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The Effect of Venn Diagram Vocabulary Graphic Organizer on Vocabulary Mastery of the First Year Students of SMP Negeri 23 Pekanbaru

Wahyu Putra Pratama[1] Rumiri Rotua Aruan[2] M Syarfi[3]
English Study Program, Faculty of Teacher Training and Education, University of Riau, Pekanbaru, Riau, Indonesia[1,2,3]
Email: wahyu.putra6551@student.unri.ac.id[1] rumiri.aruan@lecturer.unri.ac.id[2]
m.syarfi@lecturer.unri.ac.id[3]

Abstract
This study aims to determine the effect of Venn Diagram Vocabulary Graphic Organizer on Vocabulary Mastery of the first-grade students of SMP Negeri 23 Pekanbaru in the 2024/2025 academic year. The research employed a one-group pretest-posttest design as part of a pre-experimental quantitative method. A sample of 40 students from class VII F was selected through cluster random sampling. Data were collected using vocabulary tests administered before and after the treatment. The treatment consisted of four meetings during which students used Venn Diagrams to compare and contrast vocabulary items based on physical characteristics. The results showed a significant improvement in students' vocabulary mastery, with the mean score increasing from 58.90 in the pretest to 76.60 in the post-test. A paired sample t-test revealed a significance value of 0.000 (a < 0.05), indicating that the Venn Diagram had a statistically significant effect. The findings suggest that Venn Diagrams can be an effective and engaging tool for improving vocabulary acquisition in junior high school learners. This technique also encourages student interaction and active learning, making vocabulary instruction more meaningful and enjoyable.
Keywords: Venn Diagram, Vocabulary Mastery, Vocabulary Graphic Organizer

INTRODUCTION

Vocabulary is a fundamental component of language learning, serving as the foundation for the four essential skills: listening, speaking, reading, and writing. Without sufficient vocabulary, learners struggle to comprehend information and express themselves effectively. According to Nation (2021), vocabulary is not only about knowing a large number of words but also understanding how they are used appropriately in context. Vocabulary refers to a set of words known and used by an individual or within a particular language. In the context of language learning, vocabulary is of critical importance, as it forms the foundation for the development of the four language skills: listening, speaking, reading, and writing. Without adequate mastery of vocabulary, individuals are likely to encounter difficulties in both understanding and conveying meaning in communication. Students often encounter various challenges in learning vocabulary, including difficulties in pronunciation, understanding multiple meanings of words, and limited basic vocabulary as a foundation for further learning. Additionally, students struggle to retain new words due to insufficient practice and lack of adequate contextual exposure. Proper usage of vocabulary, including collocations and grammar, also presents significant challenges.

In the current era of communicative and student-centered learning, effective vocabulary instruction must go beyond memorizing word lists. As Dewey (2024) points out, vocabulary involves not only recognizing words but also comprehending their contextual meaning, semantic associations, and appropriate usage in various modes of communication. Therefore, vocabulary mastery encompasses more than the number of words known—it includes depth of

understanding and application. Schmitt & Schmiitt (2020) reinforce this view by defining vocabulary mastery as the ability to understand word forms, meanings, usage, and the relationships among words in real-life contexts. The ability to comprehend vocabulary is called vocabulary mastery. According to Meyer & Schmitt (2000)vocabulary mastery is defined as a person's knowledge or skills in comprehending and mastering language. Being proficient in vocabulary is crucial for learning English since it opens the possibility of learning more. Vocabulary mastery is very important so students must be active in exploring diverse materials to expand their vocabulary.

Despite this understanding, vocabulary remains one of the most challenging aspects for many students in Indonesia. At SMP Negeri 23 Pekanbaru, students face low motivation and difficulty in retaining new vocabulary. Observations suggest that this is partly due to a lack of effective instructional media and a continued reliance on conventional teaching methods. In particular, first-year students showed difficulty recognizing basic English vocabulary and exhibited low engagement during lessons. To address these challenges, integrating visual-based learning tools such as graphic organizers has shown promising results. Graphic organizers are a useful tool in the teaching and learning process, offering a schematic design to aid in understanding concepts. They help learners connect their prior knowledge with new ideas being introduced. Graphic organizer is a valuable tool that helps both students and instructors learn and understand concepts and their relationships. It visually represents information, making it easier to see connections and organize thoughts effectively. One such tool is the Venn diagram, a simple yet effective graphic organizer that helps students visually compare and contrast concepts. According to Ansberry & Morgan (2017), Venn diagrams can enhance comprehension by enabling learners to visualize similarities and differences between topics or items, thereby fostering analytical thinking and deeper understanding. Similarly, Hall & Strangman (2018) argue that graphic organizers help bridge prior knowledge and new content, supporting more meaningful learning. On the other hand, Kealey (1998), Venn diagrams help students visualize relationships between ideas, making abstract concepts more concrete. This approach not only aids comprehension but also fosters active learning.

The Venn diagram, originally designed for logical reasoning (Venn, 1880), is now widely applied in educational contexts, including language learning. Its structure allows students to organize vocabulary visually, improving memory retention and word association. When applied in English vocabulary learning, this tool not only enhances comprehension but also encourages active participation and collaboration among students. Using Venn diagrams in vocabulary learning allows students to identify connections between words, classify them into categories, and enhance memory through visual association. Previous studies have shown that graphic organizers like the Venn diagram are effective in improving students' vocabulary and reading comprehension (Malasari, 2017; Maulana, 2020). Given its benefits, this study seeks to explore the effect of using the Venn Diagram Vocabulary Graphic Organizer on vocabulary mastery among first-year students at SMP Negeri 23 Pekanbaru. It aims to offer a more interactive and effective vocabulary learning strategy aligned with modern pedagogical approaches.

RESEARCH METHODS

This study employed a pre-experimental design using the one-group pretest-posttest model. As described by Creswell (2018), this design involves administering a pretest to measure students' initial ability, applying a treatment, and then administering a posttest to evaluate any changes. This method was chosen to determine the effectiveness of the Venn Diagram Vocabulary Graphic Organizer in improving students' vocabulary mastery. The

research was conducted at SMP Negeri 23 Pekanbaru in the academic year 2024/2025. The population consisted of all first-year students, with total 308 students from eight classes. The sample was selected using cluster random sampling, and class VII F (40 students) was chosen as the experimental class. The instrument used in this study was a vocabulary test consisting of multiple-choice items and essay questions that assessed students' understanding and ability to compare vocabulary using a Venn diagram. The tests were validated and tested for reliability prior to implementation. The validity and reliability were calculated using IBM SPSS 25, with results indicating that the instruments were valid and reliable.

The data collection process consisted of three stages. Pre-test was administered before treatment to measure students' baseline vocabulary knowledge; treatment with the Venn Diagram method was introduced and applied over four sessions. Students compared the physical characteristics of their peers using the diagram, helping them visualize and organize vocabulary; post-test was conducted after the treatment to evaluate the effect of the Venn Diagram strategy on vocabulary mastery. The data were analyzed quantitatively using paired sample t-test with SPSS 25 to compare the results of the pre-test and post-test. The test assessed whether the observed differences were statistically significant. In addition, normality tests were conducted using the Shapiro-Wilk method, confirming that the data were normally distributed and suitable for parametric analysis. The criteria for significance were as follows: if the a-value (Sig. 2-tailed) < 0.05, the null hypothesis (Ho) would be rejected, indicating a significant effect of the treatment.

RESEARCH RESULTS AND DISCUSSION

This research was conducted at SMP Negeri 23 Pekanbaru. The result of this study is to see if there is an effect or improvement on students' vocabulary mastery after learning using the Venn Diagram Graphic Organizer. The result shows the students' vocabulary mastery has a significant increase, that can be seen in the improvement column which 17.70 points. The data was collected by giving vocabulary test. And the material in this test was the chapter I. The researcher used SPSS 25 for Windows to show the t-test results comparing the students' pre-test and post-test scores. The following are the results of the research obtained.

Table 1. The Students' Average Score in Pre-test and Post-test

Class	Pre-test	Post-test	Improvement
Experimental Class (VII. F)	58.90	76.60	**17.70**

In table 1, the mean of the pre-test was 58.90, and the mean of the post-test was 76.60 with the improvement 17.70 points. This increasing score shows that the right teaching tool such as Venn Diagram Vocabulary Graphic Organizer can make the learning environment more enjoyable and students can remember vocabulary better.

Table 2. Paired Samples Statistics

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Post-test	76.60	40	7.078	1.119
	Pre-test	58.90	40	8.012	1.267

Table 2 shows that the mean score of pre-test is 58.90 and the mean score of post-test is 76.60. the difference in meandifference between pre-test and post-test is 17.70. the table also shows the standard deviation and standard error of the mean. Standard deviation is the distribution of data in a sample to see how far or how close the data values are to the mean, while the standard error of the mean is a measure of the error value used to measure the level

of accuracy of the mean. In the pre-test, the standard deviation and standard error of the mean are 8.012 and 1.267. While in the post-test, the standard deviation and standard error of the mean are 7.078 and 1.119.

Table 3. Paired Samples Test

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	post-test – pre-test	17.70	5.932	.938	15.803	19.597	18.871	39	.000

Table 2 shows that the result of the t-test is 18.871. Meanwhile, the result of the t-table is 2.022. Therefore, the t-test result is higher than the t-table result. In that sense, it can be concluded that there is a significant difference between the pre-test and post-test in the form of an increase in the score on the post-test after treatment. It means that the alternative hypothesis in this study, "Using Venn Diagram Vocabulary Graphic Organizer has a significant effect on students' vocabulary mastery of the first-year students of SMP Negeri 23 Pekanbaru" is accepted and the null hypothesis is rejected.

Discussion

The results of this study revealed a significant improvement in students' vocabulary mastery after being taught using the Venn Diagram Vocabulary Graphic Organizer. The mean score increased from 58.90 in the pretest to 76.60 in the post-test. This 17.70-point increase indicates that the use of Venn diagrams effectively enhanced students' understanding and retention of vocabulary. The paired sample t-test further confirmed this improvement, showing a significance value of 0.000 ($a < 0.05$), which means the difference between pretest and post-test scores was statistically significant. These findings suggest that the Venn Diagram technique can be a powerful tool in helping students grasp vocabulary more deeply and meaningfully. The effectiveness of Venn diagrams can be attributed to their visual and comparative structure, which helps students organize new vocabulary by identifying similarities and differences. This method aligns with the cognitive theory of learning, which emphasizes that visual representation can aid in processing and retaining new information more effectively (Ansberry & Morgan, 2017; Hall & Strangman, 2018). Additionally, the collaborative nature of the activity—where students interviewed and compared their peers—fostered a more interactive and student-centered learning environment. This not only improved vocabulary mastery but also enhanced classroom dynamics and student motivation.

The findings of this study are consistent with previous research. For example, Malasari (2017) demonstrated that Venn diagrams improved reading comprehension by helping students identify similarities in descriptive texts. Maulana (2020) and Hastiwi & Wahyuni (2018) also reported significant improvements in vocabulary acquisition through graphic organizer techniques, further supporting the positive impact of visual tools in language learning. Despite its benefits, several challenges were noted during implementation, such as students' limited vocabulary knowledge and reliance on dictionaries. These challenges were addressed through repeated practice and teacher guidance. Nevertheless, the benefits of the Venn Diagram approach outweighed the difficulties, especially in creating a more engaging and structured vocabulary learning experience. Overall, this study reinforces the idea that visual learning strategies like the Venn Diagram can significantly enhance vocabulary mastery in junior high school students when applied consistently and with proper support.

CONCLUSION

This study aimed to find out the effect of Venn diagram vocabulary graphic organizer on vocabulary mastery of the first-year students of SMP Negeri 23 Pekanbaru. Based on the research findings and the results of the research data analysis that has been carried out, acquired significance value Sig. (2-tailed) < α, with α = 0.05 and Sig. (2-tailed) = 0.000 (0.000 < 0.05). Besides, the value of tcount > ttable which is 18.871 > 2.022. So, it means Ho is rejected and Ha is accepted. It means there is a significant difference between the mean of pre-test and post-test. So, it can be concluded that there is a significant effect of Venn diagram vocabulary graphic organizer on vocabulary mastery of the first-year students of SMP Negeri 23 Pekanbaru. In addition, the Venn Diagram Vocabulary Graphic Organizer can serve as a beneficial alternative strategy for vocabulary instruction, particularly in junior high school contexts where students often struggle with vocabulary acquisition. Its use is recommended as part of a student-centered and visually supported teaching approach.

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