

The Role of Anagram Games and Motivation in Enhancing Vocabulary Mastery of Fourth-Grade Students at SDN 3 Gesikan Tulungagung

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Abstract

This research aims to know (1) the impact of anagram game on students' vocabulary mastery, (2) the impact of learning motivation on students' vocabulary mastery, and (3) to know the impact of anagram game and students learning motivation towards fourth grade students' vocabulary mastery at SDN 3 Gesikan. This study used a quantitative method with a pre-experimental one-group pretest-posttest design. The sample consists of 26 students selected by purposive sampling. The instrument used a vocabulary test and a questionnaire for anagram and learning motivation. The result of the paired sample t-test showed that the anagram game has an impact on student vocabulary mastery; however, the regression analysis showed that learning motivation did not have an impact on students' vocabulary mastery, and the combination of anagram game and learning motivation did not have an impact on student vocabulary mastery. But students gave positive responses to the learning process using an anagram game. It can be concluded that an anagram game is an interactive medium that can improve vocabulary mastery among elementary students.

Keywords: Anagram Game; Elementary Students; Interactive Learning; Motivation; Vocabulary Mastery

INTRODUCTION

English as a foreign language (EFL) is increasingly prioritized in global education systems, including in Indonesia, where early exposure to English in primary schools is believed to enhance students' communicative competence and global readiness (Quimosing, 2022). In this context, vocabulary mastery plays a central role, serving as a foundation for the development of speaking, reading, listening, and writing skills. However, conventional teaching approaches often relying on rote memorization have been shown to be insufficient in engaging young learners (Myles, 2017). Young learners require methods that align with their developmental needs and learning styles. According to Utami et al. (2023), ineffective teaching strategies at the primary level can hinder vocabulary acquisition. Consequently, educators are encouraged to implement interactive and contextually appropriate teaching media that promote active learning and student engagement. One such strategy includes the use of educational games, which have been proven to increase motivation and learning outcomes (Anyan et al., 2023). Among various interactive strategies, the anagram game has emerged as an effective vocabulary enhancement tool. This word-rearranging game not only reinforces lexical recognition but also strengthens memory retention and encourages learners to be more involved in the language-learning process (Rosadi, 2017). Moreover, anagrams provide cognitive benefits, such as enhancing pattern recognition and linguistic flexibility, which are essential in vocabulary development (Barus & Tampubolon, 2022). Nonetheless, the effectiveness of instructional media is not solely dependent on the strategy used; students' internal motivation also plays a pivotal role. Motivation significantly influences how actively and persistently learners engage

in the learning process (Puspitarini & Hanif, 2019). Highly motivated students are more likely to utilize effective learning strategies and persist through challenges, making motivation a determining factor in vocabulary acquisition (Santinah & Saluky, 2022). Research by Wahyudi and Wijaya (2024) highlights that vocabulary mastery encompasses both productive and receptive competencies, requiring learners not only to recognize but also to appropriately use vocabulary in varied contexts. Therefore, instructional strategies must address both aspects while maintaining students' interest through engaging and supportive environments (Khatimah, 2021). The combination of anagram games and motivational factors could potentially address these needs simultaneously. Despite the growing body of research on educational games, limited studies have focused on the dual role of anagram games and learning motivation, especially at the primary level. While previous studies have found that anagram games enhance vocabulary learning among secondary students (Alfajri, 2024; Anisatun, 2022), few have investigated their effectiveness in lower elementary grades or measured how student motivation interacts with game-based instruction. This presents a critical gap in the literature that warrants further exploration. To bridge this gap, this study aims to investigate the impact of anagram games and student learning motivation on the vocabulary mastery of fourth-grade students at SD Negeri 3 Gesikan. By focusing on younger learners in a traditional educational setting, the research intends to evaluate the combined influence of instructional media and motivational variables on vocabulary acquisition. The study is guided by the following questions: (1) Does the anagram game impact students' vocabulary mastery? (2) Does learning motivation impact students' vocabulary mastery? and (3) Do the anagram game and learning motivation together impact vocabulary mastery?

Theoretically, this study is supported by the Cognitive Load Theory, which emphasizes reducing unnecessary cognitive demands to enhance learning efficiency (Sweller, 1988); the Self-Determination Theory, which explains motivation as driven by intrinsic needs for autonomy, competence, and relatedness (Bandura, 1986); and the Game-Based Learning Theory, which highlights the pedagogical value of interactive media in increasing engagement and learning outcomes (Plass et al., 2015). These theories form the conceptual basis for exploring the relationship between instructional strategy, learner motivation, and vocabulary acquisition among young EFL learners.

METHOD

This study adopted a quantitative research approach employing a pre-experimental one-group pre-test and post-test design to investigate the impact of the anagram game and student learning motivation on fourth-grade students' vocabulary mastery. This design was chosen to measure the difference in students' vocabulary performance before and after being exposed to the anagram game without the inclusion of a control group (Creswell, 2014). The design is suitable for exploring instructional interventions when random assignment is not feasible.

Participants and Sampling

The population in this study consisted of fourth-grade students at SD Negeri 3 Gesikan in Tulungagung, East Java, Indonesia. A total of 26 students participated as the sample, selected through purposive sampling, a non-probability technique that allows researchers to choose participants based on specific characteristics and research needs (Ary et al., 2014). The choice of this sample size was appropriate given the class structure and accessibility constraints during data collection.

Research Variables

The study examined two independent variables the anagram game (X_1) and student learning motivation (X_2) and one dependent variable, vocabulary mastery (Y). Vocabulary mastery was measured using students' pre-test and post-test scores. The anagram game and motivation

variables were assessed through structured questionnaires using a five-point Likert scale (Feroze Kaliyadan, 2017).

Research Instruments

The instruments employed in this study were a vocabulary test and questionnaires. The vocabulary test included 20 items aligned with the daily activities theme and was administered as both pre-test and post-test. Each correct response was awarded 5 points, with a total maximum score of 100. The motivation questionnaire was adapted from established frameworks measuring intrinsic and extrinsic learning motivation (Ardiyanto & Muharam, 2020), while the anagram questionnaire was constructed based on student perceptions of using games in learning (Fakhrudin & Nurhidayat, 2020). Both questionnaires were reviewed for content validity by expert judgment.

Validity and Reliability

To ensure instrument accuracy, the researcher conducted validity and reliability testing. Content validity was established through expert evaluation, confirming the relevance and representativeness of each item. Reliability was measured using statistical analysis to ensure consistency across items. Instruments were deemed reliable if they produced stable and consistent results over time (Sathiyaseelan, 2015).

Procedure

The research procedure involved several stages. First, the pre-test was administered to assess the students’ initial vocabulary knowledge. Next, students received instruction using an anagram game designed via the Wordwall platform, which required students to rearrange scrambled letters into correct words. This treatment was carried out over two instructional meetings. Finally, a post-test was administered, and both the motivation and anagram questionnaires were distributed to assess students’ perceptions of the learning experience (Istikhama, 2024).

Data Collection and Analysis

Data collection included scoring students’ responses from both tests and questionnaires. The data were analyzed using JASP software, a statistical tool for social sciences. Analysis included descriptive statistics, paired-sample t-tests to measure significant differences between pre- and post-test scores, and simple and multiple linear regression to examine the impact of learning motivation and the anagram game on vocabulary mastery (Adom et al., 2020). Assumption tests such as normality, multicollinearity, and heteroscedasticity were also conducted to validate the regression models.

RESULTS AND DISCUSSION

Results

This section presents the statistical findings and interprets them in relation to the study's hypotheses. The analysis includes descriptive statistics, paired-sample t-test, simple linear regression, and multiple linear regression to determine the impact of the anagram game and student learning motivation on vocabulary mastery.

1. The Impact of Anagram Game on Students’ Vocabulary Mastery

To measure the effectiveness of the anagram game, a pre-test and post-test were administered. The scores were analyzed using a paired-sample t-test.

Table 1. Paired-Sample T-Test Result

| Measure | t | df | p-value | Interpretation |
|-----------------------|---------|----|---------|------------------------|
| Pre-test vs Post-test | -11.853 | 25 | < .001 | Significant difference |

The mean pre-test score was 55.96, while the post-test score increased to 85, indicating a

substantial improvement. The p-value < .001 confirms that the anagram game had a statistically significant impact on vocabulary mastery (Creswell, 2014). This result supports Hypothesis 1 (H₁): Anagram game has an impact on vocabulary mastery.

2. The Impact of Learning Motivation on Vocabulary Mastery

Students completed a 10-item Likert-scale questionnaire measuring their intrinsic and extrinsic learning motivation.

Table 2. Learning Motivation Likert Questionnaire Summary

| Item | Statement | Mean Score | Category |
|---------------------|---|------------|----------------|
| 1 | I am confident I can recognize English words | 4.12 | Agree |
| 2 | I enjoy learning new words in English | 4.19 | Agree |
| 3 | I want to know many English words | 4.81 | Strongly Agree |
| 4 | I am serious when learning English words | 4.19 | Agree |
| 5 | I study English to become good at speaking | 4.77 | Strongly Agree |
| 6 | I want praise from the teacher for English skills | 4.31 | Agree |
| 7 | My parents help me in learning English | 4.00 | Agree |
| 8 | I love learning English word games | 4.81 | Strongly Agree |
| 9 | I am happy when I learn the meaning of new words | 4.65 | Strongly Agree |
| 10 | I enjoy studying with classmates | 4.31 | Agree |
| Overall Mean | | 4.42 | Very Good |

The total average score of 88.2 (out of 100) categorizes student motivation as very good, indicating positive perceptions toward learning English (Ardiyanto & Muharam, 2020).

To test the impact of motivation on vocabulary mastery, a simple linear regression was conducted using motivation score (X) and gain score (Y).

Table 3. Simple Linear Regression Result (Motivation → Vocabulary Mastery)

| Model | R | R ² | F | p-value | Coefficient (B) |
|-------------------------------------|-------|----------------|-------|---------|-----------------|
| Motivation → Vocabulary Gain | 0.354 | 0.125 | 3.434 | 0.076 | 0.013 |

The analysis showed that learning motivation has a weak, non-significant effect ($p = 0.076 > 0.05$) on vocabulary mastery gain.

3. The Impact of Anagram Game and Learning Motivation Combined

To evaluate the combined effect of the anagram game and student motivation, a multiple linear regression analysis was conducted.

Table 4. Multiple Linear Regression Result (Anagram + Motivation → Vocabulary Mastery)

| Model | R | R ² | Adj. R ² | F | p-value |
|---|-------|----------------|---------------------|-------|---------|
| Anagram + Motivation → Vocabulary Gain | 0.363 | 0.131 | 0.056 | 1.741 | 0.198 |

| Predictor | Coefficient (B) | Std. Error | t-value | p-value |
|-------------------|-----------------|------------|---------|---------|
| Constant | -0.748 | 0.828 | -0.904 | 0.375 |
| Motivation | 0.012 | 0.008 | 1.514 | 0.144 |
| Anagram | 0.004 | 0.009 | 0.409 | 0.686 |

Despite positive responses to both variables, the model did not yield statistically significant results ($p = 0.198 > 0.05$). Both predictors had p-values above the 0.05 threshold.

4. Anagram Questionnaire Summary

To evaluate students' responses to the use of anagram games, a 10-item Likert-scale questionnaire was administered. Below is a summary of students' perceptions:

Table 5. Statement of Anagram Questionnaire

| No | Statement | Strongly Disagree | Disagree | Enough | Agree | Strongly Agree |
|----|--|-------------------|----------|--------|-------|----------------|
| 1 | Anagram makes me like learning English. | 0 | 0 | 0 | 20 | 6 |
| 2 | Anagram helps me understand English more. | 0 | 0 | 2 | 10 | 14 |
| 3 | Anagram makes me active in learning English. | 0 | 0 | 5 | 11 | 10 |
| 4 | Anagram gives me more vocabulary information. | 0 | 0 | 1 | 7 | 18 |
| 5 | Anagram makes me like learning English vocabulary. | 0 | 0 | 1 | 7 | 18 |
| 6 | Anagram helps us in learning together. | 0 | 0 | 2 | 11 | 13 |
| 7 | Anagram helps me understand lessons better. | 0 | 0 | 2 | 11 | 13 |
| 8 | Anagram makes me happy while learning English. | 0 | 0 | 2 | 17 | 7 |
| 9 | Anagram increases my desire to learn vocabulary. | 0 | 0 | 0 | 14 | 12 |
| 10 | Anagram improves my ability in learning English. | 0 | 0 | 1 | 11 | 14 |

The responses indicate that students held overwhelmingly positive perceptions of the anagram game, with most items rated “Agree” or “Strongly Agree.” The overall mean score was 88.38, placing it in the “Very Good” category. This confirms that anagram games are not only enjoyable but also perceived as effective by the learners (Fakhruddin & Nurhidayat, 2020).

Discussion

The findings of this study reveal that the use of anagram games significantly enhanced the vocabulary mastery of fourth-grade students at SDN 3 Gesikan Tulungagung. The paired-sample t-test showed a significant difference between the pre-test and post-test scores, supporting the idea that interactive learning media can effectively improve students' language acquisition. This result aligns with Game-Based Learning Theory, which emphasizes that games provide meaningful context and engagement, making vocabulary retention more effective (Plass et al., 2015). Similar findings were reported by Anisatun (2022) and Alfajri (2024), who found that anagram games helped learners understand and remember new words more easily. Although students' learning motivation was categorized as "very good" based on the questionnaire results (mean score: 88.2), simple linear regression analysis indicated that motivation did not significantly affect vocabulary mastery. This contrasts with Self-Determination Theory, which posits that internal motivation is a strong driver of academic performance (Bandura, 1986). A possible explanation is that the short treatment period limited the influence of motivation on actual test performance. Previous research by Aalayina (2021) and Zhang & Wang (2023) found that motivation had a significant impact on language learning, but those studies involved older students or longer interventions. Moreover, the multiple regression analysis showed that the combination of anagram games and motivation did not have

a significant effect on vocabulary mastery. Although both variables were positively perceived, their combined influence was statistically insignificant. This suggests that while motivational factors and engaging media both contribute to a positive learning experience, instructional tools like anagram games may have a more immediate impact on vocabulary mastery than internal motivation alone. Similar observations were made by Utami et al. (2023), who concluded that educational games tend to produce better results when used consistently over time with appropriate learning support. In conclusion, the first hypothesis stating that anagram games affect vocabulary mastery is accepted. However, the second and third hypotheses related to the individual and combined effects of learning motivation are not supported by the data. Despite this, students' high motivation and positive attitudes toward the anagram game suggest that such media still hold promise for classroom application.

CONCLUSION

Based on the findings, it can be concluded that the anagram game significantly improves students' vocabulary mastery, as reflected in the substantial increase in post-test scores. This suggests that game-based learning is an effective strategy for young learners, especially when it involves interactive and engaging activities. Although students showed high levels of learning motivation, statistical analysis indicated that motivation alone did not have a significant effect on vocabulary mastery. Furthermore, the combination of anagram game and learning motivation also did not produce a statistically significant effect. These results highlight that while students enjoy and positively respond to both the media and the learning process, the instructional strategy itself specifically the use of anagram games has a more direct impact on vocabulary acquisition within a short-term intervention. In light of these findings, it is suggested that teachers incorporate anagram games into vocabulary lessons to increase engagement and enhance learning outcomes. Future research is encouraged to investigate the long-term influence of learning motivation and its interaction with various instructional methods. Additionally, expanding the study across different grade levels and school settings could provide a more comprehensive understanding of how media and motivation affect vocabulary mastery in the context of English as a foreign language.

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