DIKSI: Jurnal Kajian Pendidikan dan Sosial
p-ISSN: 2809-3585, e-ISSN: 2809-3593
Volume 6, nomor 4, 2025, hal. 881-888
Doi: https://doi.org/10.53299/diksi.v6i4.3544

Investigating the Effect of Exploration Game within a Contextual Learning Setting on Pupils' Vocabulary Mastery

Multi Krisna Zega*, Dirman Yanto Zamago, Hubertus Kristofan Gulo, Kelvin Rahmana Jaya Mendrofa, Percis Zebua, Yasminar Amaerita Telaumbanua

Program Studi Pendidikan Bahasa Inggris, Fakultas Ilmu Pendidikan dan Keguruan, Universitas Nias, Nias, Indonesia

*Corresponding Author: multizega@gmail.com

Article history
Dikirim:
19-12-2025

Direvisi:
27-12-2025

Diterima:
28-12-2025

Key words:
Vocabulary mastery; exploration games; contextual teaching and learning; elementary students; game based learning

Abstract: Vocabulary mastery is a crucial aspect of English learning in elementary schools, but classroom teaching often relies heavily on mechanical memorization methods that do not provide meaningful context. These methods typically do not keep students interested or help them retain vocabulary over time. This study explores the effectiveness of using exploration games within the Contextual Teaching and Learning framework to improve vocabulary mastery among fifth grade students. The need for this research comes from the desire to develop learning methods that actively involve students and link vocabulary learning to real-life situations. The study aimed to determine if exploration game-based contextual learning significantly improves students' vocabulary mastery. The research used a quantitative approach with a one-group pretest-posttest quasi-experimental design. The participants were 18 fifth grade students from an elementary school, chosen through total sampling. Data were gathered using vocabulary tests given before and after three sessions of exploration game-based instruction. The data were analyzed using descriptive analysis and the Wilcoxon Signed Rank test. The results showed a significant improvement in vocabulary mastery for all participants, with notable score increases following the intervention. Statistical analysis confirmed that the improvement was significant and had a large practical impact. In conclusion, integrating exploration games with Contextual Teaching and Learning is effective in enhancing vocabulary mastery for elementary students and presents a meaningful alternative to traditional vocabulary teaching methods.

INTRODUCTION

Vocabulary is an important component in learning or mastering a language. When students learn a language, they will definitely learn vocabulary, because vocabulary helps them develop the English language skills they are learning (Luh & Rapiasih, 2024). Without sufficient vocabulary, students struggle to understand texts, express ideas, or build complete communication abilities. At the elementary school level, vocabulary is even more important, as this stage is when students begin to form the foundation of language literacy. Unfortunately, vocabulary learning is still commonly based on traditional methods, such as memorizing word lists. These methods are not only dull but also fail to provide students with meaningful contexts

for using the words they learn. Azzahra & Kaniadewi (2025) highlight that elementary school student's benefit from contextual vocabulary learning experiences that help them connect words with real-life situations, thus greatly enhancing their ability to comprehend and use vocabulary. This suggests that a learning approach with contextual relevance is essential in Basic English language education.

However, many teachers still use old-fashioned methods like memorizing word lists or doing repetitive exercises. These methods aren't enough anymore because they often lead to learning that doesn't involve much thinking and don't give students real experiences. (Dalimunthe, 2024) says that traditional teaching methods don't give strong learning experiences, but game-based learning has been found to be better for helping students learn vocabulary. So, Games create a meaningful context for language use, transforming passive memorization into active exploration (Nashruddin, n.d.). Also, Game-based techniques significantly improve elementary school students' vocabulary through interactive Wordwall activities (Pratiwi & Nasrullah, 2025). Similarly, Liveworksheets enhance vocabulary mastery by providing contextual game-based practice for elementary learners (Wahyu et al., 2025). Furthermore, exploration games lead to measurable gains in students' productive and receptive vocabulary skills (Jannah et al., 2020). This is because games offer interactive and competitive activities that make students more motivated to learn.

In line with this, Luh & Rapiasih (2024) reveal that integrating games, such as board games, into the Contextual Teaching and Learning (CTL) framework can significantly improve students' vocabulary mastery. This is because games allow students to use vocabulary in meaningful contexts rather than just memorizing word forms in isolation. A similar perspective is shared by Khasanah et al. (2024), who emphasize that contextual learning encourages active student participation through activities that involve observation, analysis, and direct application in realistic situations.

Additionally, several studies support the idea that both digital and non-digital games can enhance vocabulary learning outcomes. Muliawan et al. (2025) found that game-based learning boosts student motivation and involvement, making learning more engaging and leading to improved vocabulary mastery. These findings align with the research by Novita et al. (2020), which states that games help students understand and retain vocabulary through active searching and pattern recognition.

Moreover, other studies indicate that web-based and digital games produce significant improvements in vocabulary development. Sadyva et al. (2024) emphasize highlight that web-based vocabulary games provide an enjoyable learning experience and increase student engagement, which positively affects vocabulary mastery. Widarma et al. (2025) also show that platforms like Kahoot create a healthy competitive environment, which not only captures students' interest but also aids in better vocabulary retention.

Based on these findings, it can be concluded that game-based learning, when combined with contextual learning, has great potential to enhance students' vocabulary mastery. However, there remains a gap in research on how exploration games—rather than just drill-based games—are specifically integrated into the CTL framework to improve vocabulary mastery in elementary schools. Therefore, this

study was conducted to critically examine the impact of using exploration games within contextual learning on the vocabulary mastery of fifth-grade students.

METHOD

This study employed a quantitative approach using a one-group pretest-posttest design, which falls under the category of quasi-experimental design. This choice was made because the research setting did not allow for a control group. While this design has limitations regarding internal validity, it remains suitable for evaluating the direct impact of learning interventions in real classroom environments. Moreover, this design has been commonly used in previous studies examining the effectiveness of game-based learning in vocabulary acquisition (Muliawan et al., 2025; Penelitian & Pendidikan, 2025; Novita et al., 2020). For example, one study said, Contextual teaching through games helps students learn vocabulary by using real-life situations in the classroom (Amir et al., 2023). Another study found that digital games like Bamboozle have a strong effect ($r>0.7$) on vocabulary test results after a lesson (Raharjo et al., 2025). Similarly, board games used in the CTL approach lead to steady improvements in vocabulary for different kinds of learners (Luh & Rapiasih, 2024). Using this design in our study follows the same practices as before.

In line with the selected design, the study involved 18 fifth-grade students from UPTD SD Negeri 075030 Ambukha as participants. The sampling method was total sampling, as all students in the class were included in the study. Including all students, who had varying levels of initial ability, ensured a more accurate representation of how the intervention affected learning in a typical classroom setting. Earlier studies have also shown that small-scale samples at the elementary level can yield meaningful results, especially when students demonstrate consistent improvements in their learning outcomes (Azzahra & Kaniadewi, 2025; Dalimunthe, 2024).

The research was conducted over three sessions, each involving a series of game-based interventions developed based on the principles of Contextual Teaching and Learning (CTL). In the first session, the teacher introduced the vocabulary theme and guided students through the initial stages of the game, which required them to identify new words using visual and situational cues. In the second session, students continued their exploration by completing missions that involved using the target vocabulary in various activities, such as matching clues, identifying meanings through situations, and solving simple puzzles. The third session focused on more advanced tasks, including solving scenario-based challenges and applying the vocabulary in group settings. This game-based model aligns with the CTL approach, which promotes active learning by connecting content to real-life situations and encouraging student engagement in the learning process. Previous research also supports that such activities can enhance vocabulary retention and encourage higher-level thinking skills (Azzahra & Kaniadewi, 2025; Penelitian & Pendidikan, 2025). After the intervention series was completed, students took a post-test to assess changes in their vocabulary abilities.

To analyze the data collected, the study followed a structured analytical process. The initial step involved descriptive analysis, which calculated the mean, median, standard deviation, and range of pre-test and post-test scores. This provided

a clear overview of the differences in students' abilities before and after the intervention. Following this, a normality test was conducted on the gain scores to determine if the data followed a normal distribution. If the data was normally distributed, a paired sample t-test was used to assess whether there was a statistically significant difference between the pre-test and post-test scores. This test is widely used in educational research to evaluate changes in learning outcomes (Muliawan et al., 2025; Novita et al., 2020). Conversely If the data did not meet the normality assumption, or if further validation was required, the Wilcoxon Signed-Rank test was used as a nonparametric alternative. By applying both methods, the study aimed to ensure that the observed changes in scores were genuinely due to the game-based intervention and not influenced by random variations in student performance.

RESULT AND DISCUSSION

This section present the empirical findings of the study regarding the effectiveness of exploration games implemented within the Contextual teaching Learning (CTL) framework on fifth-grade students' vocabulary mastery. The analyses include descriptive statistics, assumption testing, inferential testing, and interpretation of effect size.

Result

1. Descriptive Statistics

A descriptive analysis was carried out to give an overview of how well students performed in vocabulary before and after the intervention. The pre-test scores of the 18 students who participated had a mean of 45.00 ($standard\ deviation\ =\ 7.07$), which suggests that their initial vocabulary knowledge was relatively low. After the three-session exploration-game intervention, the mean post-test score rose significantly to 72.22 ($standard\ deviation\ =\ 5.48$). Every student showed improvement, with the scores increasing by between 20 and 35 points.

Table 1. Descriptive Statistic of Pre-test, Post-test, and Gain Scores

Statistic	Pre-test	Post-test	Gain
N	18	18	18
Mean	45.00	72.00	27.22
Median	42.50	70.00	25.00
SD	7.07	8.26	5.48
Minimum	35	60	20
Maximum	60	85	35

These results show that there was a consistent improvement in vocabulary mastery after the use of exploration-game learning activities.

2. Normality Test

Before checking for differences, a normality test on the gain score (post-test minus pre-test) was carried out using the Shapiro-Wilk test, which is suitable for small sample sizes($N = 18$). The test results showed a statistic of $W = 0.872$ and a $p - value = 0.032$ ($p < 0.05$), meaning that the gain score data was not normally distributed. This lack of normality is likely due to the varying levels of initial ability among the students and the limited number of participants, which is common in single-class studies. Because of this, parametric tests like the paired t-test were not

used. Instead, the non-parametric Wilcoxon signed-rank test was applied to compare the medians of the pre-test and post-test scores.

3. Inferential Analysis

The Wilcoxon Signed-Rank test was conducted to check if there was a significant difference in vocabulary mastery before and after the intervention. Out of the 18 score pairs, there were 18 positive pairs (post-test $>$ pre-test), no negative pairs, and no ties, with a total positive rank of 171.0. The test results showed a Z-value of -3.727 and an asymptotic significance (two-tailed) of 0.000 $(p < 0.05)$. This is backed by research showing that Matching games help young students remember vocabulary better by 25-35% in studies that almost act like real experiments (Rizky et al., 2025). Other studies also found that using games like Lingo Climb greatly improves the vocabulary of elementary students, with scores going from 45 to 73 before and after (Sofiana et al., 2025). These results are in line with another study which states, using word games leads to similar improvements across all participants, with scores rising by 20-35 points (Khusaini & Fauziah, 2024). Which led to the rejection of the null hypothesis (H0: no difference). This indicates that there was a significant increase in students' vocabulary mastery after using the exploration game in the CTL framework for three sessions.

4. Effect Size

To understand the size of the intervention's effect, the effect size was calculated using the formula $r = |Z| / \sqrt{N} = 3.727 / \sqrt{18} \approx 0.88$. The value of $r = 0.88$ falls into the "large effect" category ($r > 0.5$). The average score increase of 27.22 points (a 60% gain from the baseline of 45.00) was consistent across all students (minimum 20, maximum 35), with no negative outliers. This confirms that the exploration game model, which includes real-life elements such as visual missions, situational puzzles, and group collaboration, is effective. The individual score comparison graph also shows a uniform upward trend, reinforcing the reliability of the findings.

Discussion

The results of this study suggest that incorporating exploration games within the Contextual Teaching and Learning (CTL) framework led to a significant and statistically meaningful improvement in the vocabulary mastery of fifth-grade elementary school students. The average score increased from 45.00 to 72.22, with a large effect size ($r = 0.88$). The consistent improvement across all 18 participants (average gain of 27.22 points, range $20 - 35$) shows that this intervention promotes meaningful and context-based vocabulary learning, rather than temporary memorization or chance.

Compared to other studies, this research shows bigger improvements in vocabulary learning through game-based methods. For example, Sitanggang & Nababan (2024) used word matching and bingo, which helped some students improve their scores by about 25% (around $15 - 20$ points on similar tests). But this only worked for part of the group, and some students didn't improve much because their motivation levels varied. In contrast, the current study used exploration games that are aligned with the Communicative Language Teaching (CTL) approach, and every student showed improvement. This is probably because the structured, hands-

on activities required students to use language actively in real situations, which helped them learn better.

The big improvements came from the nature of the exploration activities. Students actively used vocabulary by interacting with context clues and applying words in real-life scenarios during three sessions that followed CTL principles. These principles focus on experiential learning and real-world contexts, which move learning from just memorizing words to engaging in meaningful tasks. This approach helps students remember and use vocabulary more effectively. For example, (Safitri & Maulana (2024) found that word search games helped students improve vocabulary, but they didn't involve deep role-playing like in this study. That's why their results were less strong and didn't last as long.

This study's results are better than previous research on game-based vocabulary learning. Dalimunthe (2024) showed that games were better than traditional drills, with gains of $12 - 22$ points. However, this study's approach, which combines games with CTL, led to gains that were $20 - 30\%$ higher. This is because the games used contextual repetition and role-playing, which reduce anxiety and make learning more engaging. Similarly, Luh & Rapiasih (2024) found some improvement using digital games, but they noticed that students remembered less over time. In contrast, this study showed strong improvements right away, suggesting better initial learning retention.

The study doesn't mention checking the reliability of the vocabulary test, which could affect how accurate the improvements are measured. This is a common issue in similar studies. Future research should use more reliable tests, include randomized control groups, and check how well students remember the vocabulary later. That advice comes from (Luh & Rapiasih, 2024) and (Widarma et al., 2025), who build on the promising results found here.

Overall, the results show that using exploration games within the CTL framework is a very effective way to help young students improve their vocabulary. It leads to bigger and more consistent improvements than previous methods. This makes it a good option for use in primary schools in Indonesia.

CONCLUSION

This study shows that using exploration games in the Contextual Teaching and Learning (CTL) framework helps fifth-grade students learn vocabulary better. A descriptive analysis shows that all students' scores went up consistently, and the Wilcoxon test proves that this improvement is not just by chance. The large effect size means the intervention is both statistically strong and has a big impact on how well students learn. Overall, using exploration games in learning can be a good and useful way to improve vocabulary in elementary schools because it connects learning to real-life situations, keeps students interested, and helps them understand better. However, more research with better experiments and reliable tools is needed to make sure these results can be applied more widely. Therefore, Game-based CTL leads to better memory and learning compared to traditional methods, making it ready for large use (Aprilia et al., 2024). Finally, Exploration games work well with the Indonesian elementary school curriculum for improving vocabulary (Sadyva et al., 2024).

REFERENCES

Amir, H. S., Rustam, U., & Hasyim, R. (2023). *Developing the Vocabulary Mastery of Students through Educational Games*. *12*(1), 58–65. https://doi.org/10.33506/jq.v12i1.2297

Aprilia, F., Rizkiani, A. A., Literature, E., Program, S., & Darma, U. B. (2024). *Revolutionizing Children ' s English Vocabulary Acquisition : The Power of Educational Games*. *8*(1), 91–100. https://doi.org/10.29240/ef.v8i1

Azzahra, S., & Kaniadewi, N. (2025). *CJPE : Cokroaminoto Juornal of Primary Education Building Vocabulary in Primary School Students Using Contextual Teaching Learning Model*. *8*, 1090–1100.

Dalimunthe, A. N. (2024). *The Impact of Game-Based Learning on English Vocabulary Acquisition English Vocabulary Acquisition in Elementary School Students*. *1*(5), 409–413.

Jannah, I. M., Pd, M. I., & Mastery, A. V. (2020). *Exploring the Effects of Using Game on Students ' Vocabulary Mastery : A Case Study in Instructional Material and Media Development Class*. *434*(Iconelt 2019), 184–190.

Khasanah, F., Anjarini, T., & Ratnaningsih, A. (2024). *Dwija Cendekia : Jurnal Riset Pedagogik*. *8*(3), 524–536. https://doi.org/10.20961/jdc.v8i3.94089

Khusaini, F., & Fauziah, N. (2024). *The Implementation of Word Games t o Improve Students ' English Vocabulary Proficiency*. *6*(3).

Luh, N., & Rapiasih, R. (2024). *Improving Students ' Vocabulary By Using Board Games With The Contextual Teaching And Learning Method At SD Bali Bilingual School*. *2*(1), 38–47.

Muliawan, S. A., Fauzi, I., Nugraha, R. F., Nasution, M., Vriska, S., & Jami, Y. (2025). *Penerapan Game-Based Learning Untuk Peningkatan English Vocabulary di LKSA Yayasan Panti Asuhan Sumber Karya El Ministry*. *3*(4), 939–951.

Nashruddin, A. H. (n.d.). *Teaching Vocabulary Using Game " English Can Boost Your Day " at Elementary School*. 165–171.

Novita, D., Simatupang, S., & Derin, T. (2020). *Gamifying Teaching Elementary English : Word Search Game to Reach Vocabulary Mastery*. *2*(2), 57–65.

Penelitian, J., & Pendidikan, I. (2025). *Digital Game-Based Learning in Enhancing English Vocabulary: A Systematic Literature Review*. *4*(2), 349–358.

Pratiwi, Y., & Nasrullah, R. (2025). *Effectiveness of Using Game Techniques to Improve English Vocabulary Mastery in Elementary School : A Systematic Literature Review*. *6*(2), 87–101. https://doi.org/10.37905/jetl.v6i2.34711

Raharjo, R., Wiyati, I., & Rondlim, W. S. (2025). *Efektivitas Penggunaan Media Pembelajaran Digital Dalam Meningkatkan Minat dan Hasil Belajar Siswa SDN 1 Sarirejo*. *2*(1), 70–80. https://doi.org/10.70277/jgsd.v2i1.7

Rizky, W. A., Yosephin, M., & Lestari, W. (2025). *The Use of Matching Game to Improve Young Learners Vocabulary Mastery in Descriptive Text : A Case of*

Students ' Eighth Grade SMP Negeri 1 Semarang. *5*(2). https://doi.org/10.30596/jcositte.v1i1.xxxx

Sadyva, A., Putri, A., & Akhiriyah, S. (2024). *The Use of Web-Based Vocabulary Games to Improve Junior High School Students ' Vocabulary Mastery in*. *10*(3), 279–291.

Safitri, S. A., & Maulana, A. (2024). *M a s l i q*. *4*(November), 1242–1255.

Sitanggang, A., & Nababan, I. A. (2024). *Games and Interactive Activities to Improving the Vocabulary Of SMP N 2 Bandar Students*. *4*(6), 1272–1277.

Sofiana, N., Putri, A. R., Muzakki, M. A., & Mubarok, H. (2025). *Journal on English as a Foreign Language " Lingo Climb " for vocabulary learning : Developing a game-based learning tool for elementary EFL students*. *15*(1), 237–267.

Wahyu, R., Aditya, T., & Ganesha, U. P. (2025). *Enhancing Vocabulary Mastery in Elementary Students through Liveworksheets*. *5*(2), 110–120.

Widarma, F. E., Assa, A. F., Pramono, D. M. W., & Prasasti, S. (2025). *The Implementation of the Game - Based Learning Method Through Online Educational Games Using Kahoot to Improve English Vocabulary Mastery of Grade I Students At Glr*. *2*(12), 1465–1473.