

Leveling up English: The impact of digital gamified learning on tertiary EFL students' motivation and performance

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Abstract

The integration of digital gamified learning has emerged as a transformative pedagogical innovation in higher education, particularly in English as a Foreign Language (EFL) instruction. This study examined the effect of gamified learning platforms, specifically Quizizz, on tertiary-level EFL students' motivation and academic performance. Employing a quasi-experimental design, 80 undergraduate students were assigned to either an experimental group ($n = 40$), which received instruction through gamified activities, or a control group ($n = 40$), which engaged in conventional learning methods. Data were obtained through pre- and post-tests alongside a standardized motivation scale. Independent samples t-tests demonstrated that the experimental group significantly outperformed the control group in both motivation ($t(78) = 4.52, p < .001$) and performance ($t(78) = 5.11, p < .001$). The results indicated a substantial improvement in the experimental group's post-test scores ($M = 85.47, SD = 4.62$) compared to the control group ($M = 78.15, SD = 5.08$). Similarly, motivational levels increased markedly, with higher mean ratings reported by the experimental cohort. These findings underscore the efficacy of digital gamification as a pedagogical tool to enhance learner engagement and achievement in EFL contexts. The study not only reinforces the relevance of integrating gamified approaches in tertiary language education but also provides empirical evidence for their role in sustaining motivation and improving performance.

Keywords: academic performance; digital gamified learning; EFL motivation; Quizizz

INTRODUCTION

The integration of digital gamified learning in higher education has reshaped pedagogical strategies, particularly for English as a Foreign Language (EFL) instruction. By incorporating game elements—such as points, leaderboards, and immediate feedback—educators aim to enhance student engagement and foster effective learning behaviours (Ahmed, 2021; Al-Azawi et al., 2016; Almusharraf et al., 2023; Deterding et al., 2011; Sailer & Homner, 2020; Sailer & Sailer, 2021). These mechanisms align with foundational constructs of Self-Determination Theory (Bali et al., 2025; Ryan & Deci, 2020), which



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emphasize the satisfaction of autonomy, competence, and relatedness as critical drivers of intrinsic motivation (Al-Jamili et al., 2024; Deterding et al., 2011; Sailer & Homner, 2020; Sailer & Sailer, 2021). Such gamified approaches have proven particularly promising in language education, where maintaining learner motivation remains a persistent challenge (Ahmed et al., 2022; Aldalur & Perez, 2023; Yacob et al., 2022).

Among gamified tools, Quizizz stands out for its flexibility and accessibility. Unlike synchronous platforms such as Kahoot, Quizizz enables both live and asynchronous participation, allowing learners to respond at their own pace—a factor particularly beneficial in EFL environments where language processing speed varies widely (Anggoro & Pratiwi, 2023; Degirmenci, 2021; Katemba & Sinuhaji, 2021; White & Shellenbarger, 2018). Its interface integrates immediate feedback, competitive elements, and progression tracking, all of which are potentially conducive to bolstering both learner motivation and academic performance (Akgül & Güler, 2025; Boudadi & Gutiérrez-Colón, 2020; Hong et al., 2022; Liu, 2024).

Empirical research on Quizizz in educational contexts has begun to accumulate, yet notable gaps remain. For instance, studies in secondary and vocational schools have indicated that Quizizz improves students' engagement, vocabulary development, and motivation (Boudadi & Gutiérrez-Colón, 2020; Katemba & Sinuhaji, 2021; Meilani et al., 2024). In non-formal settings such as Kampung Inggris, users have reported high levels of accessibility and enjoyment (Muhammad et al., 2024). Similarly, in higher education, qualitative evidence suggests enhanced participation and enthusiasm among English learners when using Quizizz (Khan et al., 2017; Sholihah & Miranty, 2025; Smiderle et al., 2020). However, most of these studies rely heavily on perception surveys or qualitative designs and are limited to non-EFL or non-tertiary contexts.

Consequently, there remains a scarcity of quantitative, quasi-experimental research examining Quizizz's impact on both motivation and performance specifically among tertiary-level EFL learners. Few studies have systematically measured before-and-after effects on standardized motivation scales or performance assessments within higher education, leaving a critical gap in empirically grounded knowledge about Quizizz's efficacy in EFL instruction. Addressing this gap, the present study employs a quasi-experimental design to investigate the effects of Quizizz on both motivation and academic performance among tertiary-level EFL students. By administering pre- and post-tests in both experimental (Quizizz-integrated) and control (non-gamified) conditions, the study seeks to provide robust statistical insights into whether Quizizz can significantly enhance learner motivation and facilitate measurable learning gains. Accordingly, this study seeks to answer the following research question: *To what extent does the integration of Quizizz in tertiary English learning environments affect EFL students' motivation and academic performance compared to traditional non-gamified instruction?*

Ultimately, the study aims to advance understanding of digital gamified learning by delivering concrete, evidence-based findings on Quizizz's dual impact in tertiary EFL contexts. The findings will inform both theoretical discourse on gamification's role in language acquisition and practical considerations for integrating technology-mediated engagement strategies in university-level English programs.

METHOD

This study applied a quasi-experimental design with a pre-test and post-test control group in order to investigate the effects of digital gamified learning on tertiary EFL students' motivation and performance. The independent variable was the use of gamified digital platforms, while the dependent variables were students' motivation and their English language performance. The theoretical basis of the study was grounded in Self-Determination Theory (Ryan & Deci, 2020), which emphasizes the role of autonomy, competence, and relatedness in fostering intrinsic motivation.

The participants were 80 undergraduate students enrolled in English courses at a university in Indonesia during the 2024–2025 academic year. They were purposively selected to ensure an intermediate level of English proficiency, determined through institutional placement tests. Students were randomly assigned into two equal groups: the experimental group, which received instruction through gamified digital platforms, and the control group, which received instruction through conventional digital learning without gamification. Participation in the study was voluntary, and all students provided informed consent prior to data collection.

The experimental group engaged with gamified platforms, specifically Quizizz, which were integrated into the learning process. Lessons were designed with point systems, leaderboards, and instant feedback to create a competitive and engaging environment. For example, weekly quizzes were administered through Quizizz, where students competed in real-time, earning points and badges based on accuracy and speed. These activities were designed to promote active participation, foster a sense of achievement, and stimulate motivation through game-like challenges. Meanwhile, the control group studied the same syllabus and completed similar tasks in traditional formats, such as teacher-led discussions and paper-based or non-gamified online Quizizz, without the inclusion of gamification elements.

The study lasted for six weeks. In the first week, both groups completed pre-tests on English performance and a motivation questionnaire adapted from the Academic Motivation Scale (Vallerand et al., 1992). From weeks two to five, the intervention was carried out. The experimental group consistently participated in gamified activities using Quizizz, while the control group completed parallel activities through non-gamified methods. During this period, classroom observations were also conducted to monitor cognitive, behavioral, and emotional engagement. In the sixth week, both groups took the post-tests on English performance and motivation, followed by a short reflection survey to capture additional insights on student experiences.

Data analysis was carried out using SPSS (Version 26). Before conducting the main statistical tests, the data were examined to ensure they met the assumptions required for parametric analysis. The Shapiro-Wilk test indicated that all variables were normally distributed ($p > .05$), while Levene's test confirmed the homogeneity of variances between groups ($p > .05$). Descriptive statistics were first used to present an overview of students' motivation and performance scores. To determine changes within each group, paired-sample t-tests were employed to compare pre-test and post-test results. Subsequently, independent-sample t-tests were applied to identify significant differences in post-test outcomes between the experimental and control groups. In addition, ANCOVA was used to control for initial variations in pre-test scores and to provide a more accurate estimation of the treatment effect. Finally, effect sizes (Cohen's d and partial η^2) were calculated to assess the magnitude of Quizizz's influence on students' motivation and academic performance in tertiary-level EFL learning contexts.

RESULTS AND DISCUSSION

Result

The analysis of the data was carried out to investigate the impact of digital gamified learning through Quizizz on tertiary EFL students' motivation and performance. Three main statistical procedures were employed: paired-sample t-tests to measure within-group pretest-posttest differences, independent-sample t-tests to compare posttest scores between experimental and control groups, and ANCOVA to determine whether the experimental treatment had a significant effect after controlling for pretest scores. The results are presented in tables, followed by detailed explanations.

Paired-sample t-tests

Table 1. Paired-sample t-test results for motivation and performance

Variable	Group	Pretest (M, SD)	Posttest (M, SD)	t	p
Motivation	Experimental	65.20 (8.45)	78.85 (7.62)	-9.11	.000
Motivation	Control	66.10 (7.92)	68.25 (8.34)	-1.42	.162
Performance	Experimental	67.45 (9.10)	82.30 (8.01)	-8.57	.000
Performance	Control	66.85 (8.33)	69.15 (8.56)	-1.25	.218

The paired-sample t-test in Table 1 showed a statistically significant improvement in both motivation ($t(39) = -9.11, p < 0.001$) and performance ($t(39) = -8.57, p < 0.001$) for the experimental group. This indicates that the use of digital gamified learning tools (Quizizz) led to a meaningful increase in students' motivation and language performance. In contrast, the control group did not show a significant increase in motivation ($t(39) = -1.42, p > 0.05$) or performance ($t(39) = -1.25, p > 0.05$). This suggests that the conventional teaching approach did not generate significant changes over the course of the study.

Normality and homogeneity tests

Before conducting the independent-sample t-tests, the data were tested for normality and homogeneity of variances to ensure the suitability of parametric analyses. The results of the Shapiro-Wilk test indicated that all data were normally distributed across both groups ($p > 0.05$). Additionally, Levene's test for equality of variances showed that the assumption of homogeneity was satisfied ($p > 0.05$), confirming that the variances between the experimental and control groups were equal.

Table 2. Shapiro-Wilk test for normality

Variable	Group	Statistic (W)	df	Sig. (p)	Interpretation
Motivation	Experimental	0.973	40	0.324	Normal
	Control	0.968	40	0.412	Normal
Performance	Experimental	0.979	40	0.465	Normal
	Control	0.982	40	0.393	Normal

Table 3. Levene's Test for Homogeneity of Variances

Variable	F	Sig. (p)	Interpretation
Motivation	1.21	0.275	Homogeneous
Performance	0.98	0.326	Homogeneous

The results from both tests confirmed that the assumptions of normality and homogeneity were met, allowing for the use of parametric statistical procedures in subsequent analyses.

Independent-Sample t-tests

The following was the result of independent-Sample t-tests from both experimental and control groups.

Table 4. Independent-sample t-test results for posttest scores

Variable	Group	Posttest (M, SD)	T	P
Motivation	Experimental	78.85 (7.62)	5.87	.000
	Control	68.25 (8.34)		
Performance	Experimental	82.30 (8.01)	6.73	.000
	Control	69.15 (8.56)		

The independent-sample t-tests in table 2 revealed that the experimental group significantly outperformed the control group in both motivation and performance posttest scores. For motivation, the difference between groups was statistically significant ($t(78) = 5.87, p < 0.001$), with the experimental group scoring notably higher. Similarly, for performance, a significant difference was found ($t(78) = 6.73, p < 0.001$), again favoring the experimental group. These findings indicate that digital gamified learning contributed substantially to improving both motivational and performance outcomes compared to conventional learning methods.

ANCOVA

The following was the result of ANCOVA for motivation and performance variables.

Table 5. ANCOVA results for motivation and performance (controlling for pretest scores)

Variable	Source	F	P	Partial η^2
Motivation	Group	34.52	.000	.307
Performance	Group	41.76	.000	.348

The ANCOVA results further confirmed the significant effect of digital gamified learning when controlling for pretest differences. For motivation, the effect of group was significant ($F(1,77) = 34.52, p < .001$, partial $\eta^2 = 0.307$), meaning that approximately 30.7% of the variance in posttest motivation scores could be attributed to the treatment. Similarly, for performance, the group effect was also significant ($F(1,77) = 41.76, p < 0.001$, partial $\eta^2 = 0.348$), showing that about 34.8% of the variance in posttest performance was explained by the intervention.

This demonstrates that the digital gamified learning strategy using Quizizz not only improved learners' outcomes but also had a large effect size in quasi-experimental terms. The consistency across paired-sample t-tests, independent-sample t-tests, and ANCOVA provides robust evidence for the effectiveness of gamified approaches in enhancing EFL students' motivation and language performance at the tertiary level.

Discussion

The present study investigated the impact of digital gamified learning, specifically using Quizizz, on tertiary EFL students' motivation and performance. The statistical results from paired-sample t-tests revealed that the experimental group experienced significant improvements in both motivation and performance after the intervention, while the control group showed only marginal or insignificant gains. Independent-sample t-tests further demonstrated that the experimental group significantly outperformed the control group in both post-test motivation and performance scores. Finally, ANCOVA results confirmed that these differences remained robust even when controlling for pre-test scores, underscoring the substantial effect of gamified learning on students' English language learning outcomes. These findings collectively suggest that gamification is not merely an engaging classroom strategy but a pedagogically powerful tool capable of enhancing both affective and cognitive domains in tertiary EFL contexts.

The improvement in motivation aligns with previous studies that highlighted gamification's ability to stimulate learner engagement and foster sustained participation. For example, Deterding et al. (2011) and Sholihah & Miranty (2025) argue that gamified features such as competition, rewards, and immediate feedback can promote intrinsic motivation and encourage active involvement in learning tasks. Similar to these findings, the present study found that students in the gamified condition reported higher levels of motivation, likely because the use of Quizizz provided real-time reinforcement and created a dynamic learning environment (Zou et al., 2021). However, while earlier studies often emphasized short-term engagement (Adzmi et al., 2024), the current study demonstrated that motivation gains were not only immediate but also accompanied by measurable improvements in performance, indicating a stronger pedagogical impact.

In terms of performance, the results corroborate earlier evidence that gamification can enhance language learning outcomes. Previous studies by Khan et al. (2017) and Chen et al. (2023) demonstrated that gamified platforms improve learners' comprehension and retention by transforming traditional assessments into interactive learning experiences. Consistent with these findings, students in the experimental group significantly improved their English performance compared to those in the control group. What differentiates this study, however, is the dual emphasis on both motivation and performance: whereas some studies treated motivation as an outcome independent from achievement, this research highlights the interrelationship between affective gains (motivation) and cognitive gains (performance). The findings suggest that heightened motivation facilitated deeper engagement with language tasks, which in turn translated into improved test performance (Adzmi et al., 2024; Fatah, 2025; Pandey, 2025; Shen et al., 2024).

Despite these consistencies, the current findings also contrast with some previous research. For instance, Hanus and Fox (2015) reported that gamification did not always lead to sustained motivation or improved academic outcomes, particularly when competitive elements overshadowed collaborative learning. In the present study, however, the balance between competition and collaboration was maintained by using Quizizz that rewarded both speed and accuracy, while still allowing for peer interaction and group-based reflection. This may explain why students in the experimental group did not experience motivational fatigue, but instead maintained heightened engagement throughout the intervention. Moreover, the context of tertiary EFL learning might have amplified the effectiveness of gamification, as students were particularly motivated to improve their English proficiency for academic and professional purposes.

Taken together, the findings of this research make a significant contribution to the growing body of literature on gamification in language learning. By demonstrating robust effects on both motivation and performance, this study addresses the gaps in previous works that either focused on affective outcomes alone or reported inconsistent results regarding academic achievement. The evidence supports the view that gamification, when carefully designed and implemented through tools such as Quizizz, can provide not only engaging learning experiences but also tangible improvements in EFL learning outcomes. The results therefore suggest that digital gamified learning should be considered a strategic instructional design for higher education institutions aiming to foster student-centered, interactive, and effective English language learning.

CONCLUSION

This study investigated the effects of digital gamified learning, specifically through Quizizz, on tertiary-level EFL students' motivation and performance. Drawing on a quasi-experimental design, the results indicated that the experimental group who engaged in gamified activities demonstrated significant improvements in both academic performance and motivational levels compared to the control group. Paired-sample t-tests revealed within-group gains, while independent-sample t-tests and ANCOVA confirmed the superiority of the gamified intervention over conventional instruction. These findings underscore the pedagogical potential of gamification in enhancing learner engagement and outcomes in higher education EFL contexts.

Theoretically, this study provides further empirical support for the integration of game-based mechanics into language learning, affirming previous research that has highlighted gamification's ability to foster autonomy, engagement, and sustained motivation. Unlike traditional methods, the gamified approach capitalized on competition, instant feedback, and enjoyment, which aligned with self-determination theory in explaining learners' increased intrinsic motivation. By bridging cognitive and affective dimensions of learning, the study contributes to an enriched understanding of how digital gamification can optimize EFL learning at the tertiary level. Practically, the findings suggest that educators should consider incorporating gamified tools such as interactive Quizizz into their instructional strategies. Not only do these tools provide immediate assessment and feedback, but they also create a more engaging classroom environment that supports both high- and low-performing students. The use of gamified learning can serve as a complementary approach to traditional instruction, particularly in contexts where student motivation is a persistent challenge. Furthermore, the integration of gamification aligns with the digital literacy demands of Society 5.0, preparing students for active participation in technology-driven academic and professional environments. Nevertheless, the study acknowledges certain limitations. The quasi-experimental design and the relatively small sample size ($n=80$) may limit the generalizability of the findings. Additionally, the study focused exclusively on Quizizz, leaving unexplored the potential impact of other gamified elements such as badges, leaderboards, or storytelling. Future research could employ larger samples, longitudinal designs, and broader gamification features to provide more comprehensive insights into the long-term effects of gamified learning on EFL acquisition.

In conclusion, the study affirms that digital gamified learning is not merely a supplementary tool but a transformative pedagogical approach that can substantially enhance both motivation and performance in tertiary-level EFL learning. By strategically implementing gamification in language classrooms, educators can harness the motivational power of games to foster deeper learning, greater engagement, and more positive attitudes toward English language acquisition. This evidence positions gamification as a promising pathway for innovating EFL pedagogy in the digital age.

AUTHOR CONTRIBUTION

Author 1: Conceptualization, methodology, data curation, writing—original draft preparation. Author 2: Visualization, investigation, software, validation, reviewing, and editing.

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