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THE EFFECT OF USING CROSSWORD PUZZLE TOWARD VOCABULARY MASTERY AT EIGHTH GRADE STUDENTS AT SMP NEGERI 1 TELUK PINANG

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Abstract

This quasi-experimental research aimed to evaluate the effectiveness of incorporating crossword puzzles to enhance vocabulary mastery among eighth-grade students at SMP Negeri 1 Teluk Pinang. The study involved two groups: the experimental class (Class VIII.1) and the control class (Class VIII.2), each comprising 25 students selected through total sampling. The primary focus of this research was to identify whether a notable difference in vocabulary mastery emerged between students who received instruction through crossword puzzles and those taught without using crossword puzzles. Pre-tests and post-tests were administered to both groups to collect data before and after the intervention. The experimental class was exposed to crossword puzzle-based vocabulary instruction, while the control class received vocabulary instruction without the use of crossword puzzles. The collected data were analyzed using SPSS version 27, applying descriptive statistics, normality testing, and a paired sample t-test. The analysis revealed a marked improvement in the experimental class, where the average score rose from 37.40 (pre-test) to 61.80 (post-test). In contrast, the control class showed an increase from 41.00 to 56.60. The paired sample t-test produced a significance value (Sig. 2-tailed) of 0.000, which is below the 0.05 threshold, indicating statistical significance. Thus, the findings conclude that the use of crossword puzzles significantly contributes to improving students' vocabulary mastery.

INTRODUCTION

English is broadly acknowledged as a global language that facilitates international communication and plays a significant role in connecting people across countries. In the process of language learning, students are expected to master four essential communication skills, namely listening, speaking, reading, and writing. These skills are closely related and fundamentally supported by

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vocabulary knowledge. A strong vocabulary foundation enables learners to express ideas clearly and to comprehend messages effectively in both oral and written contexts.

In recent times, educational institutions have shown a growing interest in utilizing game-based strategies to help students expand their vocabulary skills. According to Amanda and Rianto (2018:2), educational games are specially designed media that provide specific learning experiences aimed at developing students' understanding and skills while motivating them to engage with the content actively. Wahyuningsih, Y., & Maretha, C (2024:235) also highlights that educational games, such as crossword puzzles, have proven effective in improving students' vocabulary acquisition. Such games encourage student engagement in mentally stimulating challenges, which contributes to making the vocabulary learning experience more effective and enjoyable.

Crossword puzzles have emerged as one of the most engaging tools within educational games used to support vocabulary development. As explained by Rostina and Rahayu (2022:26), these puzzles involve completing a grid by inserting words that intersect vertically and horizontally, which helps activate learners' memory and analytical thinking. Beyond being an enjoyable activity, crossword puzzles foster essential cognitive skills such as reasoning and problem-solving. Fikiah (2022:63) asserts that incorporating crossword puzzles into classroom instruction enhances student motivation and encourages greater interest in language learning, ultimately leading to improved academic outcomes. Supporting this claim, Saepuloh et al. (2022:136) found that frequent exposure to crossword puzzles significantly boosts students' vocabulary mastery and overall linguistic competence.

Despite the recognized significance of vocabulary mastery in language acquisition, numerous challenges still occur within the classroom context. Observations conducted with eighth-grade students at SMP Negeri 1 Teluk Pinang revealed several key issues. One of the main problems was the students' limited vocabulary knowledge, which hindered their ability to communicate effectively. In addition, the lack of diverse teaching approaches led to decreased student

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engagement and reduced the effectiveness of vocabulary learning. Another concern was students' unfamiliarity with parts of speech, which often resulted in incorrect word usage. Many students also encountered difficulties in grasping the meaning of vocabulary items, making it hard for them to understand reading materials. Furthermore, students showed weakness in recognizing antonyms and synonyms, which are crucial for vocabulary expansion and improving overall language proficiency.

Although vocabulary mastery is widely acknowledged as a vital aspect of language learning, various obstacles are still found in classroom environments. Based on field observations conducted with eighth-grade students at SMP Negeri 1 Teluk Pinang, several specific issues were discovered. First, students experienced low vocabulary acquisition, which resulted in difficulties in effective communication. Second, the limited variety of learning methods used made the learning process less interesting and less effective. Third, students often lacked an understanding of parts of speech, which affected their ability to use words correctly. Fourth, students struggled to comprehend the meanings of vocabulary, hindering their understanding of reading texts. Lastly, students had difficulty understanding antonyms and synonyms, which are important for enriching their vocabulary and improving their language skills.

Given these issues, it is crucial to explore innovative and engaging learning strategies toward students' vocabulary mastery. One promising approach involves incorporating crossword puzzles into English language instruction. Implementation of crossword puzzles among eighth-grade students at SMP Negeri 1 Teluk Pinang showed great potential to enhance their language skills and academic performance. By incorporating crossword puzzles into classroom activities, a more attractive and effective learning environment can be created, encouraging students' interest and motivation in learning new vocabulary.

Based on the issues identified during preliminary observations, the integration of crossword puzzles as a vocabulary learning tool had not been formally applied at SMP Negeri 1 Teluk Pinang. This study aims to support vocabulary mastery by utilizing crossword puzzles in classroom learning, creating

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a more dynamic and learner-focused experience. It is anticipated that the findings will enhance instructional practices and increase student engagement in vocabulary acquisition. Accordingly, the primary goal of this research is to evaluate whether crossword puzzles effectively improve the vocabulary mastery of eighth-grade students at SMP Negeri 1 Teluk Pinang.

LITERATURE RIVIEW

Educational Game

Educational games are learning tools designed to combine instructional content with engaging game elements to create interactive and effective learning experiences. According to Zeng, J., et al (2020:189), these games are developed with specific educational objectives in mind, increasing student motivation and participation by merging fun and pedagogy. Adipat, S., et al (2021:544) support this view, stating that educational games enhance students' understanding, skills, and knowledge by promoting active learning in both formal and informal settings. Sugianto, H (2023:22) highlights that educational games encourage active participation through challenges, feedback, and rewards, which improves knowledge retention and motivation. Anastasiadis, T., et al (2018:139) add that these games not only provide entertainment but also foster cognitive and social development, making them valuable tools for learning across disciplines.

According to Hamari, J., & Koivisto, J (2015:421), educational games are characterized by several features such as challenge, feedback, achievement systems, emotional engagement, and healthy competition. These features promote motivation, interaction, and deeper learning. The benefits of educational games include enhancing student motivation, increasing engagement, fostering interactive learning, supporting social skill development, and providing immediate feedback (Hamari, J & Koivisto, J, 2015:420). By integrating educational goals with enjoyable gameplay, educational games help learners stay motivated, improve their cognitive abilities, and facilitate more meaningful and lasting learning outcomes.

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Crossword Puzzle

A crossword puzzle is a vocabulary-based word game where students complete a grid of intersecting horizontal and vertical squares by solving clues. As described by Cahyo (2014:22), it is a memory-driven activity that encourages learners to search, remember, and match words or numbers. Beyond being an enjoyable task, crossword puzzles serve as interactive learning tools that support vocabulary development by prompting students to recall and apply words in meaningful contexts. Ningtiyas, D. N (2023:9) emphasizes that such activities strengthen both receptive and productive vocabulary knowledge. In addition to improving language proficiency, crossword puzzles stimulate cognitive functions like memory, reasoning, and problem-solving. This aligns with Vygotsky's sociocultural theory (as cited in Yildiz, T, 2025:416), which highlights that engaging in mediated learning activities such as puzzles can enhance students' mental agility and critical thinking.

In the classroom setting, crossword puzzles have proven effective as supplementary teaching aids, particularly in language instruction. According to Ramadhan, A., & Adawiyah, S. L. R (2020:60), vocabulary learning is most effective when students receive comprehensible input that slightly exceeds their current skill level. Crossword puzzles support this process by offering vocabulary within a structured and accessible format, which also increases student motivation and engagement. Several types of crossword puzzles are applicable in education, including oral puzzles (using verbal clues), picture puzzles (using images as hints), and object puzzles (where clues are embedded in classroom objects) as described by Widyasari (as cited in Anwar, Y. T., & Erfansyah, E, 2018:237). The teaching procedure generally involves three phases: pre-teaching (goal setting, materials preparation, rule explanation), whilst-teaching (distribution and guidance during puzzle completion), and post-teaching (discussion and answer review). When integrated properly into instruction, crossword puzzles not only make vocabulary learning enjoyable but also foster deeper cognitive involvement and meaningful student participation.

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Vocabulary Mastery

Vocabulary mastery refers to the learner's competence in understanding, remembering, and using a broad range of words appropriately in different contexts. It is a crucial element in second language acquisition, serving as the core that supports the development of listening, speaking, reading, and writing skills. As highlighted by Pratolo, B., & Hafizhah, R (2022:3), vocabulary is indispensable for effective communication, enabling students to formulate meaningful sentences and convey their ideas with clarity and precision. Similarly, Ramadhan, A., & Adawiyah, S. L. R (2020:61) argue that students with limited vocabulary knowledge often struggle to improve their overall language proficiency. Within foreign language education, students commonly face difficulties related to unfamiliar pronunciation, spelling, and word usage. Sinaga, H., et al (2020:52) suggest that interactive strategies like games and storytelling can enhance vocabulary acquisition by promoting engagement and contextual understanding. Mnemonic devices, such as acronyms or imagery (Risa S, F, 2020:15), and technology-based tools (Resmi, R., et al, 2023) also support vocabulary development by making learning more efficient and enjoyable.

According to Hatch, E., & Brown, C (1995:301), vocabulary is categorized into receptive vocabulary, which refers to words that learners understand when reading or listening, and productive vocabulary, which involves words that learners are able to recall and use appropriately in spoken or written communication. Vocabulary plays a fundamental role in the development of all four language skills and has a strong interdependence with grammar; without sufficient vocabulary and grammatical understanding, learners cannot effectively convey or interpret meaning (Alqahtani, M, 2015:21). In assessing vocabulary mastery, several indicators are commonly used. Djiwandono (as cited in Andani, S. T., & Anggraini, D, 2023:28) emphasizes the importance of recognizing word meanings as well as identifying synonyms and antonyms. Meanwhile, Trask, R. L., & Stockwell, P (2007:206) highlight mastery of parts

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of speech, including nouns, verbs, adjectives, and other grammatical categories, as a key indicator. These aspects play a crucial role in developing deeper comprehension and supporting learners' ability to express ideas with accuracy and fluency.

RESEARCH METHOD

This research adopted a quantitative methodology utilizing a quasi-experimental design to assess the impact of integrating crossword puzzles on students' vocabulary mastery. The study was carried out at SMP Negeri 1 Teluk Pinang and spanned from May 2nd to July 2nd, 2025. The target population included all eighth-grade students, totaling 50 learners across two classes. A total sampling technique was implemented, with Class VIII.1 designated as the experimental group and Class VIII.2 as the control group, each consisting of 25 students.

To obtain the required data, pre-tests and post-tests were administered to both the experimental and control groups. The assessment instrument consisted of 20 essay items aimed at measuring students' vocabulary mastery based on three key indicators: meaning (items 1–6), parts of speech (items 7–12), and synonym & antonym relationships (items 13–20). The instrument underwent expert validation to ensure its content validity. During the implementation, both groups first completed a pre-test, then received instructional treatment according to their group designation. The experimental group was taught using crossword puzzle-based learning, while the control group was instructed without the use of crossword puzzles. This procedure followed a non-equivalent control group design, as presented in Table 1.

Tabel 1: Non-equivalent control group design

Sampling	Group	Pre-Test	Treatment	Post-Test
Non Random	Experiment	Y1	T	Y2
Non Random	Control	Y1	T	Y2

Rukminingsih, G. A., & Latief, M. A. (2020:51)

The data obtained from the tests were processed using SPSS software version 27. To provide an overview of students' performance, descriptive statistical

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measures including the mean, standard deviation, minimum, and maximum values were employed. The Shapiro–Wilk test was applied to examine whether the data followed a normal distribution. After confirming the assumption of normality, a paired samples t test was carried out to evaluate the statistical significance of the differences between the pre-test and post-test scores within each group. A significance level of $p < 0.05$ was used to interpret the results.

FINDINGS AND DISCUSSION

The present study investigates the extent to which crossword puzzles contribute to enhancing students' vocabulary mastery. The findings are presented through descriptive statistics and paired sample t-tests to evaluate differences in student performance before and after treatment

a. Descriptive Statistics of Pre-Test and Post-Test Results

Table 2 presents the descriptive statistics of students' pre-test and post-test scores in both groups to offer a more detailed depiction of their performance prior to and following the intervention.

Table 2: Descriptive Statistics of Pre-test and Post-test Results in Experimental and Control Classes

	Experiment Class		Control Class	
	Pre-test	**Post-test**	**Pre-test**	**Post-test**
Maximum score	80	95	70	90
Minimum score	5	30	10	20
Mean	37.40	61.80	41.00	56.60
Median	35.00	60.00	45.00	60.00
Mode	15	50	45	60
Standard deviation	21.268	15.935	14.289	15.727

The statistical outcomes in the experimental class indicated a substantial enhancement in post-test performance when compared to the pre-test results. The maximum score in the post-test reached 95, an increase from 80 in the pre-test, reflecting better achievement of the highest score after the intervention. The lowest score rose from 5 in the pre test to 30 in the post test, suggesting

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progress among students with initially weaker performance. The mean score increased from 37.40 to 61.80, indicating an increase in the overall average ability of the students. Furthermore, the median rose from 35.00 to 60.00, while the mode shifted from 15 to 50, reinforcing the indication of a shift in student scores to higher values. The decrease in standard deviation from 21.268 to 15.935 indicates that the test results became more consistent and the variability of scores between students decreased after the treatment.

The control group also demonstrated gains in post-test outcomes, although the improvement was less pronounced than that observed in the experimental group. The highest score rose from 70 to 90, and the lowest increased from 10 to 20, suggesting progress among students with initially lower performance levels. The mean increased from 41.00 to 56.60, indicating the development of students' average ability. The median remained stable at 60.00, while the mode increased from 45 in the pre-test to 60 in the post-test. The standard deviation slightly increased from 14.289 to 15.727, indicating a relatively fixed or slightly increased variability of results among the control class students.

Paired Sample T-Test Analysis

In order to assess whether the improvement in vocabulary mastery among students in both the experimental and control groups was statistically significant, a paired samples t test was applied. Table 3 presents the results of this test for both groups.

Table 3: 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	**Pre & Post Exp**	-24.40000	13.09580	2.61916	-29.80568	-18.99432	-9.316	24	.000
Pair 2	**Pre & Post Con**	-15.60000	7.40495	1.48099	-18.65661	-12.54339	-10.533	24	.000

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The results of the paired samples t-test in the experimental group revealed a mean score difference of -24.40, with a standard deviation of 13.09580. The calculated t value was -9.316 with 24 degrees of freedom, and the significance level (Sig. 2 tailed) was 0.000, which is below the threshold of 0.05. This outcome confirms a statistically significant difference between the pre-test and post-test scores in the experimental group. This result indicates that the implementation of crossword puzzles had a meaningful effect on enhancing students' vocabulary mastery.

In the control group, the difference in mean scores between the pre-test and post-test was recorded at -15.60, accompanied by a standard deviation of 7.40495. The calculated t value reached -10.533 with 24 degrees of freedom, and the resulting significance level was 0.000, which falls below the 0.05 threshold.

Based on the findings from the paired samples t-test conducted in both the experimental and control groups, it can be inferred that the null hypothesis (H_0) is rejected in favor of the alternative hypothesis (H_a). This outcome suggests that incorporating crossword puzzles into vocabulary instruction significantly enhances students' vocabulary mastery, with a more pronounced effect observed in the experimental group compared to the control group.

CONCLUSION

Based on the analysis of the collected data, the researcher concludes that the implementation of crossword puzzles has a statistically significant effect on students' vocabulary mastery. The objective of this study was to evaluate the effectiveness of crossword puzzles as a learning medium for vocabulary mastery. The experimental group's mean score improved from 37.40 to 61.80, while the control group's mean score increased from 41.00 to 56.60. Although both groups experienced progress, the improvement was more substantial in the experimental group.

The results of the paired samples t test indicated that the calculated t-observe

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value (9.316) exceeded the critical t value (2.064), supporting the rejection of the null hypothesis (H_0) and acceptance of the alternative hypothesis (H_a). These findings confirm that integrating crossword puzzles into vocabulary instruction significantly enhances students' vocabulary mastery during the learning process.

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