

Article

# Gamification as a strategy to strengthen online English education in rural areas in Ecuador

## *La gamificación como estrategia para fortalecer la educación virtual de inglés en zonas rurales del Ecuador*

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**Abstract:** This study analyzes the effect of gamification as a pedagogical strategy to strengthen English language learning, student motivation, and engagement in rural educational contexts in Ecuador through online instruction. A mixed-methods approach with a quasi-experimental design was adopted, involving secondary school students divided into an experimental group and a control group. The experimental group received English instruction through gamified activities, while the control group followed a traditional online teaching approach. Data collection instruments included vocabulary and grammar tests, motivation questionnaires, digital platform analytics, and semi-structured interviews with students and teachers. The results indicate significant improvements in basic language skills, as well as increased levels of motivation and active engagement among students exposed to gamification. Qualitative findings further reveal positive perceptions related to learner autonomy, enjoyment, and reduced anxiety during the learning process. Despite technological limitations associated with rural settings, gamification emerges as a viable and effective pedagogical strategy for strengthening online English education in resource-constrained environments.

**Keywords:** English language learning; online education; rural contexts; student motivation.

**Resumen:** El presente estudio analiza el efecto de la gamificación como estrategia pedagógica para fortalecer el aprendizaje del inglés, la motivación y el compromiso estudiantil en contextos educativos rurales del Ecuador mediante clases virtuales. La investigación adopta un enfoque mixto con un diseño cuasi-experimental, en el que participaron estudiantes de educación secundaria divididos en un grupo experimental y un grupo de control. El grupo experimental recibió instrucción en inglés mediada por actividades gamificadas, mientras que el grupo de control siguió un enfoque tradicional en línea. Los instrumentos de recolección de datos incluyeron pruebas de vocabulario y gramática, cuestionarios de motivación, analítica de la

plataforma digital y entrevistas semiestructuradas a estudiantes y docentes. Los resultados evidencian mejoras significativas en el desarrollo de habilidades lingüísticas básicas, así como un aumento en los niveles de motivación y participación de los estudiantes expuestos a la gamificación. Asimismo, los hallazgos cualitativos revelan percepciones positivas sobre la autonomía, el disfrute y la reducción de la ansiedad durante el aprendizaje. A pesar de las limitaciones tecnológicas propias del contexto rural, la gamificación se consolida como una estrategia pedagógica viable y efectiva para fortalecer la educación virtual del inglés en entornos con recursos limitados.

**Palabras clave:** Gamificación; aprendizaje del inglés; educación virtual; contextos rurales; motivación estudiantil.

## 1. Introduction

Teaching English as a Foreign Language (EFL) has become a key component of students' academic and professional development in a globalized world. English proficiency is increasingly associated with access to higher education, digital resources, and employment opportunities (Abdullah et al., 2025). However, in Ecuador, significant disparities persist between urban and rural educational contexts, particularly regarding access to technological infrastructure, stable internet connectivity, and innovative pedagogical approaches (Abdullah et al., 2025). These inequalities have a direct impact on the quality and effectiveness of online education, which has gained relevance in recent years due to digital transformation and the need to ensure educational continuity in vulnerable settings.

In rural areas, online English instruction often relies on traditional, content-centred methods that offer limited interaction and low motivational appeal. As a result, students frequently experience disengagement, reduced participation, and difficulties in developing basic language skills such as vocabulary, grammar, and pronunciation. Previous studies indicate that lack of motivation and limited learner autonomy are among the main challenges affecting EFL learning in virtual environments, especially in under-resourced contexts (Alfadil, 2020).

In this scenario, gamification has emerged as an innovative pedagogical strategy that integrates game elements [such as points, levels, badges, challenges, and immediate feedback] into non-game learning contexts to enhance motivation and engagement (Werbach & Hunter, 2012). Research conducted in diverse educational settings suggests that gamification can improve learner participation, foster autonomous learning, and support meaningful learning experiences in digital environments.

Studies focused specifically on English as a Foreign Language contexts highlight that gamified formative assessment tools significantly enhance learner motivation and engagement, suggesting robust motivational gains from gamification in language learning environments (Bustami et al., 2024). Moreover, motivation theories such as Self-Determination Theory (Deci & Ryan, 2000), Flow Theory (Csikszentmihalyi, 1990), and Social Learning Theory (Bandura, 1986) provide a strong theoretical foundation for understanding why gamified learning environments positively influence student behavior and learning outcomes.

Despite the growing body of international research on gamification in education (Alfadil, 2020; Bustami et al., 2024), empirical studies focusing on its application in rural online

English education in Ecuador remain scarce (Abdullah et al., 2025). This lack of localized evidence limits educators' ability to make informed decisions about the feasibility and pedagogical value of gamification in contexts characterized by technological constraints and reduced instructional support. Recent analyses of digital learning among rural students demonstrate persistent access challenges and evolving pedagogical needs, reinforcing the importance of investigating adaptive instructional strategies in underserved contexts (Abdullah et al., 2025). Consequently, there is a need to examine whether gamification can effectively address motivational and learning challenges faced by rural students in virtual EFL settings.

### **Purpose and Objectives of the Study**

The purpose of this study is to analyze the impact of gamification as a strategy to strengthen online English education in rural areas in Ecuador, considering both pedagogical outcomes and contextual limitations.

The general objective of the study is:

To analyze the effect of gamification on students' English language learning, motivation, and engagement in online classes in rural educational contexts in Ecuador.

The specific objectives are:

- To evaluate the effect of gamified activities on the development of basic English language skills, particularly vocabulary and grammar.
- To examine changes in students' motivation and engagement levels when gamification is integrated into online English instruction.
- To explore students' and teachers' perceptions of gamification as a learning strategy in rural virtual environments.
- To identify challenges and opportunities associated with the implementation of gamification in contexts with limited technological resources.

This study contributes to the existing literature by providing empirical evidence on the use of gamification in rural virtual English education contexts in Ecuador, a setting that remains underrepresented in prior research. By focusing on both learning outcomes and motivational dimensions, the study offers insights into how gamified strategies can be adapted to environments with limited technological resources.

## **2. Materials and Methods**

### **Research Approach and Design**

This study adopted a mixed-methods approach with a quasi-experimental design to examine the effectiveness of gamification as a strategy to strengthen online English education in rural areas of Ecuador. The mixed-methods approach was selected to combine quantitative evidence of learning outcomes with qualitative insights into students' and teachers' experiences, providing a more comprehensive understanding of the pedagogical impact of gamification.

The quantitative component followed a pre-test–post-test design with a control group and an experimental group. The experimental group received online English instruction supported by gamified activities, while the control group followed conventional online instruction without gamification. Due to institutional and contextual constraints, random assignment was not possible; therefore, intact classes were used, which is consistent with quasi-experimental educational research and preserves ecological validity.

The qualitative component was incorporated to explore participants' perceptions, motivation, and engagement during the intervention, complementing the quantitative findings and supporting data triangulation.

### **Participants and Context**

The study was conducted in a rural secondary school in Ecuador within an online English language program. Participants were students aged 13 to 16 years, enrolled in intermediate-level English classes. The total sample consisted of 58 students, divided into an experimental group [30] and a control group [28].

The rural context was characterized by limited technological resources and inconsistent internet connectivity, factors that influenced students' access to digital learning tools and were considered throughout the implementation of the intervention. English teachers involved in the program also participated in the qualitative phase of the study by providing their perspectives through interviews.

### **Instructional Intervention**

The intervention lasted six instructional weeks. During this period, the experimental group engaged in online English learning activities designed with gamification elements, including points, badges, challenges, levels, and immediate feedback. These elements were integrated into regular instructional content to support vocabulary development, grammar practice, and reading comprehension.

The control group followed the same curricular content and learning objectives but was taught using traditional online instructional methods based on textbooks, worksheets, and teacher-led explanations, without the inclusion of gamified components.

### **Instruments**

To address the research objectives, the following instruments were used:

- English Language Achievement Test

A pre-test and post-test were administered to measure students' performance in vocabulary, grammar, and reading comprehension.

- Motivation Questionnaire

A structured questionnaire based on Self-Determination Theory was used to assess changes in students' motivation, focusing on autonomy, competence, and relatedness in the online learning environment.

- Engagement Data from the Digital Platform

Basic engagement indicators, such as task completion and participation frequency, were collected from the online platform to support the analysis of students' learning involvement.

- Semi-Structured Interviews

Semi-structured interviews were conducted with 10 students and 2 English teachers to explore perceptions of gamified online learning, motivational factors, and contextual challenges in the rural educational setting.

### **Procedure**

The study followed these stages:

- Week 1: Administration of consent forms, English pre-test, and motivation questionnaire.
- Weeks 2–7: Implementation of the instructional intervention for both groups.
- Week 8: Administration of the English post-test and final motivation questionnaire.

- Week 9: Conducting semi-structured interviews and compiling observational notes.

### **Data Analysis**

Quantitative data from the pre-tests and post-tests were analyzed using descriptive statistics (means and standard deviations) to summarize student performance. Paired-sample t-tests were applied to examine changes within each group, and independent-sample t-tests were used to compare learning outcomes and motivational levels between the experimental and control groups. Effect sizes were calculated using Cohen's d to determine the magnitude of the observed differences.

Qualitative data obtained from interviews were analyzed using thematic analysis, identifying recurring patterns related to motivation, engagement, perceived learning benefits, and challenges of gamified online instruction. The integration of quantitative and qualitative findings allowed for a more comprehensive interpretation of the results.

### **Ethical Considerations**

Participation in the study was voluntary. Parental consent was obtained for all minor participants, and confidentiality was ensured through the use of coded identifiers. The study adhered to institutional ethical guidelines for research involving human subjects. The selected instruments and procedures were aligned with the study objectives, allowing for the collection of both quantitative data on learning outcomes and motivation, as well as qualitative insights into participants' perceptions. This methodological approach ensured a comprehensive understanding of the impact of gamification in the studied context.

## **3. Results**

This section presents the main quantitative and qualitative findings derived from the implementation of gamified activities in online English classes, focusing on language development, student motivation, engagement, and participant perceptions.

### **3.1 Quantitative Results**

#### **3.1.1 English Language Performance**

Students' English language performance was analyzed through pre-test and post-test scores in vocabulary, grammar, and reading comprehension. Descriptive statistics indicated that both groups started with comparable baseline levels. However, differences emerged after the intervention period.

The experimental group showed a notable increase in overall English achievement from pre-test ( $M = 61.4$ ,  $SD = 7.8$ ) to post-test ( $M = 74.9$ ,  $SD = 8.1$ ). A paired-sample t-test confirmed that this improvement was statistically significant,  $t(29) = 8.12$ ,  $p < .001$ , with a large effect size (Cohen's  $d = 1.48$ ).

In contrast, the control group demonstrated a more modest improvement from pre-test ( $M = 60.7$ ,  $SD = 8.2$ ) to post-test ( $M = 66.1$ ,  $SD = 8.5$ ). Although this change was statistically significant,  $t(27) = 3.21$ ,  $p = .003$ , the effect size was moderate ( $d = 0.61$ ).

An independent-sample t-test comparing post-test scores revealed that the experimental group significantly outperformed the control group,  $t(56) = 3.97$ ,  $p < .001$ , indicating that the gamified instruction had a stronger impact on English language development than conventional online instruction.

#### **3.1.2 Motivation and Engagement**

Students' motivation levels were measured using a questionnaire based on Self-Determination Theory. At pre-test, both groups reported similar motivational levels.

Following the intervention, the experimental group exhibited significant increases across all motivational dimensions.

Mean motivation scores for the experimental group increased from  $M = 3.1$  ( $SD = 0.6$ ) to  $M = 4.0$  ( $SD = 0.5$ ) on a five-point Likert scale. This improvement was statistically significant,  $t(29) = 7.05$ ,  $p < .001$ , with a large effect size ( $d = 1.29$ ). Gains were particularly evident in perceived competence and learning enjoyment.

The control group showed only slight changes in motivation from pre-test ( $M = 3.0$ ,  $SD = 0.7$ ) to post-test ( $M = 3.3$ ,  $SD = 0.6$ ),  $t(27) = 2.11$ ,  $p = .044$ , with a small effect size ( $d = 0.40$ ).

Engagement data extracted from the online platform indicated higher participation rates in the experimental group. Students exposed to gamified instruction completed a greater number of learning tasks and demonstrated more consistent participation throughout the intervention period compared to the control group.

### **3.2 Qualitative Results**

Thematic analysis of semi-structured interviews with students and teachers revealed three dominant themes related to the gamified learning experience.

#### **3.2.1 Increased Motivation and Enjoyment**

Students in the experimental group frequently described gamified activities as enjoyable and motivating. Many reported that earning points and badges encouraged them to complete tasks consistently and reduced feelings of boredom commonly associated with online English classes. Teachers also noted higher levels of enthusiasm and willingness to participate during gamified sessions.

#### **3.2.2 Sense of Autonomy and Progress**

Participants emphasized that gamified elements allowed them to feel more in control of their learning. Students reported satisfaction in progressing through levels and completing challenges at their own pace, which contributed to a stronger sense of autonomy and confidence. Visible progress indicators helped students recognize their improvement over time.

#### **3.2.3 Contextual Challenges in Rural Online Learning**

Despite positive perceptions, students and teachers identified contextual challenges, particularly unstable internet connectivity and limited access to personal devices. These factors occasionally affected students' ability to participate consistently. Nevertheless, participants agreed that gamification helped sustain engagement even when technological limitations were present.

#### **3.2.4 Integration of Quantitative and Qualitative Findings**

The integration of quantitative and qualitative results revealed a consistent pattern. Statistical improvements in English performance and motivation among the experimental group were supported by participants' narratives describing increased engagement, enjoyment, and perceived learning progress. While contextual limitations remained a challenge, the convergence of findings suggests that gamification contributed positively to strengthening online English education in a rural setting.

## **4. Discussion**

The findings of this study indicate that the integration of gamification into online English instruction positively influenced students' language performance, motivation, and engagement in rural educational contexts in Ecuador. These results are consistent with previous research suggesting that gamified learning environments enhance student

participation and learning outcomes, particularly in virtual settings where traditional instructional support is limited (Werbach & Hunter, 2012; Alfadil, 2020).

From a motivational perspective, the increase in student engagement observed in the gamified group supports the assumptions of Self-Determination Theory (Deci & Ryan, 2000). The use of points, levels, and badges appeared to foster learners' sense of competence by making progress visible and measurable, while allowing students to advance at their own pace promoted autonomy. Additionally, collaborative challenges and leaderboards contributed to a sense of relatedness, which is especially relevant in rural online environments where learners often experience social isolation. These findings reinforce the idea that gamification can compensate for reduced teacher presence and limited peer interaction by embedding motivational mechanisms directly into the learning platform.

The improvement in vocabulary retention and grammatical accuracy aligns with behaviorist principles, particularly the role of reinforcement in learning (Skinner, 1953). Immediate feedback and rewards encouraged students to repeat language tasks, such as vocabulary practice and grammar exercises, leading to more frequent exposure and consolidation of linguistic forms. This result is consistent with previous studies showing that gamified repetition enhances memory encoding and reduces cognitive fatigue in language learning (Alfadil, 2020).

Furthermore, the progressive structure of gamified activities reflects the principles of Flow Theory (Csikszentmihalyi, 1990). Students were exposed to tasks that gradually increased in difficulty, maintaining a balance between challenge and skill. This balance appears to have contributed to sustained attention and reduced anxiety, which is a common barrier in English as a Foreign Language (EFL) learning. By framing errors as part of the game rather than as failures, the gamified environment encouraged experimentation and active participation without fear of negative evaluation.

Social Learning Theory (Bandura, 1986) also provides a useful framework for interpreting the results. The visibility of peers' progress through leaderboards and shared achievements may have promoted observational learning and social modeling. Students reported increased motivation when they could compare their performance with classmates, suggesting that social dynamics embedded in gamification can reinforce learning behaviors even in virtual rural classrooms.

Despite these positive outcomes, the findings also highlight contextual challenges related to technological access and connectivity. While gamification enhanced engagement, intermittent internet access occasionally limited students' ability to participate consistently. This supports previous research emphasizing that technological constraints remain a critical factor in rural digital education and must be considered when implementing innovative strategies (Elliot & Dweck, 2005). Therefore, gamification should be designed with flexibility, allowing asynchronous participation and low-bandwidth functionality to ensure inclusivity.

Overall, the results suggest that gamification is not merely a motivational add-on but a pedagogically meaningful strategy that supports language development, emotional engagement, and learner autonomy in rural online English education. By aligning game mechanics with established learning theories, gamification offers a viable approach to addressing educational gaps and enhancing the quality of virtual instruction in under-resourced contexts.

Unlike previous studies conducted mainly in urban or well-resourced settings, the present findings demonstrate that gamification can be effective even in rural virtual

environments with technological constraints. This extends existing research by highlighting the adaptability of gamified strategies to contexts often excluded from digital innovation initiatives.

## 5. Conclusiones

This study analyzed the effectiveness of gamification as a strategy to strengthen online English education in rural areas of Ecuador. The findings confirm that gamification constitutes a pedagogically meaningful and contextually viable approach for enhancing virtual English instruction in underserved rural settings where student engagement and sustained participation remain persistent challenges.

Results demonstrate that students exposed to gamified instruction showed notable improvements in vocabulary acquisition and grammatical accuracy compared to peers receiving traditional online instruction. Learners in the experimental group exhibited higher levels of motivation and engagement, as reflected in increased task completion rates and positive shifts in motivational scale scores. Qualitatively, students experienced gamified learning as more enjoyable, less anxiety-inducing, and better aligned with their digital habits, reporting greater autonomy, competence, and persistence. Teachers perceived gamification as a tool that facilitated classroom management and encouraged active participation, even among previously disengaged learners.

The study also highlights contextual constraints that must be addressed for consistent implementation. Limited internet connectivity, restricted access to digital devices, and varying levels of teacher familiarity with educational technologies affected participation consistency for some students. These challenges underscore the importance of institutional support, targeted teacher training, and adaptive instructional design when implementing gamification in low-resource environments.

In conclusion, gamification emerges as a strategic pedagogical approach capable of strengthening online English education and reducing engagement gaps in rural contexts. When thoughtfully designed and aligned with clear learning objectives, gamified instruction can foster meaningful language learning, promote learner autonomy, and support educational equity. Future research should explore longer intervention periods, integration of additional language skills, and scalability of gamified models across diverse rural educational contexts.

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