym, antonym, and context. Each number will give 4 points if the answer is correct, and 0 if the answer is wrong.

Quantitative data that obtained from the pre-test and post-test were assessed by using SPSS 26. The statistical test used in this study was t-test, along with the conditions of the normality, homogeneity, and hypothesis tests.

RESULT AND DISCUSSION

Result

Before the treatment was given, students were administered a pre-test to ascertain their starting level of vocabulary mastery. Finally, a post-test was conducted to assess how effective the Mind-Mapping method was in improving the students' vocabulary skills. The average results of the students' pre-test and post-test are presented in Table 1.

Table 1. Descriptive Statistics

	N	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
Pre-Test	30	28	76	59.73	10.448
Post-Test	30	72	100	85.47	8.033
Valid N (listwise)	30				

The table 1 shows that during pre-test phase, students mean grade is 59.73, while in the post-test phase, students mean grade increase in 85.47. it means that students have increased their vocabulary.

Normality and homogeneity tests were used as a prerequisite test before conducting hypothesis testing. The normality test of the study was analyzed using the Shapiro-Wilk because the data was less to 50. Finding out if the research data was normally distributed or not normally distributed was done using the normallity data. There are rules for taking the results on Shapiro Wilk normality test as follows:

H_o : if the significant value (Sig) is greater than 0.05, then the research data is normally distributed.

H_a : if the significant value (Sig) is less than 0.05, the research data is not normally distributed.

The SPSS results of normality test by Shapiro-Wilk

Table 2. Normality Test

	Kelas	*Kolmogorov-Smirnov*[a]			*Shapiro-Wilk*		
		Statistic	df	Sig.	Statistic	Df	Sig.
Hasil	Pre-Test	.210	30	.002	.928	30	.044
	Post-Test	.125	30	.200*	.951	30	.176

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

According to the above result, the pre-test data's significant value for the normality test was 0.044, which is greater than the significancy position of 0.05. It indicates that pre-test data in this research is normally distributed. Furthermore, the sig value for the normality test of post-test was 0.176, which was greater than significance level of 0.05. It also can conclude that the post-test data is normally distributed.

The, a homogeneity test was conducted by the researchers. The purpose of homogeneity test is to finding out if the data have the same variance. Researchers used Lavene's test to determine the homogeneity of the data in this study. If the Significant value (Sig) more than 0.05, then, the data distribution is homogeneous. Furthermore, if the significant value (Sig) is less than 0.05, then the data distribution is not homogeneous.

Table 3 showed that the significant value of homogeneity test for the pre-test and post-test was 0.742 > 0.05. It can conclude that the data is homogeneous, because the data have the same variance and the significant value is higher than 0.05.

Table 3. *Test of Homogeneity of Variance*

		Levene Statistic	*df1*	*df2*	*Sig.*
Hasil	*Based on Mean*	.109	1	58	.742
	Based on Median	.066	1	58	.798
	Based on Median and with adjusted df	.066	1	45.209	.798
	Based on trimmed mean	.096	1	58	.757

In addition, after conducting the prerequisite test, and the outcome of the hypothesis testing was that the data was homogeneous and normally distributed. The study used the descriptive statistical trials, by using paired sample t-test. This enables the research to proceed in order to test the hypotheses and ascertain whether a significant difference exist in the students prior to and following treatment.

Table 4. Paired Samples T-Test

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	*Std. Deviation*	*Std. Error Mean*	*Lower*	*Upper*	*T*	*df*	*Sig. (2-tailed)*
Pair 1	*Pre-Test - Post-Test*	-25.733	7.329	1.338	-28.470	-22.997	-19.230	29	.000

The data 5% deegrees of freedom (df) is 29 (degrees of significance) so the t-table is 1.338. the value of t-count is -19.230, due to the pre-test value is less than the post-test value, the t count is negative. Consequently, by comparing the t count and t table, the t count value can be positive 19.230. so, t-count 19.230 > t-table 1.338. in the same variance section, it is assumed (2-tailed) indicating that 0.00 < 0.05. It indicates that the pre-test and post-test differ significantly from one another. This illustrates how applying the mind mapping technique greatly improves students' vocabulary proficiency.

The researchers explain the interpretation of research findings and hypotheses. This research exists to answer the research questions, namely that there is a significant impact of teaching vocabulary of project-based learning through mind-mapping process on students' vocabulary mastery. With these questions, the researchers will answer with the following hypothesis:

H_o : There is no significant effect of project-based learning through mind-mapping technique to improve students' vocabulary mastery of seventh grade students at SMP Ma'arif Tegalsambi after the research.

H_a : There is no significant effect of project-based learning through mind-mapping technique to improve students' vocabulary mastery of seventh grade students at SMP Ma'arif Tegalsambi after the research.

The hypothesis assumptions are as follows:
Ho accepted if significance > 0.05 and t-count < t-table
Ho is rejected if significance < 0.05 and t-count > t-table

According to analysis, the Ho or null hypothesis is rejected because the significant value is 0.00 < 0.05 and the t-count 19.230 > t-table 1.338. thus, the pre-test and the post-test differ significantly from one another. The outcome of this study is that the effectiveness of project-based learning through mind-mapping technique is very significant. It indicates that the effectiveness of project-

based learning through mind-mapping technique is significantly impacted on students' vocabulary improvement.

Discussion

The outcomes of this study showed how effectively the mind mapping works to enhance students command of vocabulary, especially when it applies to descriptive texts. The quantitative information collected from the T-Test analysis shows it. The investigation findings displayed in Table 1 has been demonstrated that the mean scores for the pre-test of 59.73 and post-test of 85.47 differ noticeably. It demonstrates how mind mapping in project-based learning significantly enhances students' vocabulary mastery. After the students received treatment, a post-test was administered, and the results showed that their average score was higher than it was prior to the treatment. It was supported a number of existing theories regarding vocabulary instruction and acquisition.

Furthermore, project-based learning assists students in acquiring new abilities and resolving issues, especially expanding their vocabulary. Through a methodical group work process, problem-based learning best fosters students' thinking skills, enabling ongoing development and thinking empowerment (Asrati et al., 2018), collaborative abilities like brainstorming, cooperative learning, and teamwork (Bahasa & Andriyani, 2022), also improving creativity and creative thinking skills (Yamin et al., 2020). Mind mapping technique as project-based learning increases effectively introduces new vocabulary and make active participation in the learning process and increases student engagement (Muassomah et al., 2024). Consequently, students can enhance their vocabulary skills, which will help them succeed greater academically.

This outcome is in line with the earlier research on the efficiency of project-based learning through mind-mapping in vocabulary learning. For instance, the study carried out by (Basri & Syamsia, 2020; Hakim, n.d.). According to these studies, employing mind mapping techniques to learn and acquire new vocabulary also improves vocabulary acquisition's effectiveness and engagement while avoiding monotony and boredom. Additionally, by offering a fun and easy way to engage students in learning activities, the project-based learning approach via mind mapping can assist teachers in effectively enhancing their vocabulary mastery (Shi & Tsai, 2022).

There are several factors that impact the post-test scores being higher than the pre-test result. Students can remember a larger vocabulary more easily when they use the mind mapping technique (Al-Al-abed Al--haq et al., 2019). The result is in line with earlier research of (Jiang, 2020) that students can participate and have deeper understanding of vocabulary during constructing mind mapping that make it easier to memorize. They argue that considering mind mapping technique provides an exciting and easy way of learning activity, it can effectively aid students in mastering vocabulary.

By applying the mind mapping method, students can learn vocabulary more actively in class. The mind mapping technique makes learning more interesting and effective to facilitate students in acquiring new vocabulary. Consequently, the research conducted by (Albakia et al., 2023; Asyiah, 2017; Rahma, 2024) that successfully conducted their study cause mind mapping was an interesting, simple, and enjoyable technique to enhance vocabulary. Based on the provided material, students were able to create mind maping, which demonstrated their proficiency with content, language features, writing elements, vocabulary, structure, mechanics, and usage of language. In order to increase students' vocabulary mastery, the mind mapping method is very helpful when learning and teaching vocabulary.

It is in line with the research by (Sudirman & Wahid, 2023) which explained that the mind mapping technique can encourage students to participate more actively in their classes in learning process. Through constructing mind mapping, students also practice in self-learning and reducing the monotonous on learning process to acquire new vocabulary (Meirbekov & Abzhekenova, 2022). Finally, the mind mapping technique is efficient tool in learning to improve student vocabulary. In creating mind mapping, an outlining strategy guides them according to the topic on connecting each vocabulary and make it easier to memorize the vocabulary (Le et al., 2023).

In summary, the study's findings support the idea that the mind mapping method can assist the students in developing their vocabulary mastery and this finding are consistent with earlier studies. Learning English by using project-based learning through mind mapping process also can increase students' excitement and make it easier for them to learn and memorize vocabulary. These results highlight a method that aids students in their educational journey and is utilized in the learning process.

CONCLUSION

The study investigated the efficiency of using project-based learning through mind mapping method on students' vocabulary improvement. Following the treatment, the students' post-test scores were significantly higher (85.47), in comparison to their pre-test scores (59.73). Mind mapping is the most useful aid in learning which helps the students improve their vocabulary enrichment.

The effectiveness of implementing mind mapping techniques in project-based learning to enhance students' vocabulary mastery is supported by the paired sample t-test. As a result, teachers may incorporate mind-mapping methods into their language instruction strategies. In order to engage students with vocabulary outside of textbooks, teachers additionally need to foster an active learning environment.

There are several suggestions for future research, in this study only one class sample was used, and there was no control class for comparison. As a result, it is advised that future researchers employ control classes to improve the findings' generalizability. furthermore, the research duration was only lasted four meetings. Longer-term research is therefore required to provide light on consistent improvement in vocabulary.

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