THE EFFECT OF THE CHAIN WORD GAME ON SENIOR HIGH SCHOOL STUDENTS' VOCABULARY ACHIEVEMENT: A QUASI EXPERIMENTAL STUDY EFL LEARNING

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Abstract

The objective of this research project is to investigate the effect of using the Chain Word Game on students' vocabulary achievement. Vocabulary is a fundamental aspect of language learning that supports listening, speaking, reading, and writing skills. The Chain Word Game is considered an engaging instructional strategy that can enhance students' vocabulary retention, motivation, and active participation. This research was conducted among the eleventh-grade students of SMAN 3 Brebes in the 2024/2025 academic year. The population of this study consisted of 350 students, and a purposive sampling technique was used to select 72 students, divided into experimental and control groups. A quasi-experimental design with pre-test and post-test was employed. The research instrument was a vocabulary test focusing on four aspects: word meaning, word use, word combination, and word grammar. Data were analysed using SPSS version 26. The results indicated that the experimental group's mean vocabulary score significantly increased from 52.03 to 81.67 after being taught using the Chain Word Game, while the control group's mean score rose from 51.11 to 59.78. The Independent Samples T-Test showed a significance value of 0.000 ($p < 0.05$), indicating a statistically significant difference between the two groups. These findings demonstrate that the Chain Word Game positively affects students' vocabulary achievement. In conclusion, the Chain Word Game is an effective instructional strategy for enhancing students' vocabulary mastery. Teachers are encouraged to implement interactive and game-based techniques, such as the Chain Word Game, to improve vocabulary learning outcomes and foster a more engaging classroom environment.

Key words: Chain Word Game, Vocabulary Achievement, EFL Learning

1 INTRODUCTION

Vocabulary is recognized as one of the most fundamental components in mastering a language, as it forms the essential foundation for comprehending and articulating ideas proficiently (Wei, 2021). An extensive vocabulary assists learners in understanding the meaning of both spoken and written materials, participating in meaningful dialogues, and expressing thoughts with clarity. In the context of English as a Foreign Language (EFL) learning, vocabulary knowledge directly influences the four essential skills of listening, speaking, reading, and writing (Qian & Lin, 2019). The role of feedback and the selection of appropriate instructional strategies are crucial in ensuring both vocabulary growth and long-term retention. Nindya and Taufiqulloh (2024) emphasize that incorporating innovative tools and interactive learning methods in EFL classrooms can significantly foster learner engagement, improve language accuracy, and support self-assessment skills, which are essential for sustainable language acquisition. This perspective underscores the importance of creating classroom environments that actively involve students in practicing and applying vocabulary in meaningful contexts, rather than relying solely on rote memorization (Tayaa, 2022).

Conventional vocabulary teaching techniques, which are often dominated by rote memorization and translation activities, have been shown to be inadequate in promoting long-term retention and the active use of new vocabulary. Dunlosky et al. (2013) found that repeated exposure to target words four or more times in focused lessons significantly improved recall accuracy compared to when words were encountered only twice. McKeown (2019) supports this finding by asserting that vocabulary instruction must address word form, meaning, and usage, and should incorporate both receptive and productive knowledge. Panmei and Waluyo (2022) further emphasize that vocabulary learning should go beyond memorizing word lists by using more engaging and participatory methodologies. In the Indonesian educational setting, the shortcomings of traditional methods are especially evident, as students often have insufficient vocabulary proficiency, which hinders their reading comprehension, writing fluency, and oral communication skills.

Based on the researcher's observations during the Pengenalan Lapangan Persekolahan (PLP) at SMAN 3 Brebes from November to December 2024, vocabulary mastery among 11th grade students continues to be a significant challenge. Limited vocabulary knowledge adversely affects their reading comprehension, writing ability, and speaking fluency. Many students struggle to retain and apply newly learned vocabulary due to the minimal use of English in their daily lives. Additionally, the use of less engaging teaching approaches such as rote memorization without contextual application often results in a rapid decline in retention levels. These findings are consistent with Nation's (2013) claim that a lack of sufficient vocabulary size can significantly limit learners' ability to both comprehend and produce language effectively. They also align with Alqahtani's (2015) view that without engaging, context-based vocabulary instruction, EFL learners' retention levels tend to remain low. Consequently, these conditions highlight the urgent need for the implementation of more interactive and learner-centered teaching methods to enhance vocabulary achievement.

One approach that can increase the enjoyment and effectiveness of vocabulary acquisition is the application of gamification in the classroom. Gamification refers to the integration of game based elements such as competition, scoring systems, and rewards into educational activities to enhance engagement and make learning more interactive (Deterding et al., 2011). In the context of English language learning, games can transform repetitive vocabulary exercises into stimulating and engaging activities. Students are often more motivated when the learning process resembles play (Yudintseva, 2015). Research shows that the incorporation of games in language instruction not only boosts motivation but also improves concentration and vocabulary retention (Vnucko & Klimova, 2023). Tabassum and Naveed (2024) further contend that games should not be considered mere time fillers but powerful tools for fostering authentic classroom interactions and enhancing vocabulary acquisition. Among various vocabulary games, the Chain Word Game has proven effective in promoting vocabulary growth by encouraging creativity, critical thinking, and peer engagement. In this game, students form a sequence of words where each new word begins with the last letter of the previous one (e.g., dog → goat → tiger), which supports both vocabulary retention and active usage.

Several studies have explored the potential of the Chain Word Game in improving vocabulary mastery. Ashary Muhammad and Manurung (n.d., 2021) conducted library research reviewing five studies and concluded that the Chain Word Game supports vocabulary building and recall, although their analysis was purely conceptual without empirical classroom data. Amaliyah (2020) reported a significant improvement in vocabulary scores following Chain Word Game implementation, although the absence of a control group limited the study's generalizability. Musiman et al. (n.d., 2025) conducted a pre-experimental study in an inclusive classroom and recorded a mean score improvement from 66.4 to 79.5, along with high levels of student approval. Similarly, Setyawati (2024) carried out a quasi-experimental study comparing Crossword Puzzle and Chain Word Game and found that students taught using games outperformed those using traditional methods. However, the combination of multiple game types and the junior high school context made it difficult to isolate the effects of the Chain Word Game in senior high schools. Lastly, Listyowati et al. (n.d., 2023) conducted Classroom Action Research, showing gradual improvement in vocabulary mastery over two cycles, although their findings were descriptive and context-specific. While these studies present promising results, most focus on general vocabulary and lack attention to academic or subject-specific terms. Moreover, many relied on non-experimental or pre-experimental designs with limited generalizability. To address these gaps, the present research investigates the use of Chain Word Game for teaching thematic vocabulary related to Science (IPA) and Social Studies (IPS) at the senior high school level, using a quasi-experimental design to produce more robust and applicable findings for cross-curricular EFL learning.

Vocabulary is a fundamental component in mastering English, as it underpins comprehension, communication, and all four language skills (Wei, 2021; Qian & Lin, 2019). In EFL contexts, effective vocabulary learning requires interactive strategies and meaningful practice rather than rote memorization (Tayaa, 2022; Nindya & Taufiqulloh, 2024). Traditional methods such as memorizing word lists often fail to promote long-term retention (Dunlosky et al., 2013; McKeown, 2019; Panmei & Waluyo, 2022), and this challenge is evident in Indonesia, where limited vocabulary proficiency hinders students' reading, writing, and speaking skills. Gamification, such as the Chain Word Game, can make vocabulary learning more engaging by incorporating competition, rewards, and peer interaction (Deterding et al., 2011; Yudintseva, 2015; Vnucko & Klimova, 2023; Tabassum & Naveed, 2024). This game requires students to link words where each begins with the last letter of the previous one (e.g., dog → goat → tiger), promoting retention, creativity, and critical thinking. Previous studies show the Chain Word Game improves vocabulary scores and motivation (Amaliyah, 2020; Musiman et al., 2025; Setyawati, 2024;

Listyowati et al., 2023; Ashary Muhammad & Manurung, 2021), though most focus on general vocabulary and use non-experimental designs. Few have applied it to thematic academic vocabulary

2 METHODOLOGY

This study employed a quantitative approach with a quasi-experimental design to investigate the effect of the Chain Word Game on students' vocabulary achievement in an EFL context. A pre-test–post-test control group design was used, as it allows comparison of learning outcomes between two groups under controlled conditions while accommodating the constraints of an existing school setting where random assignment is not feasible (Hastjarjo, 2019). The research was conducted at SMAN 3 Brebes during the 2024/2025 academic year, involving 72 eleventh-grade students selected through purposive sampling based on comparable academic abilities and class sizes. Two intact classes participated: Class XI-F1 served as the experimental group (n = 36), and Class XI-F3 as the control group (n = 36). Both groups received instruction on vocabulary related to descriptive texts with scientific themes; however, the experimental group was taught using the Chain Word Game, while the control group followed conventional teacher center methods.

The primary instrument was a vocabulary test multiple choice, that assessed four aspects of vocabulary mastery: word meaning, word use, word combination and word grammar. Content validity was established through expert judgment by two university lecturers and one experienced English teacher, ensuring alignment with the Kurikulum Merdeka. Reliability, produced a coefficient of 0.70, indicating acceptable internal consistency.

The research was carried out in three main stages:

1. **Pre-test** – Both groups completed the vocabulary test prior to the intervention to determine their baseline vocabulary achievement.
2. **Treatment** – Conducted over six instructional sessions. The experimental group engaged in Chain Word Game activities in small groups, forming word chains based on given topics, with each new word starting with the last letter of the previous one. This process aimed to reinforce vocabulary recall, producing new vocabulary, usage, and spelling in a gamified setting. The control group was taught vocabulary through conventional explanation, textbook-based exercises, and teacher-guided activities without gamification.
3. **Post-test** – Both groups completed the same vocabulary test after the treatment to measure improvement.

Table.1 *Normality Test*

Variable	N	Sig.
Pre-test Control	36	.182
Post-test Control	36	.105
Pre-test Experimental	36	.109
Post-test Experimental	36	.145

The Shapiro–Wilk test was employed to determine whether the pre-test and post-test scores in both the experimental and control groups were normally distributed, as each group consisted of fewer than 50 participants. The results showed that all data were normally distributed, with significance values greater than 0.05 for each test (pre-test control = 0.182; post-test control = 0.105; pre-test experimental = 0.109; post-test experimental = 0.145). Since the normality assumption was met, parametric tests could be applied; therefore, t-tests were used to examine the effect of the Chain Word Game on students' vocabulary achievement.

***Table.2** Homogeneity Test*

	Levene Statistic	Sig.
Based on Mean	1,374	,245
Based on Median	1,315	,255
Based on Median and with adjusted df	1,315	,256
Based on trimmed mean	1,327	,253

The experimental and control groups' post-test scores were analyzed using Levene's Test for Equality of Variances to determine whether the assumption of homogeneity was met. This assumption is essential when applying the independent samples t-test, as it ensures that differences in mean scores are not influenced by unequal score dispersion between groups. The results showed that the significance values for all methods were greater than 0.05 (based on mean = 0.245; based on median = 0.255; based on median and with adjusted df = 0.256; based on trimmed mean = 0.253), indicating that the data satisfied the homogeneity requirement. Therefore, the use of the independent samples t-test to compare post-test scores between the two groups was appropriate.

3 RESULTS

The study findings based on descriptive statistics, homogeneity and normality tests, and hypothesis testing using the independent samples t-test and the paired samples t-test are presented in this section. In the pre-test, the experimental group obtained scores ranging from 40.00 to 67.00, with a mean of 52.03, while the control group's scores ranged from 40.00 to 67.00, with a mean of 51.11. These results indicate that the initial vocabulary mastery of both groups was relatively similar prior to treatment. After the intervention, which applied the Chain Word Game in the experimental group and conventional teaching in the control group, the post-test scores increased. The experimental group's post-test scores ranged from 73.00 to 93.00, with a mean of 81.67, while the control group's scores ranged from 47.00 to 73.00, with a mean of 59.78. The greater improvement in the experimental group suggests that the Chain Word Game was more effective in enhancing students' mastery of word meaning, usage, combination, and grammatical form.

The Shapiro Wilk test was used to assess whether the pre-test and post-test scores in both groups were normally distributed, as each group consisted of fewer than 50 participants. The results showed that all significance values were above 0.05 (pre-test control = 0.182; post-test control = 0.105; pre-test experimental = 0.109; post-test experimental = 0.145), indicating that the data were normally distributed. Since the normality assumption was met, parametric tests were used to analyze the data.

The experimental and control groups' post-test scores were then compared to determine variance equality using Levene's Test for Equality of Variances. The results indicated that the assumption of homogeneity was met, with significance values greater than 0.05 for all methods (based on mean = 0.245; based on median = 0.255; based on median and with adjusted df = 0.256; based on trimmed mean = 0.253). This confirmed that the independent samples t-test was appropriate to compare post-test scores between the two groups, and that the observed differences could be more confidently attributed to the treatment rather than to differences in score dispersion.

3.1 Paired Sample T-test

To evaluate the effectiveness of the Chain Word Game, pre-test and post-test scores within each group were compared using a paired sample t-test. This method is suitable for detecting significant changes when the same participants are measured twice. In the experimental group, the mean score increased by 29.64 points, from 52.03 in the pre-test to 81.67 in the post-test. The control group showed a smaller improvement of 8.67 points, from 51.11 to 59.78. The increase in the experimental group's vocabulary achievement was statistically significant, as indicated by the significance value (Sig. 2-tailed) of 0.000 (< 0.05). Based on these results, the alternative hypothesis was accepted, confirming that the Chain Word Game had a significant positive effect on students' vocabulary achievement.

***Table 3.** Paired Sample T-test.*

Test	N	Mean	Std. Dev.
Pre-test	36	52.03	12,407
Post-test	36	81,67	15,588

3.2 Independent Sample T-test

The post-test scores of the experimental group, which was taught using the Chain Word Game, and the control group, which was taught using conventional methods, were compared using the independent samples t-test. The experimental group achieved a higher mean score (81.67, SD = 15.056) than the control group (59.78, SD = 12.407) after the treatment. Levene's Test confirmed that the assumption of equal variances was met, with a significance value greater than 0.05. The independent samples t-test result showed a statistically significant difference between the two groups, indicating that the experimental group outperformed the control group in vocabulary mastery. Based on these findings, the alternative hypothesis was accepted, demonstrating that the Chain Word Game significantly improved students' vocabulary achievement.

Table 4. *Independent SampleT-test.*

Group	N	Mean	Std. Dev.
Control	36	59,78	12,407
Experimental	36	81,67	15,056

4 CONCLUSION

This study examined the effect of the Chain Word Game on enhancing vocabulary mastery among eleventh grade students at SMAN 3 Brebes. The findings revealed a significant positive impact: students in the experimental group achieved substantially higher post-test scores than those in the control group (81.67 compared to 59.78). Statistical analysis supported these results, with the independent samples t-test ($p = 0.000$) indicating a significant difference between groups, and the paired samples t-test confirming notable improvement within the experimental group. The most prominent gains were observed in word meaning, word usage, word combination, and word grammar, aligning with Cognitive Learning Theory, which emphasizes the benefits of interactive and engaging activities in promoting deeper learning and retention. The Chain Word Game proved particularly effective in motivating students, encouraging active participation, and fostering peer interaction, which in turn facilitated more effective vocabulary recall and application. Classroom observations also indicated increased student engagement and reduced reluctance to use English during lessons. Although the study was limited to two existing classes at a single institution and conducted over a relatively short intervention period, the results suggest that the Chain Word Game is a practical and effective strategy for EFL students with limited vocabulary knowledge. Future research is recommended to explore its implementation with different types of vocabulary, over longer periods, and in various educational contexts to maximize its potential benefits.

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REFERENCES

[1] Alqahtani, M. (2015). The importance of vocabulary in language learning and how to be taught. International Journal of Teaching and Education, III(3), 21–34. https://doi.org/10.20472/te.2015.3.3.002

[2] Amaliyah, D. (2020). The Effect of Using Word Chain Game on Students' Vocabulary Mastery at Seventh Grade of SMP Ma'arif 1 Ponorogo. Iain Ponorogo.A.A. Author, *Book Title*. City/State: Publisher, Year of Publication.

[3] Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). Gamification: Toward a definition. In *Proceedings of the 2011 CHI Workshop on Gamification* (pp. 12–15). ACM. https://doi.org/10.1145/2181037.2181040 .

[4] Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013). *Improving students' learning with effective learning techniques: Promising directions from cognitive and educational psychology.* Psychological Science in the Public Interest, **14**(1), 4–58. https://doi.org/10.1177/1529100612453266.

[5] McKeown, M. G. (2019). Effective vocabulary instruction fosters knowing words, using words, and understanding how words work. Language, Speech, and Hearing Services in Schools, 50(4), 466–476. https://doi.org/10.1044/2019_LSHSS-VOIA-18-0126

[6] Muhammad, R. A., Manurung, K., & Wahyudin, W. (2021**).** *A study on the implementation of Word Chain Game in teaching vocabulary mastery. e-Journal of ELTS (English Language Teaching Society), 9*(3), 223–234. https://doi.org/10.22487/elts.v9i3.1878

[7] Musiman, M., Vernanda, G., & Fitriani, D. (2025). *Improving English vocabulary through Word Chain Game in an inclusive school in Bandar Lampung. ELT-Lectura, 12*(1), 37–50. https://doi.org/10.31849/elt-lectura.v12i1.23143

[8] Nation, I. S. P. (2013). *Learning Vocabulary in Another Language* (2nd ed.). Cambridge University Press. https://doi.org/10.1017/CBO9781139858656

[9] Panmei, B., & Waluyo, B. (2022). The pedagogical use of gamification in English vocabulary training and learning in higher education. Education Sciences, 13(1), 24. https://doi.org/10.3390/educsci13010024

[10] Qian, D. D., & Lin, Y. (2019). Vocabulary sizes and contributions to four language skills. *Language Learning Journal*, **47**(3), 317–327. https://doi.org/10.1080/09571736.2018.1481985

[11] Setyawati, A. (2024). *The Effectiveness of Crossword Puzzle and Word Chain Game in Teaching Vocabulary at MTs Al-Islam Joresan, Ponorogo*. IAIN Ponorogo.

[12] TAYAA, K. (2022). *The Use of Language Learning Strategies to Develop Learners' Vocabulary Knowledge and Writing Proficiency The Case of Third Year Students of English in Written Expression*. Université de Batna 2. Retrieved from http://repository.univ-batna2.dz/xxxx

[13] Vnucko, G., & Klimova, B. (2023). Exploring the potential of digital game-based vocabulary learning: A systematic review. *Systems*, *11*(2), 57. https://doi.org/10.3390/systems11020057

[14] Wei, L. (2021). Teaching academic vocabulary to English language learners (ELLs). Theory & Practice in Language Studies, 11(12), 1507–1514. https://doi.org/10.17507/tpls.1112.01

[15] Yudintseva, N. (2015). The effect of vocabulary games on retention and motivation. *ELT Journal*, **69**(2), 135–145. https://doi.org/10.1093/elt/ccv055.