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# The Use of Team Games Tournament (TGT) trough Crossword Puzzle to Improve Vocabulary Mastery of Eighth Grade Students at SMPN 19 Mataram

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**Abstract**

Vocabulary mastery is fundamental to the development of the four core language skills—listening, speaking, reading, and writing—yet many learners struggle due to limited exposure and practice. This study investigates the effectiveness of integrating Team Games Tournament (TGT), a cooperative learning strategy that fosters active participation and peer support, with crossword puzzles, a game-based learning tool that promotes vocabulary recall and contextual understanding, in improving the vocabulary mastery of eighth-grade students at SMPN 19 Mataram. This research fills a gap in the literature by combining TGT and crossword puzzles, which have mostly been studiedd separately in previous reserach. Using a True-experimental control and experimental group pre-test–post-test design, 60 students were randomly selected from two classes. Both group were given a vocabulary test before and after the treatment. Over two sessions (2×45 minutes), students in the experimental group participated in TGT activities combined with crossword puzzles, while the control group taught using conventional method. Results showed that the experimental group improved from a mean score of 41.17 on the pre-test to 80.00 on the post-test, while the control group improved from 39.20 to 66.33. an independent sample t-test revealed a statistically significant difference in post-test score between the two groups ($t(58) = 5.388$, $p < 0.05$), confirming that TGT combined with crossword puzzles was more effective than conventional methods in improving vocabulary mastery. These findings suggest practical implications for teaching: teachers are encouraged to adopt TGT combined with crossword puzzles as a low-cost yet highly engaging strategy to enhance vocabulary mastery. However, the study acknowledges certain limitations, particularly the short treatment duration (only two sessions), which may have influenced the extent of vocabulary retention.

**Keywords:** Team Games Tournament, Crossword Puzzle, Descriptive Adjective, Daily Activity Verb.

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## INTRODUCTION

English has become a global lingua franca, serving as the primary medium of communication in education, science, business, and technology (Crystal, 2003). To communicate effectively, learners must master the four language skills—listening, speaking, reading, and writing. However, these skills cannot be fully developed without sufficient vocabulary knowledge. As Wilkins (1972) famously stated, "Without grammar, little can be conveyed; without vocabulary, nothing can be conveyed."

Vocabulary plays a crucial role in language acquisition, since it provides the foundation for comprehension and production in both oral and written communication (Alqahtani, 2015). Yet in the context of English as a Foreign Language (EFL) in Indonesia, vocabulary mastery remains a major challenge. Reports from the Indonesian Ministry of Education and Culture (Kemendikbud, 2019) show that students' scores in the national exam are consistently lowest in reading comprehension and vocabulary-related items. Similarly, Fitriani et al. (2020) found that many Indonesian junior high school students have limited vocabulary knowledge due to minimal exposure to English outside the classroom. This issue has also been highlighted by Melani (2016), who emphasized that weak vocabulary mastery negatively affects students' reading comprehension. This indicates a significant gap in students' vocabulary acquisition that must be addressed with more engaging and effective instructional methods.

One promising approach is cooperative learning, which allows students to work collaboratively to achieve shared goals. In the Indonesian context, Farmasari (2021) reported that cooperative learning strategies improved students' vocabulary performance, while Hidayatullah (2024) noted its positive effect on learner engagement. Among various models, Team Games Tournament (TGT) has been highlighted for its unique combination of academic content and competitive games (Slavin, 2014). From a sociocultural perspective, TGT aligns with Vygotsky's Zone of Proximal Development (ZPD), which posits that learners can achieve higher levels of understanding when supported by peers or teachers. In TGT, students collaborate and scaffold each other's learning, enabling them to master vocabulary more effectively within their ZPD.

In addition, game-based activities such as crossword puzzles can enhance vocabulary retention and recall. Consistent with this, Safitri (2022) demonstrated that game-based learning increases students' motivation and active participation. Crossword puzzles stimulate retrieval practice, encourage contextual use of words, and reduce student anxiety by turning learning into a more enjoyable process (Al-Jarf, 2007). When integrated into cooperative learning frameworks like TGT, crossword puzzles not only provide cognitive benefits but also sustain student motivation and active participation.

Previous studies have shown that both TGT and crossword puzzles can be effective when used separately (Suryani, 2021; Wahyuni, 2022). More recently, Farmasari (2023) explored the integration of digital tools in vocabulary instruction, suggesting opportunities for combining traditional and technology-based methods. However, very few studies have explored their combined use, especially in Indonesian EFL classrooms. This study seeks to fill that gap by integrating TGT with crossword puzzles as a more engaging and collaborative strategy for vocabulary

learning. Therefore, it explicitly addresses the research question: "Does the use of Team Games Tournament (TGT) combined with crossword puzzles significantly improve students' vocabulary mastery?.

## RESEARCH METHOD

### Research Design

This study employed a true experimental design using a pretest–posttest control group model. In this design, participants were randomly assigned into two groups: an experimental class, which received the treatment using the Team Games Tournament (TGT) method integrated with crossword puzzles, and a control class, which was taught using conventional instructional techniques without TGT or crossword puzzle integration. Both groups were given the same pre-test to measure their initial vocabulary mastery and the same post-test after the treatment to assess improvement. This design allowed for direct comparison between the experimental and control groups, enabling the researcher to determine whether the observed improvement was a result of the treatment rather than other external factors.

### Source of Data

The data sources in this study consisted of primary data collected from two randomly selected classes of eighth-grade students at SMPN 19 Mataram in the 2024/2025 academic year. One class served as the experimental group, receiving instruction through TGT integrated with crossword puzzles, while the other class served as the control group, receiving instruction through traditional teaching methods. Both classes were similar in terms of English proficiency, as determined by previous school assessments, ensuring a fair comparison.

Additionally, a third class—Class C—was involved exclusively for conducting the validity and reliability tests of the research instrument. This class shared similar characteristics with the experimental and control groups but was not included in the main treatment. Data from Class C were used to evaluate and refine the vocabulary test before administering it to the main research groups, ensuring that the instrument was both valid and reliable for measuring students' mastery of descriptive adjectives.

### Population and Sampling

The population of this research consisted of all eighth-grade students of SMPN 19 Mataram in the academic year 2024/2025, totaling 90 students distributed across three parallel classes. The researcher employed a true experimental design with random sampling to determine the subjects of the study. Random sampling was chosen because it gives every class an equal chance to be selected, thereby minimizing selection bias and ensuring fairness in the sample distribution. As a result of this process, two classes were randomly selected to participate in the study. One class, consisting of 30 students, was assigned as the experimental group, while another class of 30 students was assigned as the control group. Both groups were administered a pre-test before the treatment to confirm their initial comparability and to establish baseline data.

### Research Instrument and validation

The main research instrument was a vocabulary test focusing on descriptive adjectives, which was the target material in this study. The test consisted of 10 multiple-choice items and 10 fill-in-the-blank items. The items were constructed based on the syllabus of the eighth grade and were reviewed by two experts in English

education to establish content validity. After expert validation, the instrument was tried out in another class to examine its construct validity through item analysis. The results of the trial showed that two fill-in-the-blank items had low item-total correlation values (r = 0.11 and r = 0.18), which were below the acceptable threshold of 0.30; therefore, these items were removed. The remaining items demonstrated satisfactory validity. In addition, the reliability of the instrument was measured using Cronbach's Alpha, which yielded a coefficient of 0.82. This result indicated that the test had high internal consistency and was reliable to be used as the main instrument of this study.

**Procedures**

In the experimental group, the treatment was implemented through the integration of Team Games Tournament (TGT) and crossword puzzles. Students were first divided into small heterogeneous teams of four to five members to encourage collaboration among learners of different proficiency levels. During the tournament phase, representatives from each team competed by answering vocabulary questions, and points were awarded for every correct response. Team rankings were updated after each round, creating a competitive yet supportive classroom atmosphere. Following the tournament, students worked together to solve crossword puzzles designed with clues based on descriptive adjectives, such as "She has long _ hair" (→ black) or "Opposite of short" (→ tall). This activity allowed students to practice retrieval of vocabulary in context while maintaining engagement through a game-like format. In contrast, the control group received vocabulary instruction through conventional methods such as teacher explanation and individual written exercises without cooperative or puzzle-based activities.

**Data Collection**

Data collection was carried out in several stages to ensure the accuracy and credibility of the findings. The first stage was instrument development and testing: the 20-item vocabulary test was constructed based on the curriculum and piloted in Class C to examine item validity (Pearson Product Moment) and reliability (Cronbach's Alpha = 0.719). The second stage was the pre-test, administered to both randomly selected classes — one as the experimental group and one as the control group — to measure initial vocabulary mastery and ensure equivalence between the groups before the treatment. The third stage was the treatment, in which the experimental group was taught using the Team Games Tournament (TGT) method integrated with crossword puzzles over two sessions (2×45 minutes each), while the control group received the same vocabulary material through conventional teaching methods without TGT or crossword puzzles. The final stage was the post-test, where both groups were given the same test as in the pre-test to measure vocabulary improvement. All pre-test and post-test scores were then coded and statistically analyzed to test the research hypothesis.

**Data Analysis**

The data analysis in this study consisted of several steps, beginning with the evaluation of the research instrument and followed by statistical testing of the research hypothesis. First, item validity was examined using the Pearson Product Moment correlation formula to determine the correlation between each item score and the total test score. The pilot test, conducted with Class C (N = 32), used an r-table value of approximately 0.349 at the 0.05 significance level. Items with an r-count greater than r-table were considered valid, while items with an r-count lower than r-

table were revised or discarded. Second, reliability was measured using Cronbach's Alpha, yielding a coefficient of 0.719, which indicated acceptable internal consistency for the vocabulary test. This ensured that the instrument produced stable and consistent results.

Following the instrument validation stage, the main research data (pre-test and post-test scores from the experimental and control groups) were analyzed using both descriptive and inferential statistics. Descriptive statistics, including mean, standard deviation, minimum, and maximum scores, were used to describe students' vocabulary mastery before and after the treatment. Prior to hypothesis testing, the assumptions for parametric analysis were checked: First, Normality was tested using the Shapiro–Wilk test, with a significance value above 0.05 indicating normally distributed data. Second, Homogeneity of variance was tested using Levene's Test, with a significance value above 0.05 indicating equal variances between groups. Since the data met both assumptions, an independent sample t-test was applied to compare the mean post-test scores between the experimental and control groups, while a paired sample t-test was used within each group to determine the significance of improvement from pre-test to post-test. The level of significance was set at 0.05, meaning that if the p-value was less than 0.05, the null hypothesis ($H_0$) would be rejected in favor of the alternative hypothesis ($H_1$).

## FINDINGS AND DISCUSSION

### Findings

To address the research objectives, the researcher collected data on students' vocabulary mastery before and after being taught using the Team Games Tournament (TGT) method integrated with crossword puzzles. The vocabulary tests administered in the pre-test and post-test were used to answer the first research question: Is there a significant effect of using Team Games Tournament combined with crossword puzzles on students' vocabulary mastery? Meanwhile, the comparison between the experimental and control groups' post-test results was conducted to answer the second research question: Is there a significant difference in vocabulary mastery between students taught using TGT with crossword puzzles and those taught using conventional methods? The findings are presented in chart bellow.

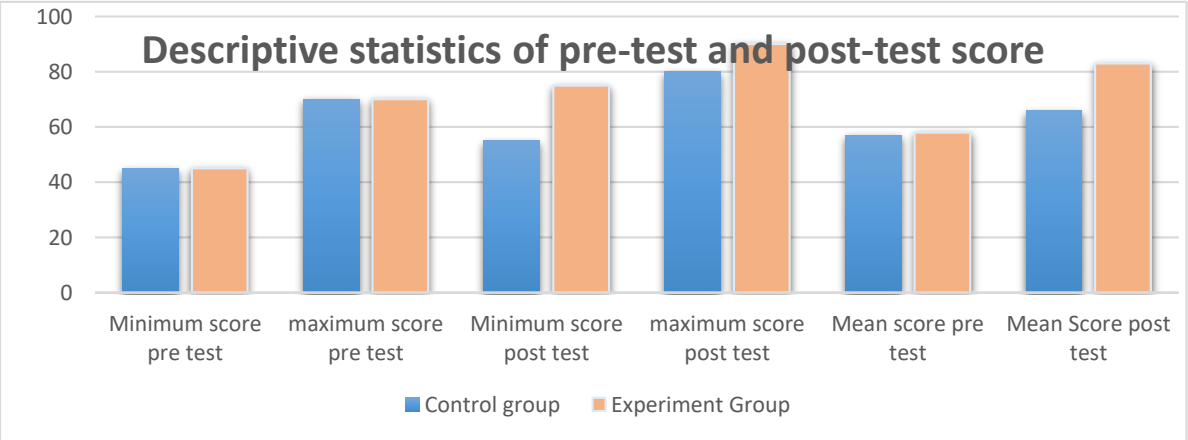


**Figure 1.**

According to the chart above, both the experimental and control groups started with relatively similar vocabulary mastery levels in the pre-test. The experimental group had a minimum score of 45 and a maximum score of 70, with a mean score of 58.33, while the control group had the same minimum and maximum scores (45 and 70) with a slightly lower mean of 57.67. After the treatment, the post-test results revealed a significant improvement in the experimental group, whose minimum score increased to 75 and maximum score reached 95, resulting in a higher mean of 83.00. In contrast, the control group showed only modest improvement, with a minimum score of 55 and maximum score of 80, yielding a mean of 66.00. These differences indicate that the experimental group experienced greater improvement in all three statistical measures—minimum, maximum, and mean—compared to the control group, demonstrating the stronger impact of Team Games Tournament combined with crossword puzzles on students' vocabulary mastery.

**Normality Test**

Before conducting parametric statistical tests, the data were tested for normality to ensure that they met the assumptions of normal distribution. The Shapiro–Wilk test was applied to both pre-test and post-test scores for the experimental and control groups. A significance value (Sig.) greater than 0.05 indicates that the data are normally distributed.

**Tests of Normality**

| | | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | kelas | Statistic | df | Sig. | Statistic | df | Sig. |
| hasil | pretest A (control) | .186 | 30 | .009 | .940 | 30 | .089 |
| | posttest A (control) | .189 | 30 | .008 | .947 | 30 | .142 |
| | pretest B (eksperiment) | .153 | 30 | .073 | .954 | 30 | .217 |
| | posttest B (eksperiment) | .155 | 30 | .063 | .962 | 30 | .354 |

a. Lilliefors Significance Correction

**Figure 2.**

As shown in Figure 2, all significance values are greater than 0.05, indicating that the data for both the experimental and control groups, in both pre-test and post-test, are normally distributed. Therefore, the assumption of normality for conducting parametric tests was fulfilled.

**The Homogeneity of the data:**

After confirming that the data were normally distributed, a homogeneity of variance test was conducted to determine whether the variance between the experimental and control groups was equal. This test was performed using Levene's Test for Equality of Variances. A significance value (Sig.) greater than 0.05 indicates that the data variance is homogeneous.

**Tests of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| hasil | Based on Mean | .440 | 1 | 58 | .510 |
| | Based on Median | .738 | 1 | 58 | .394 |
| | Based on Median and with adjusted df | .738 | 1 | 57.099 | .394 |
| | Based on trimmed mean | .421 | 1 | 58 | .519 |

**Figure 3.**

As shown in Figure 3, the significance value for the pre-test is 0.643 and for the post-test is 0.264, both greater than 0.05. This indicates that the variances of the experimental and control groups are homogeneous in both pre-test and post-test results. Therefore, the assumption of homogeneity required for parametric testing was met.

**Independent sample T test**

The independent samples t-test was conducted to determine whether there was a statistically significant difference in vocabulary mastery between the experimental group and the control group after the treatment. Before conducting the test, the assumption of equal variances was examined using Levene's Test for Equality of Variances. Since the significance value (Sig.) was greater than 0.05, the Equal variances assumed row was used for interpreting the t-test results.

**Table 1.**

| Levene's Test (F) | Levene's Sig | t | df | Sig. (2-tailed) | Mean difference | Error Difference |
|---|---|---|---|---|---|---|
| **0.44** | 0.51 | 5.388 | 58.0 | 0.001 | -13.66667 | 2.53633 |

As shown in Table 1, Levene's test yielded a Sig. value of 0.510 (> 0.05), indicating that the variances between the two groups were equal. Therefore, the results from the Equal variances assumed row were interpreted. The t-test result showed t(58) = 5.388, with a significance value of 0.001 (< 0.05), indicating a statistically significant difference in post-test scores between the experimental and control groups. The mean difference of -13.67 points suggests that the experimental group outperformed the control group by approximately 13.67 points in vocabulary mastery. The negative sign occurs because the calculation was based on (Control – Experimental), meaning the experimental group achieved higher scores. Furthermore, the 95% confidence interval for the mean difference ranged from -18.74 to -8.59, which does not include zero, providing further evidence of a significant difference in vocabulary mastery after the treatment.

Beyond statistical significance, it is important to measure the magnitude of the treatment effect, since a significant p-value alone does not provide information about how meaningful the effect is in practice. For this reason, Cohen's d was calculated to determine the effect size of the treatment. The result yielded d = 1.2, which, based on Cohen's (1988) classification, represents a large effect size (0.2 = small, 0.5 = medium, 0.8 or above = large).

The hypothesis testing in this study aimed to determine whether the use of Team Games Tournament (TGT) integrated with crossword puzzles had a significant effect on students' vocabulary mastery. The null hypothesis ($H_0$) stated that there is no significant difference in vocabulary mastery between students taught using TGT with crossword puzzles and those taught using conventional methods. The alternative hypothesis ($H_1$) stated that there is a significant difference between the two groups. Based on the results of the Independent Sample T-Test (t = 5.388, df = 58, Sig. (2-tailed) = 0.001), the p-value is less than the significance level of 0.05. This means that $H_0$ is rejected and $H_1$ is accepted. In other words, there is a statistically significant difference in post-test scores between the experimental group and the control group. The negative mean difference (-13.67) obtained from the SPSS output indicates that the experimental group scored higher than the control group, because

the difference was calculated as Control – Experimental. This confirms that the application of TGT with crossword puzzles not only improved students' vocabulary mastery but did so to a significantly greater extent compared to traditional teaching methods.

**Qualitative findings**

Classroom observations showed that students in the experimental group were more active and motivated than those in the control group. During the TGT tournament, students were excited to compete, often discussing answers with their teammates and cheering when they scored points. The competitive element made the learning process lively and fun, which encouraged students to recall and use new vocabulary. In the crossword puzzle activity, students worked together to solve clues such as "She has long _ hair." They discussed possible answers and sometimes debated before agreeing, which helped them practice vocabulary in context while also learning from one another. Many students even said the activity was "fun" and "different from usual exercises."

On the other hand, not all students benefited equally. In some groups, more confident students dominated the discussion while quieter students contributed less. This imbalance limited the learning opportunities for some members and may explain why a few students showed little or no improvement in their post-test scores. These findings suggest that although TGT and crossword puzzles can increase motivation and vocabulary mastery, teachers still need to monitor group work carefully to ensure that all students are actively involved in the learning

The findings of this study align with previous research that has emphasized the benefits of cooperative learning and game-based activities in improving vocabulary mastery (Slavin, 2014; Al-Jarf, 2007; Suryani, 2021). The substantial improvement in post-test scores demonstrates that the integration of TGT and crossword puzzles created a learning environment that was both engaging and effective. TGT encouraged collaboration and positive competition, motivating students to actively participate, while crossword puzzles reinforced vocabulary retention through retrieval practice and contextual application.

Furthermore, the competitive yet cooperative nature of TGT ensured that all students, regardless of their initial proficiency level, contributed to group success. This is consistent with Johnson and Johnson's (1994) theory of positive interdependence, where students work together to achieve a common goal. The enjoyable learning atmosphere also reduced anxiety, increased motivation, and fostered a supportive peer-learning environment. These factors combined to produce significant gains in vocabulary mastery, particularly in the area of descriptive adjectives.

## CONCLUSION

This study concludes that the integration of Team Games Tournament (TGT) and crossword puzzles is an effective strategy to significantly improve students' vocabulary mastery. The findings show not only a statistically significant improvement in the experimental group but also a large effect size, meaning that the impact of this strategy is both meaningful and practical. Classroom observations further confirmed that the use of TGT and crossword puzzles created a more

engaging, interactive, and enjoyable learning atmosphere compared to conventional methods. Beyond vocabulary learning, the implications of this research extend to broader educational goals. The collaborative nature of TGT trains students to practice teamwork, communication, and problem-solving—skills that are essential for the 21st century and the digital era. The crossword puzzle activity also fosters critical thinking and creativity by encouraging students to recall and apply vocabulary in different contexts.

This study has demonstrated the effectiveness of integrating Team Games Tournament (TGT) with crossword puzzles in enhancing vocabulary mastery among eighth-grade students. However, several limitations should be acknowledged. First, the treatment was conducted in only two sessions (2 × 45 minutes), which may not have been enough to fully measure long-term vocabulary retention. Second, the study relied on paper-based TGT and crossword puzzles, without the use of digital applications that might have provided more flexibility and interactivity.

Based on the findings, several suggestions can be made. Teachers are encouraged to apply TGT combined with crossword puzzles regularly as an alternative strategy for teaching vocabulary, as it increases student motivation and engagement. To improve effectiveness, teachers should also monitor group dynamics carefully and ensure that every student participates actively. In addition, the use of digital applications such as Kahoot, Quizizz, or online crossword puzzle generators is recommended to complement the paper-based activities, making learning more interactive and accessible both inside and outside the classroom. Finally, future researchers are suggested to conduct longer-term studies with larger and more diverse samples in order to explore the broader impact of this method on vocabulary mastery and other language skills.

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