The Efficacy of the Anagram Technique in Stimulating EFL Learners' Creativity and Enhancing Vocabulary Mastery: An Empirical Evidence

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Abstract

This study investigates the effectiveness of the Anagram technique in enhancing vocabulary mastery among tenth-grade students of Islamic High Schools. Vocabulary acquisition plays a pivotal role in mastering English, yet many students struggle with retention and application. This quasi-experimental research aimed to assess whether the Anagram technique, which involves rearranging scrambled letters to form meaningful words, could improve students' mastery of nouns, verbs, and adjectives. The study involved two groups: an experimental group, which received instruction using the Anagram technique, and a control group, which followed conventional vocabulary instruction. A pre-test and post-test were administered to both groups to measure improvements in vocabulary proficiency. The results showed that the experimental group exhibited a significant improvement in vocabulary mastery, with their mean score increasing from 65 to 74, while the control group showed only a minimal increase from 69 to 70. The t-test analysis confirmed the statistical significance of the difference (t-count = 11.298 > t-table = 1.995), indicating that the Anagram technique was more effective than traditional methods. These findings highlight the potential of using interactive, puzzle-based activities in language instruction to enhance students' cognitive engagement and retention of vocabulary. The study suggests that integrating word-play strategies like Anagram into EFL classrooms can foster active learning and provide an engaging alternative to traditional vocabulary teaching methods, benefiting students' long-term vocabulary development.

Keywords: Anagram technique; Creativity; Vocabulary mastery; English language learning

INTRODUCTION

Vocabulary is an essential component in mastering the English language, forming the foundation for skills in listening, speaking, reading, and writing. A sufficient vocabulary enables students to communicate effectively, construct meaningful sentences, and comprehend written and spoken texts. In particular, vocabulary mastery is crucial for senior high school students as it not only aids in communication but also enhances their understanding of grammatical structures and the nuances of the language. However, teaching vocabulary in an English as a Foreign Language (EFL) context remains challenging. Many students experience difficulties in retaining new words and concepts in long-term memory. Consequently, they struggle to use these words effectively in communication and have trouble constructing accurate sentences or identifying parts of speech. Preliminary observations at MAN 2 Kota Palu revealed that many students find it difficult to understand English explanations, heavily rely on translating words into Indonesian, and possess limited vocabulary knowledge, which significantly hinders their

overall language proficiency. This problem highlights the need for more effective vocabulary instruction methods in senior high schools.

In response to these challenges, various studies have explored methods to improve vocabulary acquisition in EFL settings. Research indicates that explicit vocabulary instruction, especially when combined with engaging and interactive learning activities, can greatly enhance student motivation and retention of new words (Folse, 2008; Yurtbasi, 2015). Among the strategies tested, game-based learning techniques have proven particularly effective. Activities such as word puzzles and letter manipulation tasks have been found to stimulate creativity, reinforce memory, and improve vocabulary retention. One widely discussed technique is the Anagram method, which involves rearranging scrambled letters to form meaningful words. This strategy has shown promising results in helping students improve their vocabulary mastery by encouraging active participation and cognitive engagement (Tangkas, 2014; Sinaga, 2020). More recent studies further support the effectiveness of puzzle-based learning, noting its role in enhancing cognitive engagement and promoting long-term retention of vocabulary in EFL learners (Lee & Lin, 2021; Hassan & Ariffin, 2022; Oliveira & Smith, 2023).

Despite the positive findings from previous research, there are still gaps in the literature. Many studies have been conducted in junior high school settings or focused on different text types and vocabulary areas. Furthermore, several studies have employed limited methodological approaches, such as classroom action research, which may not provide comprehensive insights into the effectiveness of certain techniques. The Anagram technique, while showing promise, has rarely been studied in the context of senior high school education, particularly regarding the mastery of specific linguistic elements such as nouns, verbs, and adjectives. Additionally, no studies have used a quasi-experimental design to assess the Anagram technique's effectiveness at MAN 2 Kota Palu. This highlights the need for a more thorough investigation to evaluate the impact of this method in the specific educational context of senior high school students in Palu.

Given these gaps, the present study aims to explore whether the Anagram technique can effectively enhance the vocabulary mastery of tenth-grade students at MAN 2 Kota Palu. The study will specifically focus on improving students' knowledge of nouns, verbs, and adjectives—key elements of speech that form the foundation of sentence construction and communication in English. By addressing this gap in the literature, the study will contribute new empirical evidence and practical insights into the use of word-play strategies for vocabulary development. The findings will be valuable not only for educators seeking to improve vocabulary instruction in senior high school settings but also for advancing the theoretical understanding of effective vocabulary learning techniques in EFL contexts.

The objectives of this research are to assess the effectiveness of the Anagram technique in improving students' overall vocabulary mastery and to evaluate how well it helps students acquire specific linguistic elements like nouns, verbs, and adjectives. By focusing on these aspects, the study will contribute to the broader body of knowledge in the field of language education and provide actionable insights for EFL instructors looking to incorporate more engaging and effective vocabulary teaching strategies.

The novelty of this study lies in its examination of the Anagram technique in the context of senior high school students, an area that has received limited attention in existing research. Furthermore, by employing a quasi-experimental design, the study offers a more rigorous evaluation of the technique's impact compared to previous studies that relied on less controlled methodologies. This approach will provide more reliable evidence of the technique's effectiveness in improving vocabulary mastery among senior high school students in an EFL setting, particularly in a context like MAN 2 Kota Palu, where English language instruction faces specific challenges. Therefore, the results of this study

will not only add to the theoretical literature but also offer practical recommendations for educators striving to improve vocabulary acquisition in their classrooms.

This study is guided by the following research questions: Does the Anagram technique significantly improve the vocabulary mastery of tenth-grade students at MAN 2 Kota Palu? And To what extent does the Anagram technique enhance students' mastery of nouns, verbs, and adjectives?

RESEARCH METHOD
Research Design

This study employed a quasi-experimental design with two groups: an experimental group and a control group. Both groups were assessed with a pre-test and post-test to measure the impact of the Anagram technique on vocabulary mastery, ensuring a comparison between the groups before and after the intervention. The experimental group received the treatment, which involved the use of the Anagram technique to improve vocabulary knowledge, while the control group did not. This design is well-suited for addressing the research questions because it allows for the measurement of changes in vocabulary mastery due to the Anagram technique, while controlling for other variables by using a comparable control group. The quasi-experimental approach is particularly appropriate when random assignment is not feasible, as is the case in this study, and provides a strong basis for evaluating the effectiveness of the intervention.

The study design follows the structure outlined by Arikunto (2006), where a pre-test is administered to both groups before the intervention, the experimental group receives the treatment (Anagram technique), and a post-test is given to both groups afterward. This approach allows for a clear comparison of vocabulary improvement between the groups, which is essential for answering the research questions about the effectiveness of the Anagram technique in enhancing vocabulary mastery, particularly with nouns, verbs, and adjectives.

Participants

The population for this study consisted of 494 tenth-grade students from 14 classes at MAN 2 Kota Palu, with each class comprising 33 to 37 students. Purposive sampling was used to select two classes that had similar academic characteristics, ensuring that the results would reflect the impact of the Anagram technique on students of comparable proficiency. The selection of participants was based on English teachers' recommendations and the students' final-semester English scores, which were analyzed to ensure that the vocabulary proficiency levels across the selected classes were similar.

Class XA was selected as the experimental group due to its slightly lower vocabulary performance, which made it a suitable candidate for receiving the treatment. This allowed the researchers to observe potential improvements in vocabulary mastery more clearly. Class XB, the control group, was chosen because it had comparable vocabulary proficiency, class size, schedule compatibility, and a stable classroom environment. This selection was intended to minimize external factors that might affect the results, ensuring that any observed differences in vocabulary mastery could be attributed more confidently to the Anagram technique rather than pre-existing disparities between the groups.

Research Instruments

The main instrument for data collection in this study was a vocabulary test designed to assess students' mastery of specific linguistic elements, including nouns, verbs, and adjectives. The test included three types of questions: a completion test (5 items), a word arrangement test (5 items), and a synonym test (5 items). Each correct answer was scored 1 point, with a total maximum score of 15 points. This format was chosen to evaluate

students' ability to recognize and manipulate words, which are crucial aspects of vocabulary mastery.

To ensure the validity and reliability of the vocabulary test, a multi-stage validation process was undertaken. The initial version of the test was reviewed by two experienced English teachers from MAN 2 Kota Palu and a university lecturer specializing in language assessment. These experts evaluated the test based on several criteria: content relevance to the syllabus, clarity of instructions, linguistic accuracy, item difficulty level, and suitability for Grade X learners. Feedback from these experts led to revisions in the test, including adjustments to item difficulty and improvements to the clarity of the instructions.

Additionally, a pilot test was conducted with a separate tenth-grade class that was not part of the study sample. This pilot test aimed to assess the clarity of the items, the difficulty distribution, and the overall reliability of the test. The results of the pilot test indicated that the instrument had acceptable reliability, and any ambiguous items were refined before the actual data collection. This rigorous process ensured that the vocabulary test was both valid and reliable for measuring students' vocabulary mastery in this context.

Data Analysis

The data collected from the pre-test and post-test were analyzed to evaluate the effectiveness of the Anagram technique in improving students' vocabulary mastery. The analysis involved comparing the mean scores of the experimental and control groups before and after the intervention. The primary method of analysis was a t-test, specifically an independent sample t-test, to determine if there were significant differences in vocabulary mastery between the two groups after the treatment. After computing the mean scores for both groups, hypothesis testing was conducted to assess the impact of the Anagram technique. The null hypothesis (H_0) stated that the Anagram technique would not significantly improve vocabulary mastery, while the alternative hypothesis (H_a) posited that it would. The decision criterion was based on comparing the t-test results to a critical value from the t-distribution table (ttable). If the calculated t-value (tcount) exceeded the critical t-value (ttable), the null hypothesis was rejected, indicating that the Anagram technique was effective in improving vocabulary mastery. Conversely, if the tcount was less than or equal to ttable, the null hypothesis was accepted, implying that the Anagram technique had no significant effect.

The use of a t-test is justified because it provides a robust statistical method for comparing the means of two independent groups and determining whether the differences observed are statistically significant. This analysis method is particularly suitable for the quasi-experimental design used in this study, as it allows for a clear and objective assessment of the impact of the Anagram technique on vocabulary mastery.

RESULTS AND DISCUSSION
Results

The study compared the vocabulary mastery of tenth-grade students in the experimental and control groups before and after treatment. In the pre-test, the experimental group obtained a mean score of 65, while the control group obtained 69, indicating that the control group initially had slightly better vocabulary mastery. After the treatment, six sessions of vocabulary instruction using the Anagram technique the post-test results showed a mean score of 74 for the experimental group and 70 for the control group. This indicates an improvement of +9 points for the experimental group, compared to only +1 point in the control group.

The t-test analysis produced a t-count of 11.298, exceeding the t-table value of 1.995 at a 0.05 significance level (df = 68). This result confirms that the difference between the experimental and control groups after treatment was statistically significant. Therefore,

the null hypothesis (H₀) was rejected, and the alternative hypothesis (Hₐ) was accepted showing that the Anagram technique effectively improved students' vocabulary mastery.

The findings of this study demonstrate that the Anagram technique had a significant and positive effect on students' vocabulary mastery. The experimental group showed a substantial improvement of nine points from pre-test to post-test, compared to only a one-point increase in the control group. This difference was statistically significant, confirming that the Anagram technique is more effective than conventional vocabulary instruction. Several key factors contributed to this improvement.

First, the Anagram technique promotes active cognitive engagement, requiring students to analyze letter patterns, manipulate forms, and construct meaningful words. This aligns with Nation's (2013) emphasis on deep processing for vocabulary retention, supporting the idea that vocabulary is learned more effectively when students actively work with linguistic forms. Such active engagement moves learners beyond passive memorization, encouraging deeper mental encoding.

Second, the puzzle-like nature of the Anagram activities increased motivation and focused attention. Students viewed the activities as enjoyable challenges rather than routine worksheet tasks. This echoes the findings of Lee and Lin (2021), who note that game-based vocabulary learning creates a more stimulating and motivating learning environment. Increased motivation, in turn, enhances persistence, involvement, and retention of new vocabulary items.

Third, the Anagram technique provided meaningful repetition. Students encountered target vocabulary multiple times: scrambled, reconstructed, and discussed. This varied, meaningful repetition supports Schmitt's (2008) view that repeated encounters are essential for vocabulary acquisition. Through repetition in different cognitive formats, the words became more memorable and easier to recall.

Fourth, Anagram tasks fostered collaborative learning, as students frequently discussed possible solutions in pairs or small groups. Peer interactions allowed learners to negotiate meaning, clarify misunderstandings, and build vocabulary knowledge together. This aligns with Vygotsky's (1978) perspective that social interaction plays a central role in language development.

Finally, the technique enhanced metalinguistic awareness, enabling students to recognize spelling patterns and morphological structures as they manipulated letters. This supports Graves' (2016) assertion that awareness of word structure contributes to vocabulary growth and comprehension efficiency.

Implications for Vocabulary Teaching in EFL Contexts

The positive results from this study carry important implications for EFL vocabulary instruction beyond the context of MAN 2 Kota Palu. The Anagram technique demonstrates that vocabulary learning becomes more effective when it is interactive, cognitively demanding, and student-centered. EFL teachers can incorporate similar word-play strategies to foster active learning and improve retention, especially in classrooms where students often struggle with motivation or vocabulary recall. Additionally, the success of Anagram suggests that teachers should integrate multiple modes of vocabulary processing such as decoding, reconstructing, and discussing words rather than relying solely on translation or memorization. This approach aligns with contemporary vocabulary teaching frameworks emphasizing depth of processing, learner autonomy, and meaningful use.

Furthermore, in diverse EFL settings where learner proficiency varies widely, Anagram can serve as an inclusive and adaptable technique. It allows students to engage at their own pace, supports mixed-ability classrooms, and encourages social interaction that benefits learners with varying strengths.

The findings of this study reinforce earlier research indicating that Anagram can enhance vocabulary mastery (Herawati, 2022; Manalu, 2015; Maimunah, 2014). However, the present study extends the literature by applying the technique within a quasi-experimental framework, focusing specifically on nouns, verbs, and adjectives in a high school EFL context. The results also align with recent research emphasizing the effectiveness of game-based and problem-solving vocabulary tasks (Hassan & Ariffin, 2022; Oliveira & Smith, 2023), confirming that such approaches increase cognitive engagement and retention. Thus, this study contributes to the growing body of evidence that interactive, puzzle-oriented strategies can be powerful tools for vocabulary instruction, especially in EFL classrooms where students often struggle with memorization-based approaches.

Discussion

The results of this study demonstrate that the Anagram technique significantly improves vocabulary mastery among tenth-grade students at MAN 2 Kota Palu. Specifically, the experimental group that received the treatment showed a marked improvement in their mean score, increasing from 65 to 74, while the control group's improvement was minimal, from 69 to 70. This finding supports the hypothesis that the Anagram technique is an effective instructional strategy for enhancing vocabulary mastery in an English as a Foreign Language (EFL) context. The statistically significant results, confirmed by the t-test (t-count = 11.298 > t-table = 1.995), underscore the potential of this technique as a valuable pedagogical tool.

The results of this study align with previous research that emphasizes the benefits of interactive and engaging vocabulary learning strategies. For instance, several studies have demonstrated that game-based learning techniques, such as puzzles and word manipulation tasks, enhance students' cognitive engagement and motivation, which are essential for effective vocabulary acquisition (Lee & Lin, 2021; Oliveira & Smith, 2023). The Anagram technique, by requiring students to rearrange scrambled letters into meaningful words, stimulates mental engagement and fosters active participation. This active involvement is consistent with Nation's (2013) theory on deep processing, which suggests that vocabulary learned through active manipulation and use is retained more effectively than through passive memorization.

Furthermore, the Anagram technique's effectiveness can be attributed to the puzzle-like nature of the activity, which increases the appeal of vocabulary learning. This finding is consistent with studies that highlight the importance of motivation in language learning. For instance, Lee and Lin (2021) found that game-based activities create a stimulating and motivating environment that enhances learners' persistence and involvement. In this study, students reported enjoying the challenge of solving the Anagram puzzles, which likely contributed to their improved vocabulary retention. As students perceive the activity as both fun and intellectually stimulating, they are more likely to stay engaged and persist in the learning process, leading to better vocabulary retention (Sotlikova, 2023; Naqsyabandiyah & Dehghanitafti, 2023; Hidayatullah, Munir, & Tawali, 2022).

The results also suggest that the Anagram technique facilitates meaningful repetition, a critical component of vocabulary learning. By engaging with the target words in multiple ways—through unscrambling, reconstructing, and discussing the words—students encounter the vocabulary repeatedly in varied contexts. Schmitt (2008) emphasizes the importance of repeated exposure to vocabulary, noting that repetition is essential for word retention. The varied forms of repetition offered by the Anagram technique, combined with the cognitive demand of the activity, make it a highly effective method for reinforcing vocabulary knowledge. This is in line with the findings of Herawati (2022) and Maimunah (2014), who also found that the Anagram technique helps students improve their

vocabulary retention by providing multiple opportunities to encounter and use target words.

Additionally, the collaborative nature of the Anagram activity in this study fostered social interaction among students, which further contributed to vocabulary acquisition. Students often worked in pairs or small groups, discussing potential solutions and negotiating meanings. Vygotsky's (1978) socio-cultural theory emphasizes the role of social interaction in cognitive development, asserting that collaborative learning activities help students clarify their understanding and deepen their knowledge. In this context, peer discussions allowed students to articulate their thoughts, ask questions, and learn from each other, which facilitated a deeper understanding of the vocabulary and its usage.

Another significant finding of this study is the technique's ability to enhance metalinguistic awareness. As students manipulated the letters to form words, they became more attuned to word structures, spelling patterns, and morphological elements. This increased awareness of how words are constructed supports vocabulary growth and improves reading comprehension (Youssef, 2021; Villanueva, 2022; Suci et al., 2023), as students are better able to recognize word patterns and derive meanings from context. Graves (2016) highlights that metalinguistic awareness plays a crucial role in vocabulary development, and the Anagram technique provides a practical means of fostering this awareness.

In comparison with previous studies, the findings of this study are particularly significant because they extend the research on the Anagram technique to senior high school students. While previous research has focused on the effectiveness of the technique in junior high school settings (e.g., Rosadi, 2017; Sinaga, 2020), this study adds to the literature by demonstrating its efficacy in a senior high school context, particularly in the acquisition of key linguistic elements such as nouns, verbs, and adjectives. This extension of the research is important because it provides empirical evidence that the Anagram technique is not only effective for younger learners but also for older students who are engaged in more complex aspects of language learning.

Moreover, this study contributes to the body of knowledge by employing a quasi-experimental design, which provides a more rigorous evaluation of the Anagram technique's impact than previous studies that relied on less controlled methodologies. By using both pre-test and post-test measures and a control group, this study strengthens the evidence for the effectiveness of the Anagram technique in improving vocabulary mastery. The use of a t-test for hypothesis testing further supports the reliability of the findings and provides statistical confirmation that the observed improvement in the experimental group was not due to chance.

However, while the results are promising, it is important to acknowledge that there are limitations to this study. The sample size, although adequate for this particular study, is relatively small and limited to a single school in Palu. Future research could benefit from a larger and more diverse sample to assess the generalizability of the findings. Additionally, while the study focused on nouns, verbs, and adjectives, other aspects of vocabulary, such as phrasal verbs or collocations, were not explored. Expanding the scope to include a broader range of vocabulary types could provide more comprehensive insights into the effectiveness of the Anagram technique.

The findings of this study confirm that the Anagram technique is an effective method for improving vocabulary mastery among senior high school students in an EFL context. The technique's ability to engage students cognitively, increase motivation, provide meaningful repetition, foster collaboration, and enhance metalinguistic awareness makes it a valuable tool for vocabulary instruction. These findings not only align with previous research but also extend the understanding of the Anagram technique's applicability in senior high school settings. As such, the study provides valuable implications for

vocabulary instruction in EFL classrooms and suggests that incorporating interactive, student-centered techniques like Anagram can significantly enhance vocabulary learning outcomes.

CONCLUSION

This study confirms that the Anagram technique is a highly effective method for enhancing vocabulary mastery among senior high school students in an EFL context. The results clearly indicate that the experimental group, which received the treatment, showed a significant improvement in their vocabulary scores compared to the control group. The Anagram technique fostered active engagement, increased motivation, and provided meaningful repetition, all of which contributed to the students' enhanced vocabulary retention. These findings support the importance of using interactive and student-centered approaches in language teaching, particularly for vocabulary acquisition. Moreover, the study's quasi-experimental design, which included both a pre-test and post-test with a control group, ensures that the observed improvements can be attributed to the Anagram technique rather than other variables, providing reliable evidence of its effectiveness.

The implications of this study are far-reaching for EFL classrooms, especially in contexts where students struggle with vocabulary retention and application. By integrating the Anagram technique into their teaching practices, educators can offer a more engaging and interactive way for students to internalize new words, particularly important linguistic elements such as nouns, verbs, and adjectives. The success of this study also encourages further exploration of word-play strategies in EFL settings and suggests that such techniques can be adapted for diverse learner profiles and educational contexts. Future research could expand the scope by including a larger sample size, exploring additional vocabulary types, and assessing the long-term effects of Anagram-based learning on students' overall language proficiency.

RECOMMENDATION

For further studies, it is recommended to expand the research to include a larger and more diverse sample size, encompassing students from different schools or regions to enhance the generalizability of the findings. Additionally, future research could explore the effectiveness of the Anagram technique in improving other aspects of language learning, such as reading comprehension, writing fluency, or the acquisition of more complex vocabulary items like phrasal verbs or collocations. It would also be beneficial to investigate the long-term impact of the Anagram technique on vocabulary retention by conducting follow-up assessments after several weeks or months. Furthermore, incorporating mixed-methods approaches, such as student interviews or surveys, could provide deeper insights into learners' perceptions of the technique, their level of engagement, and the factors that contribute to its effectiveness. Lastly, comparing the Anagram technique with other vocabulary learning strategies, such as context-based learning or flashcards, could help identify the most effective approaches for different student groups.

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