

# The Effect of Anagram Games on EFL Learners' Mastery of Irregular Verbs

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## Abstract

*This study investigates the effectiveness of anagram games in enhancing EFL learners' mastery and retention of English irregular verbs. Grounded in Constructivist Learning Theory and Cognitive Information Processing Theory, the research employed a quasi-experimental design involving 60 Indonesian EFL students divided into experimental and control groups. The experimental group received instruction through anagram game activities, while the control group was taught through traditional grammar-based methods. Data were collected using pre-tests, post-tests, follow-up tests, questionnaires, and classroom observations. Quantitative results indicated significant improvement in the experimental group's mastery of irregular verbs ( $t(29) = 14.52, p < 0.001$ ) compared to the control group ( $t(29) = 6.37, p < 0.001$ ), with a large effect size (Cohen's  $d = 1.32$ ) observed in the post-test comparison. Follow-up test results revealed better retention among students taught with anagram games. Qualitative findings from questionnaires and observations demonstrated positive student attitudes, increased motivation, and higher engagement during instruction. The study concludes that anagram games are an effective, affordable, and engaging strategy for teaching irregular verbs in EFL contexts. Suggestions are provided for teachers, curriculum developers, institutions, and future researchers.*

**Keywords:** *Anagram games; irregular verbs; game-based learning; EFL learners*

## Introduction

Learning English requires a lot of vocabulary, especially for people who are learning English as a second language (Brown, 2004:5) . Learning new words well helps you improve your listening, speaking, reading, and writing skills. However, learning irregular verbs is very hard because their patterns are hard to remember and don't follow a set pattern. So, teachers need to come up with new and interesting ways to help students learn irregular verbs.

Recent studies have demonstrated that game-based learning (GBL) can enhance student engagement and cognitive retention by incorporating elements of enjoyment and competition into the educational experience. Research, including Rahmawati (2024) and Alotaibi (2024), has shown that using games in English classes can improve both motivation and learning, especially when it comes to vocabulary and grammar. In the same way, Zumaro (2023) found that anagram games, where learners rearrange letters to make meaningful words, encourage active cognitive processing and repeated exposure to target forms, which are important for long-term memory. Anagram games have been effectively utilized in vocabulary acquisition; however, empirical studies regarding their application for the mastery of irregular verbs are limited. This gap underscores the necessity to investigate how anagram-based activities may enhance students' internalization of verb forms.

This study is based on Constructivist Learning Theory and Cognitive Information Processing Theory from a theoretical point of view. Constructivism stresses that learners should be actively involved in building knowledge by having meaningful experiences. Anagram games exemplify this principle by necessitating learners to reconstruct word forms through problem-solving and interaction. Cognitive Information Processing Theory, conversely, asserts that memory retention is enhanced when learners participate in deep processing, which includes manipulating, analyzing, and reorganizing linguistic input. Anagram activities help students remember and reorganize irregular verb forms over and over again, which helps them encode them better in long-term memory.

With the growing focus on active, learner-centered methods in English teaching, it is both timely and necessary to look into anagram games as a way to teach. Although there is an increasing amount of research on game-based language learning, not many studies have looked into how it can be used to teach specific grammatical points, like irregular verbs, especially in EFL contexts like Indonesia. This study is imperative as it tackles a persistent linguistic challenge that students struggle with irregular verbs and simultaneously advances the evolution of English pedagogy by evaluating an economical, accessible, and engaging instructional method that corresponds with contemporary educational trends in interactive and digital learning.

Many studies have looked into how games can help students learn English, but most of them have only looked at vocabulary acquisition, speaking fluency, or reading comprehension (e.g., Rahmawati, 2024; Hafiza, 2024). There are not many real-world studies that have looked at using games to teach grammar, especially for verbs that don't follow the usual rules. Even fewer have specifically tested anagram games, even though they could help students remember things and improve their morphological awareness. Previous studies have frequently indicated favorable learner attitudes towards games, yet offered insufficient quantitative evidence concerning their efficacy in enhancing particular grammatical outcomes (Kusuma & Hartono, 2023). Consequently, there is an absence of a thorough understanding regarding the impact of anagram games on learners' mastery, retention, and recognition of irregular verbs in an EFL context.

One of the hardest things about learning English as a Foreign Language (EFL) is getting the hang of irregular verbs. Irregular verbs don't follow the same patterns as regular verbs, so students have to learn their past and past participle forms separately. Many EFL learners, especially those who don't have a lot of chances to use English, tend to forget or mix up irregular verb forms even after being taught them many times. Traditional grammar-based teaching methods, such as drills, rote memorization, and translation, often result in low retention and lack of motivation, making irregular verb acquisition a recurring difficulty in grammar learning (Sari, 2022; Kusuma & Hartono, 2023).

In Indonesian higher education, grammar instruction is predominantly characterized by traditional, teacher-centered approaches that prioritize rote memorization of rules over student engagement. This causes a mismatch between how students like to learn, usually through active, visual, and digital experiences, and how teachers teach. Because of this, students may not be interested in what they're learning and may not learn much. Anagram games could be a new and easy way to teach that could help close this gap. Anagram games are a useful way to teach English as a second language (EFL) students how to use irregular verbs because they make learning fun and interactive. Players of an anagram game have to move letters around to make real words. Recent studies show that anagram games boost motivation, creativity, and memory retention in learners. This makes them a good way to learn irregular verbs.

This study is unique because it focuses on irregular verbs, which is a linguistic area that hasn't been studied much in research on game-based learning. This study utilizes anagram games as a pedagogical intervention, presenting a form-focused yet interactive methodology that integrates cognitive processing, memory retrieval, and learner motivation. Furthermore, it aims to furnish empirical evidence via an experimental design regarding the efficacy of anagram games in improving EFL learners' proficiency and retention of irregular verbs, an area characterized by a scarcity of prior quantitative data. This combination of focus, method, and context adds new ideas to the growing

field of grammar instruction through games and supports the move towards more interesting, student-centered teaching methods in EFL classrooms.

## Methodology

The data collected from the pre-test, post-test, follow-up test, questionnaires, and classroom observations were analyzed using both quantitative and qualitative techniques. Descriptive and inferential statistical analyses were employed to assess the impact of anagram games on EFL learners' proficiency in irregular verbs. The researchers used descriptive statistics like means, standard deviations, and score ranges to show how well the students in both the experimental and control groups did. The inferential statistics include:

1. Quantitative Analysis

To determine the effect of anagram games on EFL learners' mastery of irregular verbs, descriptive and inferential statistical analyses were conducted. The descriptive statistics, means, standard deviations, and score ranges were calculated to describe students' performance in both the experimental and control groups. The inferential statistics included:

2. Normality and Homogeneity Tests

The Shapiro-Wilk test was employed to verify the normality of data distribution, and Levene's test was used to confirm the homogeneity of variances across groups. Both assumptions were satisfied ( $p > 0.05$ ), allowing the use of parametric tests.

3. Paired-Samples t-Test:

This test was used to compare the pre-test and post-test scores within each group to determine whether there was a significant improvement after the treatment.

Independent-Samples t-Test: This test compared the post-test mean scores of the experimental and control groups to examine whether the difference between them was statistically significant.

All quantitative analyses were performed using SPSS (version 26). Statistical significance was set at the 0.05 level.

2. Qualitative Analysis

The qualitative data were drawn from two sources: (1) the students' perception questionnaire (open-ended items) and (2) classroom observation checklists.

1. *Questionnaire Data:*

The Likert-scale responses were summarized using descriptive statistics (mean and standard deviation) to indicate students' attitudes toward the use of anagram games. Thematic coding was used to find patterns in open-ended

responses that had to do with motivation, enjoyment, collaboration, and how useful anagram games were thought to be for learning irregular verbs.

2. Observation Data:

The checklist for observing the classroom looked at how involved, engaged, collaborative, and attentive the students were during the lessons. Observers recorded the frequency of active involvement and peer interaction. The results were analysed descriptively to enhance the quantitative findings and offer a more comprehensive insight into students' behaviour during the learning process.

This study sought to furnish a holistic understanding of the impact of anagram games on the cognitive (achievement) and affective (attitude and motivation) aspects of EFL learners' proficiency in irregular verbs through the integration of quantitative and qualitative analyses.

## Results

This part shows the results of the data analysis, which includes the numbers from the pre-test, post-test, and follow-up test, as well as the numbers from the student perception questionnaires and classroom observations.

1. Quantitative Findings

*a. Descriptive Statistics*

Before the treatment, both groups had relatively similar levels of mastery in irregular verbs. Table 1 shows the mean scores and standard deviations of both groups in the three testing phases.

Test Type	Group	N	Mean	SD
Pre-test	Experimental	30	65.4	6.21
	Control	30	64.8	6.34
Post-test	Experimental	30	84.7	5.89
	Control	30	73.2	6.11
Follow-up Test	Experimental	30	82.9	5.73
	Control	30	68.4	6.45

The table shows that the experimental group, which learned through anagram games, did better than the control group. The experimental group had a mean gain of 19.3 points from the pre-test to the post-test, while the control group only had a mean gain of 8.4 points.

### *b. Paired-Samples t-Test*

The paired-samples t-test was used to determine whether each group showed significant improvement after the treatment.

Experimental group:  $t(29) = 14.52, p < 0.001$

Control group:  $t(29) = 6.37, p < 0.001$

Both groups improved significantly after the learning sessions; however, the experimental group demonstrated a much larger increase in mean score.

### *c. Independent-Samples t-Test*

The independent-samples t-test compared the post-test scores of both groups.

$t(58) = 7.43, p < 0.001, \text{Cohen's } d = 1.32$

This indicates a large effect size, showing that the use of anagram games had a strong positive effect on students' mastery of irregular verbs compared to the traditional teaching method.

### *d. Retention Test Results*

Two weeks after the post-test, a follow-up test was conducted to measure retention. The experimental group's score decreased slightly from 84.7 to 82.9 ( $t(29) = 1.24, p > 0.05$ ), which was not statistically significant. In contrast, the control group's score dropped significantly from 73.2 to 68.4 ( $t(29) = 3.88, p < 0.01$ ).

This indicates that the experimental group retained more of the learned material, suggesting that the anagram games enhanced long-term memory of irregular verb forms.

## **2. Qualitative Findings**

### *a. Students' Perceptions*

Data from the questionnaire revealed that students had positive attitudes toward the use of anagram games in learning irregular verbs. The mean scores of several key questionnaire items are summarized below:

Item	Statement	Mean
1	I enjoy learning irregular verbs through anagram games.	4.6
2	Anagram games help me remember verb forms more easily.	4.4
3	I feel more motivated to participate in class when playing anagram games.	4.5
4	Anagram games make grammar learning less boring.	4.7
5	I prefer anagram games to memorizing word lists.	4.3

Qualitative responses showed that students perceived anagram games as fun, interactive, and challenging. Many participants mentioned that they could remember verb forms more effectively because they had to “think and rearrange letters repeatedly,” which helped reinforce their memory.

## **b. Observation Findings**

Classroom observations supported the quantitative data. During the treatment sessions, most students in the experimental group were actively engaged, frequently interacting with peers and showing enthusiasm when solving word puzzles. The observers reported high levels of participation, collaboration, and peer support. In contrast, the control group displayed lower engagement, and some students appeared passive during grammar drills and written exercises.

## **Discussion**

The findings of this study demonstrated that anagram games significantly improved EFL learners’ mastery of irregular verbs. The statistical analysis revealed a substantial increase in the post-test scores for the experimental group compared to the control group, and this improvement was maintained in the follow-up test. These results provide strong empirical evidence that anagram games are effective instructional tools for grammar learning. This is consistent with recent empirical research demonstrating that digital and non-digital word puzzles significantly enhance grammar accuracy and retention among EFL learners (Lee & Chen, 2020; Mahmoud & Taha, 2021).

The improvement in the experimental group is also aligned with Constructivist Learning Theory, which posits that students construct knowledge actively through hands-on tasks. Recent studies emphasize that game-based tasks provide the kind of cognitive engagement necessary for constructing linguistic knowledge. For example, Alshammari (2020) found that puzzle-based grammar activities enhanced students’ ability to reorganize linguistic input through active manipulation. This supports the claim that rearranging letters and forming verb patterns in an anagram game requires deeper cognitive involvement—an essential principle of constructivism.

Additionally, the results align with Cognitive Information Processing Theory, which suggests that information processed through repeated manipulation and meaningful engagement leads to stronger retention. Recent research confirms that games requiring repeated retrieval—such as anagrams—significantly improve long-term memory of grammar forms (Sari & Wang, 2022). Similarly, Hamad & Al-Harbi (2023) found that memory-based language games promote semantic encoding, leading to improved recall of irregular verb forms. This explains why the experimental group in this study exhibited minimal score decline in the follow-up test.

The results of this study also agree with research on Game-Based Learning (GBL) within the past five years. For example, Suhartono (2019) and Kurniawan (2021) found that games increase student motivation, attention, and positive attitudes toward learning grammar. Zumaro (2023) further reported that anagram-style activities specifically enhance vocabulary retention and metalinguistic awareness. These findings reinforce the conclusion that the combination of enjoyment, challenge, and repeated exposure in anagram games strengthens linguistic accuracy.

The positive student perceptions in this study align with recent work emphasizing the affective benefits of GBL. Hidayati & Yusuf (2020) found that game-based grammar tasks increase learner motivation and reduce anxiety. Likewise, Chen & Hsu (2021) showed that EFL students feel more confident and engaged when grammar instruction is delivered through enjoyable, interactive tasks. In this study, students agreed that anagram games made grammar learning less monotonous and more meaningful, confirming trends observed in recent literature.

Classroom observations showed that students in the experimental group were more active, collaborative, and focused, which resonates with collaborative GBL studies from the past five years. For example, Rahmani & Sadeghi (2022) noted that puzzle-based collaboration increases peer interaction and supports deeper grammar processing. This aligns with the observation that anagram games encouraged students to learn from peers, correct mistakes, and cooperate through shared problem-solving.

However, despite these strengths, recent studies also highlight that game-based techniques are more effective for form-focused instruction than for complex communicative grammar skills (Lestari & Fitriani, 2021). This mirrors the limitation found in this study: although students mastered irregular verb forms, they were not tested on sentence-level application. Future research may therefore integrate anagram games with communicative tasks to explore effects on grammatical fluency.

Overall, the findings align with the broader trend in recent literature showing that low-cost, cognitively demanding games promote active learning, memory retention, and motivation in EFL grammar classrooms (Widodo, 2019; Zhang, 2022). Anagram games, therefore, represent an effective, accessible, and engaging pedagogical strategy suitable for both resource-rich and resource-limited learning environments.

## **Conclusion**

From the analysis of the data and the discussion, the researchers can draw a number of conclusions from this study. The results clearly showed that playing anagram games helped EFL learners learn irregular verbs a lot. The experimental group, which learned through anagram games, achieved much higher post-test scores compared to the control group taught through traditional grammar instruction. This improvement was

statistically significant and maintained in the follow-up test, demonstrating that anagram games not only enhanced learning outcomes but also improved long-term retention.

The effectiveness of anagram games can be explained through Constructivist Learning Theory, which emphasizes active learner participation in constructing knowledge, and Cognitive Information Processing Theory, which highlights the importance of mental engagement in encoding information into long-term memory. Students actively processed and retrieved verb forms by rearranging letters and solving word puzzles, which helped them remember things better.

Additionally, students' perceptions indicated that anagram games made grammar learning more enjoyable, interactive, and motivating. Learners reported higher engagement and confidence when learning irregular verbs through games, and classroom observations confirmed that students in the experimental group were more active and collaborative.

In summary, the study concludes that anagram games are an effective, affordable, and enjoyable instructional strategy for teaching irregular verbs in EFL contexts. They promote not only cognitive achievement but also affective engagement, offering an alternative to traditional grammar teaching that often relies heavily on memorization and repetition.

### **Suggestions**

Based on the findings and conclusions, the following suggestions are proposed for English teachers, curriculum developers, and future researchers:

1. For English Teachers:  
Teachers are encouraged to integrate anagram games into grammar lessons, especially when teaching irregular verbs or other difficult language forms. These games can make learning more interactive and support students' memory retention through repeated exposure and problem-solving activities.
2. For Curriculum Developers:  
Game-based learning activities, such as anagram games, should be included in EFL curriculum design as part of a broader strategy to promote active, student-centered learning. These activities can boost motivation and work for different types of learners, especially when it comes to grammar topics that students often find hard
3. For Educational Institutions:  
Schools and universities should provide support and training for teachers to use innovative, low-cost methods like anagram games in the classroom. This method is easy to use and doesn't require a lot of resources, and it makes the learning environment more dynamic and interesting.
4. For Future Researchers:

It is advisable to conduct additional research to investigate the application of anagram games in various aspects of English grammar, including tenses, phrasal verbs, and sentence structure. Researchers could also examine how digital or online versions of anagram games affect learning outcomes, motivation, and language production in larger or more diverse populations.

5. For Students:

Students should use language games as study tools on their own time. Engaging with anagram or word-forming activities through mobile apps or digital platforms can help reinforce vocabulary and grammar learning independently and enjoyably.

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