

**Implementing Word Puzzle as Media for Teaching Vocabulary in SMP
Muhammadiyah Pangsidi**

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ABSTRACT

This study investigated the effectiveness of word puzzles as an innovative teaching medium in improving seventh-grade students' vocabulary mastery at SMP Muhammadiyah Pangsidi, Indonesia. The research was driven by the students' persistently low vocabulary proficiency, which stemmed from conventional, teacher-centered methods that lacked engagement and failed to promote active learning. Employing a quantitative pre-experimental design with a one-group pretest-posttest approach, the study involved 21 seventh-grade students selected through total sampling. Vocabulary mastery was assessed using a 50-item test consisting of 10 multiple-choice items and 40 word puzzle items covering syllabus-based topics (animals, school objects, occupations, parts of the body, and daily activities). Data collected from pretest and posttest were analyzed using descriptive statistics and the Wilcoxon Signed-Rank Test, given the non-normal distribution of the data. The findings demonstrated a statistically significant improvement in students' vocabulary mastery after the intervention. The mean score rose substantially from 16.33 in the pretest to 72.62 in the posttest. The Wilcoxon Signed-Rank Test produced a significance value of 0.001 ($p < 0.05$), leading to the rejection of the null hypothesis. These results confirm that word puzzles effectively enhance vocabulary acquisition by increasing student motivation, participation, and retention in an EFL context. The study recommends the integration of word puzzles as a practical, low-cost, and engaging alternative to traditional vocabulary instruction, particularly in junior high schools with limited resources.

Keywords: Word Puzzle; Vocabulary Mastery; Teaching Media

INTRODUCTION

English has become a global lingua franca that plays a pivotal role in international communication, education, technology, and economic opportunities. In Indonesia, English is taught as a foreign language (EFL) from elementary to senior high school levels and serves as one of the core subjects in the national curriculum. Mastery of English enables students to access global knowledge, participate in international discourse, and enhance their future career prospects. However, despite its importance, many Indonesian students still struggle to achieve adequate English proficiency, particularly in the foundational aspect of language learning.

Vocabulary is widely recognized as the cornerstone of language competence. Without sufficient vocabulary knowledge, learners face significant difficulties in developing the four language skills: listening, speaking, reading, and writing. As Wilkins (1972) famously noted, “Without grammar, very little can be conveyed; without vocabulary, nothing can be conveyed.” Strong vocabulary mastery allows students to comprehend texts, express ideas fluently, and communicate effectively. In junior high school contexts, building a robust vocabulary repertoire is especially critical as students transition from basic to more complex language use.

Despite its importance, vocabulary mastery among Indonesian junior high school students remains alarmingly low. Numerous studies have reported that students often experience difficulties in remembering, understanding, and using English words in context. This problem is largely attributed to traditional teaching methods that rely heavily on rote memorization, word lists, and teacher-centered instruction. Such conventional approaches tend to make learning monotonous, reduce student motivation, and limit active engagement during lessons.

The passive nature of traditional vocabulary instruction further exacerbates the issue. Students are frequently asked to memorize isolated words without meaningful context or interactive activities. As a result, they quickly forget new vocabulary and lack confidence when required to apply it in real communication. Observations from classroom practices and preliminary interviews with English teachers consistently reveal low student participation and minimal retention of vocabulary taught through these conventional methods.

To address these challenges, innovative and engaging teaching media are urgently needed. Game-based learning approaches have gained increasing attention in language education because they transform passive learning into active, enjoyable experiences. Among various game-based tools, word puzzles stand out as a promising medium. Word puzzles require students to actively search, recognize, spell, and associate words within a meaningful context, thereby promoting deeper cognitive processing and better long-term retention.

Word puzzles offer multiple pedagogical advantages. They stimulate both linguistic and spatial intelligence, enhance concentration, develop problem-solving skills, and

create a relaxed learning atmosphere that reduces anxiety. Moreover, word puzzles are low-cost, easy to implement, and adaptable to different proficiency levels and classroom conditions. They also encourage collaboration when used in pairs or groups, aligning well with the cooperative learning values prevalent in Indonesian educational settings.

This study was conducted at SMP Muhammadiyah Pangsidi, a junior high school that reflects typical challenges faced by many schools in semi-urban areas of South Sulawesi. During the researcher's teaching practicum, it was observed that seventh-grade students exhibited very low vocabulary mastery and minimal motivation in English lessons. Conventional teaching practices dominated the classroom, with limited use of interactive media. This situation created a clear research gap, as few studies have specifically examined the effectiveness of printed word puzzles in resource-limited junior high school environments in Indonesia. Therefore, the present study aims to investigate the effectiveness of implementing word puzzles as a teaching medium to improve seventh-grade students' vocabulary mastery at SMP Muhammadiyah Pangsidi. It is hoped that the findings will provide empirical evidence supporting the use of this innovative medium and offer practical recommendations for English teachers seeking more engaging vocabulary instruction strategies.

LITERATURE REVIEW

Vocabulary constitutes the fundamental building block of language proficiency. Nation (2013) defines vocabulary as knowledge of word forms, meanings, and uses in various contexts. Without adequate vocabulary, learners cannot effectively develop the four language skills. Schmitt (2020) further emphasizes that vocabulary size strongly correlates with overall language competence, as words serve as the primary carriers of meaning in communication. The importance of vocabulary in foreign language learning has long been acknowledged by scholars. Wilkins (1972) famously stated that "without grammar, very little can be conveyed; without vocabulary, nothing can be conveyed." This assertion highlights that vocabulary mastery is more critical than grammatical accuracy for successful communication, particularly for junior high school students who are still building foundational language abilities.

Despite its significance, vocabulary instruction in Indonesian EFL classrooms remains problematic. Conventional methods dominated by rote memorization and word lists often result in low retention and passive learning. Students frequently struggle to recall and apply vocabulary in meaningful contexts, leading to low motivation and poor performance (Simanungkalit & Tombeng, 2023). To overcome these limitations, innovative teaching media such as word puzzles have emerged as promising alternatives. Mahmoud and Omar (2022) found that word puzzles significantly enhance vocabulary retention in EFL classrooms by promoting active engagement and meaningful repetition. Their study demonstrated that puzzle-based

activities stimulate curiosity and strengthen long-term memory compared to traditional approaches.

Similar positive results were reported by Da Cruz (2023) in a classroom action research involving crossword puzzle games. The implementation of word puzzles led to substantial improvement in students' vocabulary scores across cycles, with increased motivation and participation observed throughout the learning process. These findings support the effectiveness of game-based media in transforming monotonous vocabulary lessons into enjoyable activities. Word puzzles offer multiple cognitive and affective benefits. According to Krashen (1985), such activities lower the affective filter by creating a relaxed and non-threatening learning environment, thereby facilitating better language acquisition. Additionally, Deci and Ryan (2000) explain that puzzle-based learning fulfills students' psychological needs for competence, autonomy, and relatedness, which in turn enhances intrinsic motivation.

From a theoretical perspective, the use of word puzzles is grounded in several established learning theories. Constructivist theory and Dual Coding Theory support the integration of visual-spatial and linguistic processing in puzzle activities, leading to deeper vocabulary internalization (Paivio, 1986; Piaget, 1976). These media also align with Sociocultural Theory by encouraging collaborative problem-solving among students (Vygotsky, as cited in Lantolf, 2006). Previous studies consistently show the potential of word puzzles, yet research gaps remain, particularly in Indonesian junior high school contexts with limited resources. While most existing studies focus on senior high school or university levels and digital formats (Chowdhury, 2024; Kurniawati, 2022), few have examined the implementation of printed word puzzles in rural or semi-urban junior high schools. This study aims to fill this gap by investigating the effectiveness of word puzzles at SMP Muhammadiyah Pangsidi.

METHOD

Design and Sample

This study employed a quantitative approach using a pre-experimental design, specifically the one-group pretest-posttest design. This design was selected to measure changes in students' vocabulary mastery before and after the implementation of word puzzles as a teaching medium. As noted by Sugiyono (2017), this design is appropriate for classroom-based research where the use of a control group is not feasible. The design is represented as $O_1 \times O_2$, where O_1 indicates the pretest, X the treatment, and O_2 the posttest. The research was conducted at SMP Muhammadiyah Pangsidi, South Sulawesi, Indonesia, during the 2025/2026 academic year. The population included all seventh-grade students at the school. Since there was only one class, total sampling was applied, resulting in 21 students as the research sample. The participants were aged between 12 and 13 years and had relatively similar prior exposure to English instruction.

Instruments and Procedures

The primary instrument used in this study was a vocabulary test developed by the researcher. The test consisted of 50 items, including 10 multiple-choice questions and 40 items presented in a word puzzle format. The content covered five topics based on the Grade VII English syllabus: animals, school objects, occupations, parts of the body, and daily activities. Each correct answer was scored 2 points, with a maximum possible score of 100. To ensure validity, the instrument was reviewed by two English lecturers for content validity. Reliability testing using Cronbach's Alpha yielded a coefficient of 0.82, indicating good internal consistency.

Data collection was conducted over six meetings within a four-week period. The first meeting was used to administer the pretest to assess students' initial vocabulary mastery. The following four meetings were dedicated to the treatment, during which word puzzle activities were integrated into vocabulary instruction. Each session included vocabulary introduction, pronunciation practice, puzzle-solving activities (both individual and group), and follow-up communicative tasks. The final meeting was allocated for the posttest, which used the same instrument as the pretest.

Data Analysis

Data analysis was carried out in two stages: descriptive and inferential statistics. Descriptive statistics, including mean, standard deviation, minimum, and maximum scores, were used to summarize students' vocabulary achievement before and after the treatment. Students' scores were further classified into five categories: Excellent (90–100), Good (80–89), Fair (70–79), Poor (60–69), and Very Poor (≤ 60), adapted from Arikunto (2021). Before conducting hypothesis testing, a normality test was performed using the Shapiro-Wilk test. Since the data were not normally distributed, a non-parametric statistical test was employed. The Wilcoxon Signed-Rank Test was used to determine whether there was a statistically significant difference between pretest and posttest scores at a significance level of 0.05. All statistical analyses were conducted using SPSS version 25.

RESULT AND DISCUSSION

The implementation of word puzzles as a teaching medium resulted in a remarkable improvement in students' vocabulary mastery. Before the treatment, all 21 seventh-grade students at SMP Muhammadiyah Pangsidi demonstrated extremely low vocabulary levels. The pretest results showed that every participant was categorized in the "Very Poor" level, indicating severe difficulties in recognizing and understanding basic English vocabulary. Table 1 presents the descriptive statistics of students' vocabulary scores. The pretest mean score was only 16.33 (SD = 11.59), with the lowest score of 0 and the highest of 40. In contrast, the posttest mean score increased dramatically to 72.62 (SD = 18.00), with scores ranging from 8 to 92. This substantial increase in mean score suggests a strong positive effect of the word puzzle intervention.

Table 1. Descriptive Statistics of Pretest and Posttest Scores

Statistics	Pretest	Posttest
N	21	21
Minimum	0	8
Maximum	40	92
Mean	16.33	72.62
Std. Deviation	11.59	18.00

The distribution of students' vocabulary mastery levels also shifted significantly after the treatment. In the pretest, 100% of students were in the Very Poor category. After the implementation of word puzzles, no students remained in the Very Poor category except for two, while the majority achieved Fair, Good, and Excellent levels.

Table 2. Frequency of Vocabulary Mastery Categories

Category	Pretest (f)	Pretest (%)	Posttest (f)	Posttest (%)
Excellent	0	0	4	19.05
Good	0	0	4	19.05
Fair	0	0	9	42.86
Poor	0	0	2	9.52
Very Poor	21	100	2	9.52

A normality test using the Shapiro-Wilk method revealed that the posttest data were not normally distributed ($p < 0.05$). Therefore, a non-parametric Wilcoxon Signed-Rank Test was conducted to examine the significance of the difference between pretest and posttest scores. The test produced a Z value of -3.923 with an asymptotic significance (2-tailed) of 0.001. The Wilcoxon Signed-Rank Test results confirmed a statistically significant improvement in students' vocabulary mastery after the treatment ($p = 0.001 < 0.05$). Out of 21 students, 20 showed positive rank improvements, while only one student showed no change. These findings clearly indicate that the use of word puzzles was highly effective in enhancing vocabulary acquisition. The detailed pretest and posttest individual scores further support the overall positive trend. Most students experienced score gains of more than 50 points, demonstrating consistent improvement across different ability levels after participating in the four treatment sessions using word puzzles.

The substantial increase in mean vocabulary scores from 16.33 to 72.62 confirms that word puzzles are an effective teaching medium for junior high school students. This finding aligns with previous studies by Mahmoud and Omar (2022) and Da Cruz (2023), who reported significant vocabulary gains through puzzle-based learning. The interactive nature of word puzzles encourages active engagement rather than passive memorization. The shift in mastery categories from 100% Very Poor in the pretest to a more balanced distribution in the posttest demonstrates not only statistical but also practical significance. Students moved from complete inability to moderate and high mastery levels, indicating that word puzzles successfully helped them internalize word forms, meanings, and spellings more effectively.

The effectiveness of word puzzles can be explained through cognitive and affective perspectives. As supported by Dual Coding Theory (Paivio, 1986) and Self-Determination Theory (Deci & Ryan, 2000), puzzles combine visual-spatial and linguistic processing while fulfilling students' needs for competence and enjoyment. This dual benefit likely contributed to better retention and motivation observed during the treatment. The results also address the research gap identified in the literature. While most previous studies focused on senior high school or digital puzzles (Chowdhury, 2024), this study proves that printed word puzzles remain highly effective in resource-limited junior high school settings such as SMP Muhammadiyah Pangsidi. This finding is particularly valuable for teachers in similar contexts across Indonesia.

The Wilcoxon Signed-Rank Test result ($p = 0.001$) provides strong empirical evidence rejecting the null hypothesis. The consistent improvement across 20 out of 21 students suggests that the positive outcome was not due to chance but rather the systematic implementation of word puzzle activities. However, two students showed relatively low improvement. This may be attributed to individual factors such as attendance, learning motivation, or external variables. Future studies should incorporate qualitative data to better understand such individual differences and design more differentiated instruction.

The findings of this study strengthen the theoretical foundation for game-based learning in EFL vocabulary instruction. Word puzzles not only improve test scores but also create a more enjoyable classroom atmosphere, which is crucial for adolescent learners who often find traditional methods demotivating (Kurniawati, 2022). The implementation of word puzzles as a teaching medium has proven to be a practical, low-cost, and highly effective strategy for enhancing vocabulary mastery. English teachers are encouraged to adopt this approach, while schools should provide support for innovative media development to improve English learning outcomes in junior high schools.

CONCLUSION

This study concludes that the implementation of word puzzles as a teaching medium significantly improves seventh-grade students' vocabulary mastery at SMP Muhammadiyah Pangsidi. The pre-experimental design with one-group pretest-posttest revealed a substantial increase in the mean vocabulary score from 16.33 in the pretest to 72.62 in the posttest. Furthermore, the Wilcoxon Signed-Rank Test confirmed a statistically significant difference ($p = 0.001 < 0.05$), leading to the acceptance of the alternative hypothesis. These results provide strong empirical evidence that word puzzles are an effective innovative medium for vocabulary instruction in EFL junior high school contexts. The findings demonstrate that word puzzles not only enhance students' ability to recognize, spell, and understand English vocabulary but also transform the learning atmosphere into a more engaging and enjoyable experience. The dramatic shift in mastery categories from 100% Very Poor in the pretest to a majority achieving Fair, Good, and Excellent

levels in the posttest highlights the practical effectiveness of this low-cost, easily implemented teaching strategy, particularly in schools with limited resources. This research contributes to the growing body of knowledge on game-based learning in Indonesian EFL settings and offers valuable practical implications for English teachers. It is recommended that teachers adopt word puzzles as a regular component of vocabulary lessons, while schools provide necessary support for innovative teaching media. Future researchers are encouraged to conduct experimental studies with control groups and explore the long-term effects of word puzzle implementation across different school levels and regions.

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