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INVESTIGATING THE IMPACT OF MIND MAPPING TECHNIQUES ON ENGLISH VOCABULARY PROFICIENCY AT VOCATIONAL SCHOOL IN JAKARTA

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Abstract:
This study aims to test the effect of mind mapping on English vocabulary mastery in class X students of SMK X Jakarta. This study is an experimental study. The population in this study was 58 class X students of SMK X Jakarta, and a sample of 30 students was taken using the random sampling technique. Data collection in this study was through pre-tests and post-tests. In this study, the results of the post-test of the experimental class were obtained, namely an average value of 92.03, a median value or middle value of 92.7, a mode value or value that often appears of 93.5, a variance value of 8.267, and a standard deviation value of 2.87. The results of the post-test of the control class obtained an average value of 70.03, a median value or middle value of 70.7, a mode value or value that often appears of 71.7, a variance value of 7.695, and a standard deviation value of 2.77. The study's results, through hypothesis testing, show that mind mapping influences the mastery of English vocabulary among class X students of SMK X Jakarta. This is indicated by the t-test value obtained by the t-count value of 21.65 and the t-table value of 2.048. So t-count > t-table (21.65 > 2.048) means that H0 is rejected and H1 is accepted. So, mind mapping influences the mastery of English vocabulary in class X students of SMK X Jakarta.

Keywords:
Mind Mapping; Vocabulary; Technique

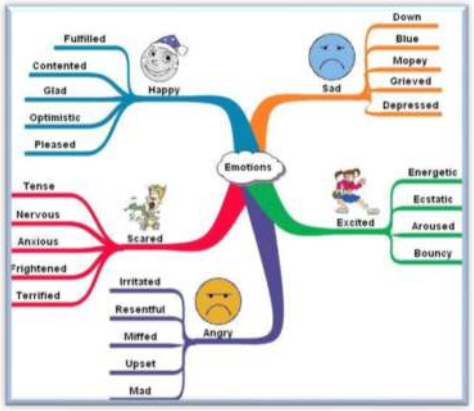
INTRODUCTION

English is an international language that plays a vital role in the world and is used to communicate with each other today. English is the primary medium for global communication and is used in various sectors such as business, tourism, education, and technology (Damayanti, 2019, p.76). In Indonesia, the integration of English into the national education curriculum reflects the recognition of the importance of English in equipping students with the skills needed to compete in a global environment (Al Assad, H., & Abdullah, 2025), especially for Vocational High School (SMK) students). So, English proficiency is not just an academic requirement, but also a practical need to achieve local and international professional success

Despite this increasing emphasis, many vocational high school students still struggle with English, especially in vocabulary mastery, which is the basis for language mastery that can affect a person's way of thinking and creativity in the language learning process (Nurhalimah, N., Romdanih, R., & Nurhasanah, 2021). According to Hudayani et al. (2025), Vocabulary is a collection of words or phrases used in a language or terms that a person or group of speakers commonly uses in communicating. Vocabulary is the foundation of the four language skills: listening, speaking, reading, and writing (Feng, Alsager, Azizi, & Sarabani, 2023; Kurniawati & Karsana, 2020). Without an adequate vocabulary base, students can face difficulties understanding and producing meaningful communication, affecting their confidence and engagement in the classroom (Noermanzah, 2017). Vocabulary limitations in schools throughout Depok, including SMK X, have been identified as a significant barrier to effective English learning.

According to Andanty (2025), Traditional teaching approaches in English classes often fail to address these challenges. This may be because students rely on memorization, which is less engaging and does not encourage long-term retention. Therefore, educators must seek innovative and learner-centered strategies that actively engage students in the learning process (Agustina et al., 2025; Wahyugi & Siregar, 2025; Zainuddin, Z., & Keumala, 2021) where strategies according to the Oxford Learner's Pocket Dictionaries (2010) are action plans that are designed to achieve long-term goals or overall main objectives (Morgan, Whitler, Feng, & Chari, 2019). One such strategy is Mind Mapping, a visual learning tool that combines brain function's creative and logical aspects to improve memory and understanding (Karim, Novirianti, & Viratama, 2025; Nikhilkumar D. Parikh, 2016). Imbris Fanita (2021) also explains that “Mind mapping is a medium that helps someone to focus on a subject and can also detail the ideas that arise but does not prevent someone from seeing the subject broadly. Nurani and Saputri (2020) define mind mapping as an effort to develop thinking activities to be broader in all directions. In addition, according to Tony Buzan, cited in Arum Putri Rahayu (2021), mind mapping has significant benefits that can help students increase productivity, creativity, understanding, and the ability to understand important information.

Mind Mapping, Initially introduced by Tony Buzan, mind mapping allows students to visualize relationships between concepts using images, colors, keywords, and branching structures (Jones, Ruff, Snyder, Petrich, & Koonce, 2012; Waliyudin & Annisah, 2022) This technique supports cognitive processes such as recalling and organizing ideas and increases creativity and motivation in learning, as stated by Ulfa & Indari (2020). He stated, "Mind mapping is a creative technique to write a note which helps people memorize words and texts and the meanings of those to improve the lesson comprehension, organize the lesson, and create good intelligence"(Yusrumaida, 2021).
Several studies by Widyawati (2017) and Nurkamaliah et al. (2018) have shown the effectiveness of mind mapping in improving vocabulary acquisition among students of various educational levels. However, most studies have focused on elementary or junior high school students. Limited attention has been paid to its impact on vocational high school students, who require more targeted interventions due to their specific educational and career needs.



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Based on initial observations conducted at SMK Jakarta, it was found that Grade X students often considered English a complex subject, mainly due to their limited vocabulary. Teachers have recognized this problem and have begun experimenting with various teaching strategies to support students' language development. Among all, mind mapping has shown promising initial results, indicating its potential as an effective vocabulary development tool in a vocational setting. According to Suhada et al. (2020), mind mapping is a learning method that is in the form of visual to verbal, into images, so that it is easy to see, record, recall information that is imagined, traced, shared with others, presented, and discussed together. In addition, mind mapping can also be used as a medium that helps someone to focus on a subject (Imbris Fanita, 2021).

Therefore, this study was motivated by a need to explore the effectiveness of mind mapping in improving English vocabulary mastery among vocational students. This is based on the hypothesis that visual-based and student-centered strategies, such as mind mapping, can positively influence student learning outcomes by making vocabulary mastery more interactive, engaging, and memorable. The research question for this study is how effective is the English vocabulary mastery result of students of SMK X after using the mind mapping method?

METHOD

This study uses an experimental research design to determine the effect of specific treatments on others in a controlled situation (Sugiyono, 2017) with a quantitative approach. In this study, the author provides different treatments to two study groups: the experimental and control groups. The experimental group will be given the mind mapping learning method for learning English vocabulary. Then, the control group is a study group that does not receive the teaching treatment using the mind mapping method. The sample used was 30 students, namely 15 students from class X.1 as the experimental class and 15 students from class X.2 as the control class, using Simple random sampling, or sampling from the population, is carried out randomly without considering strata (Suseno, I., 2019).

Table 1. Research Design

KE	X	O_1
KK	-	O_2

Description:
KE : Experimental class
KK : Control class
X : Treatment in the form of teaching with the mind mapping method
O1 : Experimental class test results after receiving treatment X
O2 : Control class test results after receiving treatment X

The instrument used in this study was a test (pretest and posttest) for class X students of SMK X Jakarta who had received an experiment (experimental class) in the form of using mind mapping or who did not receive the experiment (control class) (Arikunto, 2017; Imbris Fanita, 2021) The data collection technique used a pretest, treatment, posttest, and observation. Then, the data of this research were analyzed using statistics, including validity tests, reliability tests, normality tests, descriptive statistical analysis, and paired sample t-tests (Maswar, 2017). The steps in the data analysis technique used after conducting the test to obtain data that will be processed and analyzed to find answers to the research or test the research hypothesis are as follows:

Descriptive Analysis Techniques

The steps in descriptive analysis are as follows: (a). Create a table of value results (values are written sequentially from the smallest to the largest). (b). Calculate the distance or range (R) with the formula: R = highest data - lowest data. (c). Determine the number of classes (K), with the formula: K = 1 + 3.3 log n; with n = number of data. (d). Determine the length of the interval (P) with the formula : P = Range (R) / Number of Classes (K). (e). Create a frequency distribution table. (f). Calculate the average (mean), with the formula: $\bar{X} = \frac{\sum fixi}{\sum fi}$ where fi: frequency of value i and xi: middle value of class i. (g) calculate the middle value or median (Me), with the formula: $\text{Me} = b + p\left|\frac{\frac{1}{2}n - F}{f}\right|$, where b: lower limit, p: class interval length n: number of classes, F: cumulative frequency before the median location frequency and f: median location frequency. (h). calculate the mode (Mo), with the formula Mo = L + (d1/(d1+d2))i, where L is the lower limit of the mode class, d1 is the difference in frequency of the mode class with the previous class, d2 is the difference in frequency of the mode class with the next class, and i is the class length. (i). determine the variance (S2) and standard deviation (S), with the formula: $S^2 = \frac{n\sum fixi^2 - (\sum fixi)^2}{n(n-1)}$ $S = \sqrt{\frac{n\sum fixi^2 - (\sum fixi)^2}{n(n-1)}}$. (j). Create a bar chart/histogram graph.

1. Test the Research Instrument with validity and reliability tests, normality tests using the Lilliefors test formula, homogeneity tests.
2. Research Hypothesis Test.
3. Statistical Hypothesis Test.

RESULTS AND DISCUSSION

Results

Tabel 4. 3 *Frequency Distribution of Posttest Result Data for Control Class (X.1)*

Interval		Frequency	Presentasion	xi	$fi.\ xi$	F	xi^2	$fi.\ xi^2$
65	66	2	13%	65,5	131	2	4290,25	8580.5
67	68	3	20%	67,5	202,5	5	4556,25	13668,8
69	70	2	13%	69,5	139	7	4830,25	9660,5
71	72	5	33%	71,5	357,5	12	5112,25	25561,3
73	74	3	20%	73,5	220,5	15	5402,25	16206,8
Sum		**15**	**100%**	**347,5**	**1050,5**		**24191,3**	**73677,8**

Figure 1 *Control Class Histogram*

Based on the description of the graph above, it can be concluded that the highest value is in the interval 73 - 74, which amounts to 3 students, while the lowest value is in the interval 65 - 66, which amounts to 2 students. The highest frequency is in the interval 71 - 72, which amounts to 5 students. In this case, the interval 71 - 72 is a high range for respondents in the control class based on the English vocabulary mastery test results.

Table 2 *Frequency Distribution of Experimental Class Posttest Result Data (X.2)*

Interval		Frequency	Presentasion	xi	$fi.\ xi$	F	xi^2	$fi.\ xi^2$
66	67	5	33.33%	66.5	332.5	5	4422.25	22968,8
68	69	3	20.00%	68.5	205.5	8	4692.25	8010,25
70	71	1	6.67%	70.5	70.5	9	4970.25	25116,8
72	73	4	26.67%	72.5	290	13	5256.25	43711,3
74	75	2	13.33%	74.5	149	15	5550.25	27360,8
Sum		**15**		**352.5**	**1047.5**		**41901,3**	**127168**

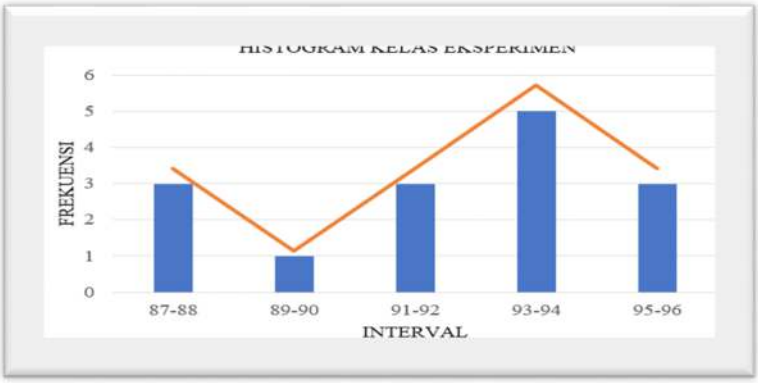

Figure 2 *Histogram of Experimental Class*

Based on the description of the graph above, it can be concluded that the highest value is in the interval 95-96, which amounts to 3 students, while the lowest value is in the interval 87-88, which amounts to 3 students. The highest frequency is in the interval 93-94, which amounts to 5 students. In this case, the interval 93-94 is a high range for the experimental class respondents based on the English vocabulary mastery test results.

Discussion

The results of this study were obtained from the results of the analysis through the calculation of the average (mean), median, mode, variance, and standard deviation on the results of the English vocabulary mastery test of class X students of SMK Jakarta accompanied by the results of hypothesis testing in both classes, namely the control class and the experimental class. Then, a comparison of the research results from the English vocabulary mastery test scores of the experimental class and the control class is obtained, which are presented in the following table.

Table 3 *Comparison of Data Analysis Results*

Value	Eksperiment Class	Control Class
Mean	92,03	70,03
Median	92,7	70,7
Mode	93,5	71,7
Variance	8,267	7,695
standard deviation	2,87	2,77

Based on the research, mind mapping on English vocabulary mastery in class X students has a significant influence. This can be seen from the comparative data in the table above, which shows that the average value of the experimental class is greater than the average value of the control class, which is 92.03> 70.03. The following can also be seen from the results of the calculation by conducting a t-test: the t-count value is (21.65), while the t-table is (2.048); then t-count> t-table, which is 21.65> 2.048, then H0 is rejected and H1 is accepted. This shows an influence from mind mapping, which can help students map ideas or concepts creatively, making it easier to compile or summarize writing according to the given topic.

CONCLUSION

This study shows that using the mind mapping method significantly affects the mastery of English vocabulary of class X students of SMK Jakarta. Students find it easier to understand the material, are more confident, and are motivated because of the interesting visualization of mind mapping. Although there are some challenges, such as passive students and distractions during learning, the t-test results (21.65 > 2.048) confirm this method is effectiveness. Therefore, it is recommended that stakeholders consider the application of mind mapping in vocabulary learning to improve student learning outcomes.

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