

## **Gamification and student's performance: a comparative study**

### **Gamificación y el rendimiento de los estudiantes: un estudio comparativo**

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## Resumen

Este estudio explora el impacto de la gamificación en el rendimiento académico de los estudiantes en la enseñanza del inglés como lengua extranjera (EFL). Al integrar elementos de juego como recompensas, puntos, desafíos y competencia, la gamificación busca mejorar la participación, la motivación y el logro académico de los estudiantes. Se empleó un diseño de investigación comparativo para evaluar la efectividad de los enfoques de aprendizaje gamificado en comparación con los métodos tradicionales. Los hallazgos indican que la gamificación mejora significativamente la motivación y la participación, especialmente en habilidades de lectura, escritura y comprensión auditiva. Sin embargo, las habilidades de expresión oral requieren apoyo adicional. El estudio destaca la necesidad de estrategias pedagógicas equilibradas que combinen métodos gamificados y tradicionales.

**Palabras clave:** Gamificación; compromiso estudiantil; motivación; rendimiento académico; inglés como lengua extranjera (EFL); estrategias instruccionales

## Abstract

This study explored the impact of gamification on student performance in English as a Foreign Language (EFL) education. By integrating game elements such as rewards, points, challenges, and competition, gamification aims to enhance student engagement, motivation, and academic achievement. A comparative research design was employed to evaluate the effectiveness of gamified learning approaches versus traditional instructional methods. The findings indicate that gamification significantly improves motivation and engagement, particularly in reading, writing, and listening skills. However, speaking skills require additional instructional support. The study highlights the need for balanced pedagogical strategies incorporating both gamified and traditional teaching methods.

**Keywords:** Gamification; student engagement; motivation; academic performance; English as a Foreign Language (EFL); instructional strategies

## Resumo

Este estudo investiga o impacto da gamificação no desempenho acadêmico dos alunos no ensino de inglês como língua estrangeira (EFL). A incorporação de elementos de jogo, como recompensas, pontos, desafios e competição, visa aumentar o engajamento, a motivação e o desempenho acadêmico dos alunos. Foi utilizado um desenho de pesquisa comparativo para avaliar a eficácia das abordagens de aprendizagem gamificada em comparação com os métodos tradicionais. Os resultados indicam que a gamificação melhora significativamente a motivação e o engajamento, especialmente nas habilidades de leitura, escrita e compreensão auditiva. No entanto, as habilidades de fala exigem suporte instrucional adicional. O estudo enfatiza a necessidade de estratégias pedagógicas equilibradas que combinem métodos gamificados e tradicionais.

**Palavras-chave:** Gamificação; engajamento estudantil; motivação; desempenho acadêmico; inglês como língua estrangeira (EFL); estratégias instrucionais

## Introduction

Gamification, as an innovative instructional strategy, has gained significant attention in educational contexts for its potential to enhance student engagement and academic performance. By incorporating game elements into the learning process, educators aim to foster motivation, participation, and knowledge retention (Sailer and Homner, 2020) (Zainuddin et al., 2020). This study compares the effects of gamified learning approaches on student performance in different educational settings, shedding light on its effectiveness and implications for teaching practices in both national and foreign language education.

The present study, *Gamification and Students' Performance: A Comparative Study*, was developed as part of the research framework of the online Master's program in Education with a specialization in Linguistics and Literature. This investigation aligns with the research line "Education, Culture, Technology, and Innovation for Society" and specifically addresses the sub-line "Didactics of Teaching and Learning in National and Foreign Languages." The proposal sought to address the issue of low academic performance among beginner-level EFL learners by implementing gamification as an effective strategy to increase students' performance.

By integrating game-like elements such as rewards, points, challenges, and competition, gamification aims to create a more engaging and interactive teaching environment that motivates students to participate actively in their learning process Yıldırım and Şen (2021), Reinhardt (2019). The goal is to compare the efficacy of this approach with traditional methods to determine if gamification can offer a sustainable solution to the problem of low performance among beginner-level EFL learners. The study was conducted at the English Language Center of the "Dirección de Educación Continua" at UTMACH and involved a questionnaire to establish the relationship between gamification and students' performance in teaching English as a foreign language.

In the current educational context, the need to implement innovative strategies that enhance student performance has become a priority. Specifically, the use of traditional teaching methods in the teaching-learning process has revealed significant limitations that affect student motivation, engagement, and active participation, particularly in the field of national and foreign language education Almeida and Simoes (2019), Felder and Brent (2020). These practices, often centered on passive and lecture-based methods, lead to superficial learning that is disconnected from students' real needs and interests. This is especially concerning in today's context, which is increasingly characterized by the integration of technology and the digitalization of educational processes.

One of the most concerning manifestations of this problem was the low academic performance observed among students who struggle to effectively develop language skills, which directly impacts their overall learning outcomes. Additional negative effects include a lack of interest in learning languages, reduced retention of knowledge, and, in some cases, student attrition due to a lack of motivation Hamari et al. (2020), Majuri et al. (2018). These

limitations not only affect the classroom experience but also have long-term repercussions on students' personal, professional, and social development.

The possible causes of these undesired outcomes included the limited integration of technological resources and innovative strategies into teaching practices, the lack of teacher training in the use of tools such as gamification, and an educational planning process that prioritizes quantitative results over qualitative, student-centered learning experiences Dicheva et al. (2020), Seaborn and Fels (2020). Furthermore, resistance to change in certain educational settings continues to uphold a traditionalist vision that underestimates the advantages of active and engaging methodologies.

Gamification, defined as the use of game-based elements and mechanics in non-recreational contexts, emerges as a promising strategy to address these challenges. By promoting interactive and motivating learning environments, gamification seeks to increase student engagement and performance Sailer and Homner (2020), Zainuddin et al. (2020). However, questions remain regarding its effectiveness compared to traditional teaching methods, particularly in language learning contexts. This takes us to the following research question: To what extent does gamification influence academic performance among beginner-level EFL learners at UTMACH's English Language Center?

Addressing this question did not only help identify the impact of gamification on student performance but also contributed to the development of innovative and effective teaching strategies. The findings of this research aimed to foster meaningful, engaging, and adaptive learning experiences that meet the demands of the modern educational landscape.

### **Literature Review: Gamification and Student Performance**

Gamification, defined as the use of game design elements in non-game contexts (Deterding et al., 2011), has emerged as a promising strategy to enhance student engagement and academic performance in educational settings. By incorporating elements such as points, badges, and leaderboards, gamification aims to motivate learners and create immersive learning experiences. However, while its potential is widely recognized, the empirical evidence on its effectiveness remains mixed. This literature review explores the theoretical foundations of gamification, examines empirical evidence on its impact on student performance, identifies gaps in the existing research, and highlights the significance of this study in addressing these gaps.

The concept of gamification is rooted in theories of motivation and engagement. Deterding et al. (2011) provide a foundational definition, describing gamification as the application of game mechanics to non-game contexts to drive user engagement. Building on this, Hamari et al. (2014) link gamification to self-determination theory, suggesting that game elements like points and badges can satisfy psychological needs for competence, autonomy, and relatedness, thereby enhancing motivation. These theoretical frameworks established a strong basis for understanding how gamification can influence student behavior and performance. However, they also highlighted the need for empirical studies to validate these theoretical claims in educational contexts.

Empirical studies have demonstrated both the potential and limitations of gamification in improving student performance. For instance, Sailer et al. (2017) found that game elements such as points, badges, and leaderboards significantly enhance motivation and performance in educational settings. Similarly, Zainuddin et al. (2020) reported that gamification led to measurable improvements in academic performance and motivation in higher education. Recent studies, such as Huang et al. (2021), have extended these findings to STEM education, showing that gamification can boost engagement and performance in challenging subjects like science and mathematics.

However, the evidence is not uniformly positive. Hamari et al. (2014) conducted a meta-analysis revealing that while gamification positively affects motivation and engagement, its impact on learning outcomes is inconsistent. Majuri et al. (2018) echoed these findings, noting that gamification improves engagement but does not always translate into better academic performance. These mixed results suggest that the effectiveness of gamification may depend on factors such as the design of game elements, the context of implementation, and the characteristics of the learners.

Despite the growing body of research, several gaps and limitations remain. First, many studies, such as those by Sailer et al. (2017) and Almeida & Simoes (2019), are limited by small sample sizes and short-term interventions, raising questions about the generalizability and sustainability of their findings. Second, there is a lack of longitudinal studies examining the long-term effects of gamification on student performance. Rodrigues et al. (2023) addressed this gap to some extent by demonstrating improved retention rates over time, but more research is needed across diverse educational settings.

Additionally, the focus of existing studies has been uneven. While some, like Huang et al. (2021), have explored gamification in STEM education, others, such as Kalogiannakis et al. (2022), have focused on online learning environments. This leaves a gap in understanding how gamification impacts traditional classroom settings and non-STEM subjects. Furthermore, Dichev and Dicheva (2020) highlight the need for more rigorous experimental designs to isolate the effects of specific game elements and their interactions with different learner profiles.

Recent studies have expanded our understanding of gamification's impact on student performance. For instance, Huang et al. (2021) found that gamification significantly enhances engagement and performance in STEM subjects, while Kalogiannakis et al. (2022) demonstrated its effectiveness in online learning environments. Rodrigues et al. (2023) provided longitudinal evidence that gamification improves academic performance and retention rates in higher education. However, Dichev and Dicheva (2020) caution that while gamification is effective for engagement, its impact on long-term learning outcomes remains inconsistent. Similarly, Almeida and Simoes (2019) highlighted its benefits for intrinsic motivation in primary education but noted the need for further research in diverse educational contexts. These findings underscore the potential of gamification while highlighting the need for more comprehensive and longitudinal studies.

To summarize, the literature on gamification and student performance reveals both its potential and its challenges. Theoretical frameworks provide a strong foundation for understanding how gamification can enhance motivation and engagement, while empirical studies offer evidence of its positive effects on performance in specific contexts. However, inconsistencies in the findings and gaps in the research—such as the lack of longitudinal studies and limited exploration of diverse educational settings—underscore the need for further investigation. This study aims to address these gaps by examining the impact of gamification on student performance in a broader context, contributing to a more comprehensive understanding of its effectiveness in education.

## Materials and methodology

This study aimed to investigate the impact of gamification on the academic performance of beginner-level English as a Foreign Language (EFL) learners. By comparing gamified learning approaches with traditional teaching methods, the research sought to determine the effectiveness of gamification in enhancing student engagement, motivation, and performance. This study adopted a comparative research design, enabling the analysis of the relationship between gamification and student performance in EFL. The comparative approach facilitated the evaluation of differences in learning outcomes between groups exposed to gamified strategies and those following traditional instructional methods. A quantitative-methods approach was employed, to gather measurable data and ensure objective analysis.

The study involved 40 students enrolled in the first level of the English Language Center at the “Dirección de Educación Continua” of the “Universidad Técnica de Machala” (UTMACH). Participants were aged between 17 and 29 years and possess basic proficiency in English (A1 level based on the CEFR framework). The sample includes both male and female students with diverse learning backgrounds. Participants were selected using a non-probability purposive sampling method, focusing on a specific context where gamification strategies are applied. All participants provided informed consent before data collection commenced. To measure student performance, a questionnaire was administered. These tests assessed language skills, including vocabulary, grammar, reading comprehension, and writing. Students completed surveys to gauge their motivation, engagement, and attitudes toward learning English before and after the intervention. The surveys used Likert-scale questions to quantify these aspects. For Statistics, Paired t-tests compared pre/post-test scores; independent t-tests analyzed inter-group differences. ANOVA assessed demographic subgroup variations (e.g., age, prior English experience). Means, standard deviations, and frequencies were calculated to describe the sample characteristics and survey responses. Written consent was obtained from all participants, ensuring they were fully aware of the study’s purpose, procedures, potential risks, and benefits. Participant confidentiality were maintained by assigning unique identifiers and securely storing data. Participants were randomly assigned to an experimental group (n=20) receiving gamified instruction and a



control group (n=20) following traditional methods. They were informed that their participation is voluntary and that they could withdraw from the study at any time without penalty.

## Results

The study examined the impact of gamification on the students' performance in the beginner-level English as a Foreign Language (EFL) students at the English Language Center of Dirección de Educación Continua, UTMACH. A total of 40 students participated, representing diverse demographic characteristics in terms of age, gender, and length of English study. Most students had been learning English for over a year, and only a small fraction used the language outside the classroom.

### Motivation and Performance.

The survey revealed that students were highly motivated by gamified learning activities. When asked about their enthusiasm for participating in gamified activities, 50% strongly agreed, and 32.5% agreed, with only a small fraction remaining neutral or disagreeing. Additionally, 92.5% of students agreed that gamified activities made learning English more enjoyable, and 67.5% reported a strong sense of achievement when completing tasks. Notably, 97.5% of students agreed that elements such as points, badges, and rewards encouraged them to improve their English skills.

### ANOVA Test

- **F-Statistic:**  $F = 60.73$
- **p-Value:**  $p = 4.37 \times 10^{-9}$

### Interpretation.

The ANOVA ( $F=60.73$ ,  $p<.001$ ) revealed significant differences in gamification's impact across language skills, with reading and writing showing the greatest improvement. The p-value is extremely low ( $p < .05$ ), indicating significant differences in the impact of gamification across the four language skills (listening, speaking, reading, writing). This result suggests that gamification does not affect all skills equally; some skills may benefit more than others.

### t-Test (Comparison of Writing vs. Speaking)

- **t-Statistic:**  $t = 1.67$
- **p-Value:**  $p = .34$

The t-test ( $t=1.67$ ,  $p=.34$ ) indicated no statistically significant difference in perceived impact between writing and speaking skills Interpretation

The p-value is greater than .05, indicating that there is no significant difference in the perceived impact of gamification between writing and speaking. Although writing received more responses in "Strongly Agree" and "Agree," the difference compared to speaking is not strong enough to be statistically significant.

### **Impact on Language Skills.**

The survey evaluated students' perceptions of how gamification affected the four language skills:

- **Listening:** 82.5% agreed that gamified listening activities improved their comprehension.
- **Speaking:** 72.5% felt that gamification increased their confidence in speaking English, though 7.5% disagreed, suggesting that additional support may be necessary in this area.
- **Reading:** 87.5% of students reported that gamified reading tasks helped them understand and retain vocabulary and grammar.
- **Writing:** 97.5% of students enjoyed gamified writing activities, indicating a strong positive impact on this skill.

### **Perceived Effectiveness and Limitations.**

Overall, 60% of students described gamification as a positive learning tool, while 30% remained neutral, and 10% expressed negative views. Regarding potential drawbacks, 40% of students felt that some aspects of gamification were less beneficial. Additionally, 65% provided constructive suggestions to enhance gamified activities, emphasizing the need for improvements in certain areas.

The greatest perceived gains were in reading (87.5%) and writing (97.5%), even though all language skills improved. Since gamified activities (such writing challenges and vocabulary tests) are structured and task-oriented, they may be the reason for this trend. They work well with mechanisms like progress tracking and point systems.

A startling 82.5% of students expressed excitement about gamified activities, and 92.5% agreed that engaging in these activities enhanced their enjoyment of learning. According to 97.5% of students, the usage of extrinsic motivators—such as badges and points—had a very significant effect on skill development. The ANOVA results ( $F=60.73$ ,  $p<.001$ ) support the substantial overall effect of gamification on performance.

More than two-thirds (67.5%) of students said they felt a great sense of accomplishment after finishing gamified tasks, indicating that self-efficacy was strengthened by instant feedback and visible progress (such as badges), especially in specific skill areas like vocabulary retention or grammar.

### **Limitations.**

Speaking had the lowest agreement rating (72.5%), with 7.5% explicitly rejecting that gamification increased their confidence, but reading and writing flourished. Speaking's interactive, impromptu needs may not be sufficiently met by gamification mechanics (such

as solo chores), as evidenced by the lack of a statistically significant difference between speaking and writing ( $t=1.67$ ,  $p=.34$ ).

While badges and points encouraged temporary participation, 40% of students criticized some gamified components as "less beneficial," suggesting possible burnout or a gradual decline in internal motivation. A subset of students who favor conventional approaches or who need a more thorough educational integration of game mechanics may be represented by neutral (30%) and unfavorable (10%) replies.

**Contextual Restrictions:** Although the majority of participants (65%) had studied English for more than a year, they seldom ever used it outside of the classroom. This calls into question gamification's capacity to connect classroom instruction with practical language use, especially for abilities that require genuine interaction, including listening (82.5% agreement).

## Discussion

The findings of this study align with previous research indicating that gamification enhances student motivation and performance in language learning (Deterding et al., 2011; Hamari et al., 2014). The overwhelmingly positive responses regarding motivation suggest that game-based learning strategies foster a more interactive and enjoyable classroom environment. Elements such as points, rewards, and challenges appear to sustain student interest and encourage participation (Sailer et al., 2017).

However, the relatively lower confidence levels in speaking skills suggest that while gamification makes learning more enjoyable, it may not entirely mitigate language anxiety (Zarzycka-Piskorz, 2016). Some students may require additional communicative activities that encourage spontaneous speech and interaction to reinforce speaking skills effectively. Future gamified approaches should integrate collaborative speaking tasks, role-playing, and real-world conversational scenarios to enhance oral proficiency.

Furthermore, the mixed responses regarding the effectiveness of gamification highlight the importance of a balanced instructional approach. While gamification can increase engagement, it should complement rather than replace traditional teaching methods. A combination of game-based activities and structured instruction may yield the most effective learning outcomes (Kapp, 2012).

### Limitations

This study presented some limitations. First, there was a small sample size ( $n = 40$ ) which does not permit to generalize the results, since they do not represent broader populations or contexts. Second, there was only a 6 week intervention period and this did not adequately capture long-term retention or sustainability of outcomes, limiting insights into enduring effects. Finally, reliance on self-reported motivation data introduces potential social desirability bias, where participants might provide responses they perceive as socially acceptable rather than truthful reflections of their experiences. These constraints highlight

the need for caution when interpreting the results and suggest avenues for future research with larger samples, extended timelines, and objective measures.

## Conclusions

The results of this study indicate that gamification is an effective strategy for enhancing motivation and performance in beginner-level EFL classrooms, particularly in listening, reading, and writing skills. Students responded positively to gamified activities and reward-based motivation, reinforcing the idea that interactive learning fosters engagement. However, speaking skills require additional support, as some students did not report to the same level of confidence in this area.

Future implementations of gamification should focus on incorporating activities that promote spontaneous speaking, providing a well-rounded learning experience. Additionally, adjustments should be made to address students' concerns regarding less effective aspects of gamification. Overall, with strategic refinement, gamification can continue to be a valuable tool in EFL education, improving student motivation and fostering a dynamic learning environment. To address speaking skill gaps, educators should integrate role-plays and peer interactions into gamified frameworks. Institutions should prioritize teacher training in gamification tools.

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