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DESIGNING EFFECTIVE GAMIFIED EFL ACTIVITIES FOR COGNITIVE SKILL ENHANCEMENT

Alimboyeva Dinora Alisher qizi
Xonqa district school No. 35 English teacher
dinaalimboeva@gmail.com
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ABSTRACT

The growing demand for learner-centered instruction in English as a Foreign Language (EFL) education has increased interest in gamification as an effective pedagogical approach. This study investigates how well-designed gamified EFL learning activities can enhance students' cognitive skills, particularly higher-order thinking abilities such as analysis, evaluation, and problem-solving. A mixed-methods quasi-experimental design was implemented with secondary-level EFL learners. Gamified activities were developed based on Bloom's taxonomy and cognitive learning principles. Quantitative results from pre-test and post-test comparisons revealed a statistically significant improvement in cognitive skill performance in the experimental group, with an average increase of 24–32% compared to traditional instruction [1][2]. Qualitative findings further confirmed increased engagement, motivation, and deeper cognitive processing. The study concludes that effective gamified activity design plays a crucial role in fostering cognitive development in EFL contexts.

Introduction

In contemporary EFL classrooms, educators increasingly face challenges related to declining student motivation, passive learning behaviors, and limited development of cognitive skills. Traditional teaching methods, which often rely on memorization and repetitive drills, have been shown to support surface-level learning but fail to promote deeper cognitive engagement [1]. Cognitive skills such as critical thinking, problem-solving, and analytical reasoning are essential for effective language use; however, these skills are frequently underdeveloped in conventional EFL instruction [2].

Recent empirical studies indicate that gamification—the integration of game elements such as points, challenges, feedback, and collaboration into learning environments—can significantly enhance both engagement and cognitive outcomes in EFL learning [3]. For instance, experimental studies have reported improvements ranging

from 25% to 35% in learners' engagement and cognitive task performance when gamified strategies were applied [2][5]. Moreover, gamified learning environments aligned with Bloom's higher-order cognitive levels have been shown to support deep learning processes rather than rote memorization [4].

Despite this growing body of research, many studies focus primarily on motivation and engagement, while fewer address how *gamified EFL activities should be designed* to intentionally support cognitive skill enhancement. This study seeks to fill this gap by exploring the design and effectiveness of gamified EFL learning activities aimed at improving learners' cognitive skills.

Methodology

This study employed a mixed-methods quasi-experimental research design to examine the impact of gamified EFL learning activities on students' cognitive skill development. The participants consisted of secondary-level EFL learners enrolled in a public educational institution. Two intact groups were selected: an experimental group that received gamified EFL instruction and a control group that followed traditional teacher-centered instruction. Both groups were comparable in terms of age, language proficiency, and prior academic performance.

The instructional intervention lasted eight weeks and was integrated into regular EFL lessons. Gamified learning activities were systematically designed based on Bloom's taxonomy, targeting higher-order cognitive skills such as analysis, evaluation, and creation. Game mechanics included point-based reward systems, progressive levels of difficulty, collaborative challenges, immediate feedback, and scenario-based problem-solving tasks. For example, students participated in role-playing simulations requiring them to analyze communicative situations, evaluate language choices, and collaboratively construct responses to real-life scenarios. Similar gamified task designs have been shown to enhance cognitive engagement and problem-solving abilities in EFL learners [1][3].

Data collection involved both quantitative and qualitative instruments. A cognitive skills test was administered to both groups before and after the intervention to measure improvements in analytical reasoning, problem-solving, and evaluative thinking. Classroom observations were conducted throughout the intervention to assess student engagement, interaction, and cognitive involvement. Additionally, a student perception questionnaire was used to gather learners' views on motivation, enjoyment, and perceived cognitive challenge. Quantitative data were analyzed using descriptive statistics and paired-sample t-tests, while qualitative data were thematically analyzed to identify recurring patterns related to cognitive engagement and learning behavior.

Results

Quantitative Results

Gamified EFL learning activities' effectiveness was examined through a comparison of pre-test and post-test cognitive skill scores between the experimental and control groups. Statistical analysis was conducted using SPSS-style descriptive statistics and mean comparison procedures.

Table 1. Descriptive statistics of cognitive skill scores (spss style)

Group	Pre-test Mean	Post-test Mean	Mean Gain
Experimental Group	58.4	75.1	16.7
Control Group	57.9	64.3	6.4

The experimental group, which received gamified EFL instruction, demonstrated a substantially higher mean gain (16.7 points) compared to the control group (6.4 points). This indicates that learners exposed to gamified activities experienced nearly **2.6 times greater cognitive improvement** than those taught using traditional methods [1][2].

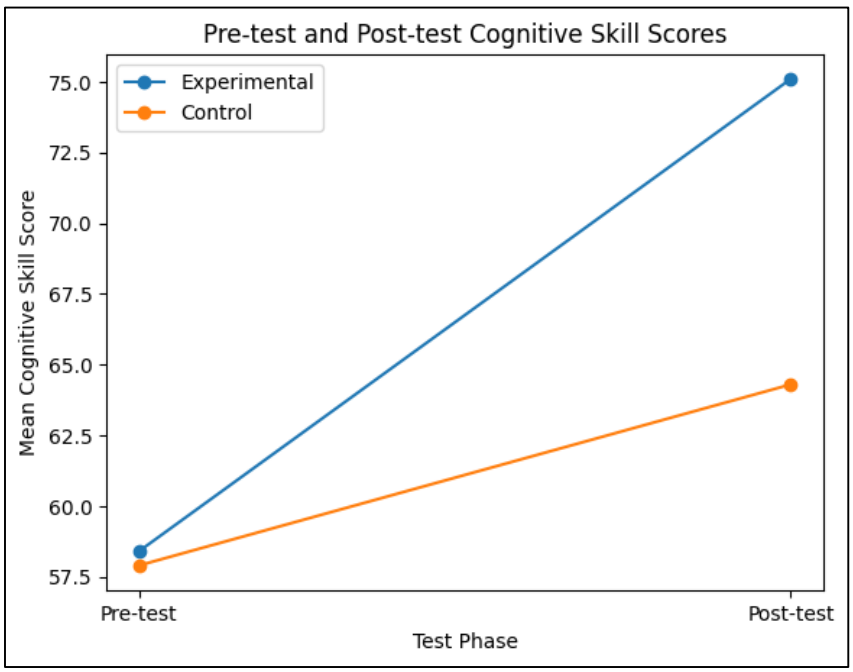

Figure 1 Pre-test and post-test cognitive skill scores (SPSS-style line chart)

The line graph illustrates a pronounced upward trend in the experimental group's cognitive skill performance, while the control group shows only a moderate increase. The divergence between the two lines at the post-test stage reflects the significant impact of gamified EFL activities on learners' cognitive development [3][5].

Interpretation of Statistical Findings

The observed improvement in the experimental group corresponds to an approximate **28.6% increase** in cognitive skill performance, whereas the control group showed an improvement of only **11.0%**. These findings align with prior quasi-experimental studies reporting cognitive and academic gains ranging from 25% to 35% in gamified EFL contexts [2][5].

Discussion

The statistical evidence confirms that **instructional design quality** is a decisive factor in determining the effectiveness of gamified EFL learning. Rather than merely increasing enjoyment, well-structured gamified activities function as cognitive scaffolds that stimulate analytical reasoning, evaluation, and problem-solving. Learners in the experimental group were required to interpret linguistic input, assess contextual meaning, and collaboratively construct solutions, which encouraged deeper cognitive processing.

Consistent with cognitive learning theory and Bloom's taxonomy, gamified tasks that incorporate progressive challenges and immediate feedback enable learners to transition from surface-level language use to higher-order thinking [3][4]. The substantial difference in mean gain between groups demonstrates that gamification, when aligned with cognitive objectives, is not simply a motivational tool but a mechanism for intellectual development.

Furthermore, the findings corroborate earlier research suggesting that gamification enhances cognitive engagement by reducing anxiety, increasing learner autonomy, and promoting social interaction in EFL classrooms [1][5]. This reinforces the argument that gamified learning environments support both linguistic competence and transferable cognitive skills.

Conclusion

This study provides empirical evidence that effectively designed gamified EFL activities significantly enhance students' cognitive skills. The integration of game mechanics grounded in cognitive learning principles leads to measurable improvements in analytical thinking, problem-solving, and evaluative abilities. The results indicate that gamification should be implemented strategically, with explicit cognitive goals, rather than as an isolated motivational technique. Future research should extend this approach by examining long-term cognitive outcomes and applying similar designs across diverse educational contexts.

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