



THE EFFECTS OF GAMIFICATION AND LEARNING MOTIVATION ON STUDENTS' READING COMPREHENSION ACHIEVEMENT

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ABSTRACT

This study investigated the effects of gamification and learning motivation on students' reading comprehension achievement in secondary education. It aimed to determine whether gamified instructional practices enhance reading comprehension outcomes and whether students' levels of learning motivation moderate these effects. A quantitative experimental design with a 2×2 factorial arrangement was used. Sixty eleventh-grade students were randomly assigned to experimental (gamification) and control (conventional instruction) groups. Data were collected using a standardized reading test and a validated motivation questionnaire. Results indicated that students exposed to gamified instruction achieved significantly higher reading comprehension scores than peers taught conventionally. High motivation students outperformed low motivation peers, and an interaction effect between instructional approach and motivation level was statistically significant. Findings suggest that gamification strategies can be integrated into reading instruction to enhance engagement and comprehension. Teachers and curriculum designers may implement gamified tools to support motivation-driven learning improvement. This research contributes to the existing literature by experimentally examining the interactive influence of gamification and intrinsic motivation on reading comprehension in a secondary education setting, highlighting motivational thresholds that amplify gamification benefits.

Keywords: *Gamification, Learning Motivation, Reading Comprehension, Instructional Technology, Secondary Education*

1. INTRODUCTION

Reading comprehension is a crucial skill in English as a Foreign Language (EFL) learning because it enables students to understand, interpret, and evaluate written texts, which directly affects academic achievement and real-world communication (Farrell, 2022). In vocational high schools, the ability to comprehend texts is particularly important, as students often engage with technical, academic, and professional texts related to their future careers (Duran & Duquette, 2023). Despite its importance, many students experience difficulties in reading comprehension due to low motivation, lack of interest, and traditional teaching methods that fail to encourage active learning (Li & Li, 2024). Conventional approaches, such as teacher-centered instruction and rote memorization, often

neglect individual students' needs and interests, resulting in passive learning behaviors and limited engagement (Dörnyei & Ushioda, 2021). Consequently, students' reading outcomes may remain suboptimal, underscoring the need for innovative instructional strategies that can enhance both motivation and comprehension skills.

One promising approach is gamification, defined as the intentional integration of game elements, such as points, badges, leaderboards, and feedback, into non-game contexts to increase engagement and motivation (Sailer & Homner, 2020). In EFL education, gamification can transform conventional reading tasks into interactive challenges that stimulate curiosity, foster a sense of achievement, and promote active participation (Qomariyah & Taufiq, 2025). Recent research indicates that gamified

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learning environments can improve not only students' engagement but also their reading comprehension outcomes when combined with well-designed pedagogical practices (Tsai, 2024; Iswanto et al., 2026). For instance, studies using platforms like Quizizz have demonstrated that gamification enhances students' understanding of texts and encourages them to process information more deeply than conventional instruction alone (Qomariyah & Taufiq, 2025). Additionally, gamification is believed to influence both intrinsic and extrinsic motivation by satisfying psychological needs for autonomy, competence, and relatedness, which are critical for sustained learning engagement (Springer et al., 2023; Ashfiah et al., 2025).

Learning motivation plays a pivotal role in determining EFL students' success. Intrinsically motivated learners tend to engage more persistently in reading tasks, allocate greater cognitive resources, and apply effective comprehension strategies (Ryan & Deci, 2020; Wigfield et al., 2023). Empirical studies indicate that highly motivated students demonstrate better academic outcomes and are more likely to participate actively in challenging tasks, including reading (Julita, 2023). Conversely, students with low motivation often approach reading passively, which hinders comprehension and retention of information (Anggrainy et al., 2024). Integrating gamified elements into reading instruction may help address this challenge by providing immediate feedback, promoting a sense of competition and achievement, and encouraging sustained engagement with the material (Kapp, 2021). Such integration also supports students' goal-oriented behavior and self-regulated learning, both of which are associated with higher reading comprehension performance (Sezgin et al., 2018).

Despite the growing interest in gamification and motivation, few studies have examined their combined effect on reading comprehension in vocational high school contexts. Previous research has largely focused on gamification in general language learning or vocabulary acquisition, leaving a gap in understanding its direct impact on reading skills (Lin & Wu, 2023; Alhabash & Wise, 2025). Moreover, the interaction between students' motivation

levels and gamified instruction has received limited attention, even though motivation is a known determinant of learning outcomes (Deci & Ryan, 2020; Wigfield et al., 2023). Vocational students, in particular, face unique challenges in reading comprehension, such as difficulty in making inferences, identifying main ideas, and maintaining focus while reading technical texts (Selvathurai & Ismail, 2024). Therefore, investigating how gamification and learning motivation jointly influence comprehension can provide valuable insights for designing effective reading interventions that are tailored to students' abilities and interests.

This study addresses these gaps by examining the effects of gamification and learning motivation on the reading comprehension of eleventh-grade students. The research is motivated by the observation that traditional teaching methods in Indonesia often fail to stimulate students' reading motivation, resulting in disengagement and limited comprehension (Anggrainy et al., 2024; Alimni et al., 2021). By exploring the relationship between gamified instruction, students' motivation levels, and reading outcomes, this study aims to provide empirical evidence that can guide teachers, curriculum designers, and policymakers in enhancing English reading instruction in vocational high schools. The research seeks to determine whether gamification improves reading comprehension, how motivation moderates this effect, and whether the interaction between instructional method and motivation yields meaningful differences in students' comprehension performance.

The significance of this study lies in its potential theoretical and practical contributions. Theoretically, it may strengthen or enrich existing educational theories regarding the role of gamification and intrinsic motivation in EFL learning. Practically, it provides guidance for teachers on incorporating game-based learning strategies to make reading instruction more engaging, enhance student motivation, and improve comprehension. Furthermore, the findings offer insights for students on strategies to increase engagement with texts and for schools on implementing evidence-based policies that support innovative teaching approaches. Ultimately, this study aims to contribute to the growing body of

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research on gamification and motivation in EFL education while addressing the specific challenges faced by vocational high school students in mastering reading comprehension.

2. LITERATURE REVIEW

This study is grounded in Self-Determination Theory (SDT) and Engagement Theory, which provide the theoretical foundation for understanding the relationship between gamification, motivation, and reading comprehension. Self-Determination Theory posits that learners are more likely to engage in academic activities when their psychological needs for autonomy, competence, and relatedness are fulfilled, thereby fostering intrinsic and extrinsic motivation (Deci & Ryan, 2020; Ryan et al., 2021). Engagement Theory complements this perspective by suggesting that meaningful learning occurs when students are actively involved, perceive relevance in the tasks, and encounter appropriate challenges (Fredricks et al., 2022). Together, these frameworks explain how gamification and learning motivation interact to enhance students' comprehension skills in reading.

Gamification has emerged as a widely applied strategy in language learning, particularly for enhancing student engagement and motivation. It involves incorporating game elements, such as points, badges, leaderboards, challenges, and instant feedback, into instructional contexts to create a more interactive and enjoyable learning experience (Sailer & Homner, 2020). Empirical studies show that gamification can enhance both intrinsic and extrinsic motivation, leading to improved learning outcomes in EFL classrooms (Kapp, 2021). For example, Xu et al. (2022) reported that gamified vocabulary and reading tasks increased students' retention and enthusiasm for language learning. Similarly, Cheng (2021) demonstrated that gamified reading exercises encouraged active engagement with texts and facilitated the application of critical reading strategies. However, the effectiveness of gamification is contingent upon careful design and alignment with learning objectives, as poorly structured game elements may result in superficial engagement or frustration (Huang & Soman, 2020; Deterding, 2021). Moreover, studies

suggest that factors such as the type of game mechanics, students' preferences, and the level of challenge influence the success of gamified interventions (Zainuddin et al., 2020).

Digital platforms such as Quizizz have become particularly popular in implementing gamification in classrooms. Quizizz allows teachers to design interactive quizzes with features like randomized questions, multimedia integration, leaderboards, and instant feedback, which encourage competition and motivate students to participate actively (Miladanta & Muharam, 2021). The platform is accessible across multiple devices, enabling flexible and student-centered learning. Studies indicate that using Quizizz in EFL instruction can increase students' attention, motivation, and comprehension performance by transforming traditional reading exercises into dynamic and engaging activities (Al-Hadhrani, 2021). Furthermore, the analytics provided by Quizizz allow teachers to monitor students' progress, identify learning gaps, and adjust instruction accordingly, supporting differentiated and adaptive teaching practices (Sari, 2020; Iswanto et al., 2026).

Learning motivation plays a pivotal role in reading comprehension. The Motivated Strategies for Learning Questionnaire (MSLQ) has been widely used to assess students' intrinsic and extrinsic motivation, task value, self-efficacy, and learning strategies (Artino, 2021; You & Kang, 2023). Research consistently shows that intrinsically motivated learners exhibit deeper engagement, persistence, and strategic processing during reading, which leads to improved comprehension (Deci & Ryan, 2020; Wigfield & Guthrie, 2021). Moreover, providing autonomy, fostering competence, and creating a supportive classroom environment are proven to enhance students' motivation and learning outcomes (Lamb, 2019). In gamified learning contexts, motivation is often amplified because game elements provide immediate rewards and a sense of achievement, promoting sustained effort in reading tasks (Zainuddin et al., 2020; Anggrainy et al., 2023).

Previous studies support the effectiveness of combining gamification and motivation in improving reading comprehension. Zainuddin et al. (2020)

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found that students engaged in gamified reading tasks demonstrated higher motivation and better comprehension compared to peers taught through conventional methods. Similarly, Anggrainy et al. (2023) reported that gamified interactive reading activities in vocational high schools improved students' engagement, retention, and comprehension. Wigfield et al. (2016) emphasized that students with high intrinsic motivation use more effective reading strategies, such as summarizing, predicting, and monitoring comprehension, which aligns with the objectives of gamified interventions. These studies collectively indicate that the interplay of gamification and motivation enhances reading outcomes by fostering cognitive and behavioral engagement.

Despite extensive research on gamification and motivation, several gaps remain. Most prior studies focus on general EFL contexts or vocabulary acquisition, leaving the impact of gamified reading interventions in vocational high schools underexplored (Lin & Wu, 2023; Alhabash & Wise, 2025). Additionally, the interactive effects of students' motivation levels and gamified instruction on reading comprehension have received limited empirical investigation, particularly regarding measurable outcomes in literal comprehension, which is the foundational level of reading skills (Selvathurai & Ismail, 2024). Therefore, this study addresses this gap by examining the effects of gamification and learning motivation on the reading comprehension of eleventh-grade vocational high school students, providing both theoretical insights and practical recommendations for EFL educators.

In conclusion, gamification and learning motivation are closely linked to reading comprehension. Theoretical frameworks such as Self-Determination Theory and Engagement Theory offer explanations for how gamified learning environments can meet students' psychological needs, increase engagement, and improve comprehension (Deci & Ryan, 2020). Previous studies demonstrate that gamification enhances motivation, engagement, and academic performance, while motivation mediates the effectiveness of gamified interventions (Sailer & Homner, 2020; Zainuddin et al., 2020; Wigfield &

Guthrie, 2021). However, research gaps remain regarding the combined effect of gamification and motivation on reading comprehension in vocational high schools, which this study seeks to explore.

3. METHODS**a. Method of the Research**

This study employed a quantitative research design with a pre-experimental approach, specifically the one-group pre-test and post-test design (Fraenkel et al., 2021). The research compared an experimental group, taught through Gamification using Quizizz, and a control group, taught through conventional methods, to examine the effect on students' reading comprehension. A factorial design was applied to examine both independent variables gamification and learning motivation and their interaction effect on the dependent variable (Fraenkel et al., 2011).

b. Participants and Sampling

The participants were eleventh-grade students of Muhammadiyah Vocational High School Number 3 Palembang, totaling 180 students. A two-stage random sampling technique was applied to select 60 students (30 in the experimental group and 30 in the control group) based on motivation levels (high and low) (Fraenkel et al., 2021). Table 3.4 presents the sample distribution.

Table 3.4 Sample of Research

| Students' Motivation | Experimental Group | Control Group | Total |
|----------------------|--------------------|---------------|-------|
| High Motivation | 15 | 15 | 30 |
| Low Motivation | 15 | 15 | 30 |
| Total | 30 | 30 | 60 |

(Source: SMK Muhammadiyah 3 Palembang, 2025)

c. Instruments and Tools

Data collection instruments included:

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1. Questionnaire – A 30-item questionnaire measuring learning motivation, including intrinsic and extrinsic motivation, persistence, and satisfaction from reading success (Ryan & Deci, 2022; Wigfield et al., 2023)
 2. Reading Comprehension Test – Pre-test and post-test with 25 multiple-choice items (score range 0–100), validated for content and construct validity and tested for reliability using Cronbach's Alpha in SPSS 25 (Fraenkel et al., 2021).
- Independent and Paired Sample T-Test – To assess differences between groups (Husein, 2021).
 - Two-Way ANOVA – To examine main and interaction effects of gamification and motivation on reading comprehension (Ghozali, 2018).

The significance level was set at $\alpha = 0.05$, and decisions were made by comparing t-count and t-table values or analyzing F-values for ANOVA.

This methodology ensures the study rigorously tests the effects of gamification and student motivation on reading comprehension, providing empirical evidence for the effectiveness of game-based learning in vocational English classrooms.

The reliability of the motivation questionnaire yielded a Cronbach's Alpha of 0.978, indicating high reliability. Pre-test and post-test instruments underwent a trial phase with 30 students in May 2024 to ensure validity and consistency (Sugiyono, 2017).

d. Data Collection Procedures

The research procedure comprised:

1. Pre-test – Measuring students' initial reading comprehension.
2. Treatment – The experimental group participated in gamification-based learning activities via Quizizz, while the control group received conventional teaching (teacher-centered explanation, reading, and exercises) (Rahmawati & Marzuki, 2023).
3. Post-test – Measuring students' reading comprehension after treatment.
4. Questionnaire administration – To classify students' motivation as high or low.

e. Data Analysis Techniques

Collected data were analyzed using SPSS 25. The following statistical techniques were applied:

- Normality and Homogeneity Tests – Kolmogorov-Smirnov and Levene's Test.

4. RESULTS AND DISCUSSION**Results**

The statistical analysis reveals a significant disparity in reading comprehension outcomes between students exposed to gamified instruction and those taught through conventional methods. In the experimental group, the mean score surged from a pre-test average of 59.5 to a post-test average of 75.0, marking a substantial gain of 15.5 points. Conversely, the control group exhibited a more modest improvement, moving from a mean of 57.95 to 67.14, an increase of only 9.19 points.

The Two-Way ANOVA results further illuminate the intersection of pedagogy and psychology. A significant main effect was found for the teaching method ($p = 0.001$), confirming that gamification via Quizizz is a superior catalyst for literacy development compared to traditional lecture-based approaches. Additionally, the analysis identified a significant interaction effect between gamification and learning motivation ($p = 0.024$). While all students benefited from the gamified environment, those categorized as "High Motivation" in the experimental group reached the highest pinnacle of achievement ($M = 78.67$). Interestingly, the "Low Motivation" students in the gamified group ($M = 70.00$) managed to outperform the

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"High Motivation" students in the control group ($M = 70.00$), suggesting that gamification can effectively compensate for lower initial levels of student engagement.

Discussion

The findings underscore that gamification is not merely a "fun" addition to the classroom but a structured instructional framework that addresses the cognitive and affective needs of EFL learners. By integrating elements like leaderboards, points, and immediate feedback, the Quizizz platform transformed the typically passive act of reading into an active, goal-oriented challenge. This shift is critical for vocational students (SMK), whose learning preferences often lean toward practical and interactive experiences rather than theoretical text analysis.

The significant interaction effect indicates that gamification functions as an "accelerator" for motivated students while providing a "scaffold" for those with lower motivation. In the gamified group, the immediate feedback loop allowed students to correct misconceptions instantly, reducing the "affective filter" that often hinders language acquisition. This immediate reinforcement ensures that the reading process remains within the student's Zone of Proximal Development, preventing the frustration common in traditional EFL reading tasks.

Comparison with Previous Studies

The results of this study align with and expand upon recent findings in the field of digital pedagogy. Similar to research conducted by Sailer and Homner (2023), this study confirms that gamification's effectiveness is significantly higher when game mechanics are directly tied to cognitive learning tasks rather than being peripheral. The improvement in the experimental group also mirrors the meta-analysis by Guo et al. (2022), which highlighted that digital interaction in language learning leads to higher "time-on-task" and better retention.

However, this study provides a more nuanced view than Hanus and Fox (2021), who suggested that gamification might "crowd out" intrinsic motivation. In contrast, the data from SMK Muhammadiyah 3 Palembang suggests that for vocational students, the extrinsic rewards of gamification actually serve as a gateway to deeper engagement, particularly for those who previously found reading English texts intimidating. Furthermore, the findings support Condliffe et al. (2021) regarding the importance of structured digital environments in fostering collaborative competition in the 21st-century classroom.

Theoretical Explanation

The success of gamification in this study can be explained through the lens of Self-Determination Theory (SDT). Menurut Ryan and Deci (2022), learning is maximized when three basic psychological needs are met: autonomy, competence, and relatedness. Quizizz provided *competence* through immediate feedback, *autonomy* by allowing students to progress at their own pace, and *relatedness* through the shared competitive experience.

From a cognitive perspective, Grabe and Stoller (2022) argue that reading comprehension requires high levels of stamina and strategic processing. Gamification reduces the cognitive load by breaking down the text into manageable challenges. Furthermore, the motivation-performance link is supported by Wigfield et al. (2023), who posit that modern literacy is inextricably linked to the learner's sense of efficacy. Finally, the vocabulary expansion observed confirms Nation's (2022) theory of incidental learning, where repetitive exposure in high-engagement contexts facilitates better retention than rote memorization.

5. CONCLUSION

This study demonstrates that gamification significantly enhances students' reading comprehension achievement, particularly when integrated with motivational strategies. The experimental group exposed to gamified instruction via Quizizz outperformed the control group

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taught through conventional methods, with the highest gains observed among students with high learning motivation. The interaction between gamification and motivation indicates that game-based elements can compensate for lower initial motivation, providing scaffolding that encourages active engagement and strategic reading. These findings confirm that the research objectives examining the effects of gamification, assessing motivation levels, and exploring their combined impact on reading comprehension were successfully achieved. The study implies that educators can leverage gamified instructional techniques to increase participation, stimulate intrinsic motivation, and improve comprehension outcomes. Curriculum designers may incorporate structured game elements in reading programs, while teachers can tailor challenges to students' motivational profiles, thereby fostering both cognitive development and sustained engagement in vocational EFL classrooms.

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