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A Study on the Impact of Gamified Tools on English Learning Motivation

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This study aims to investigate the impact of gamified English learning tools (e.g., Duolingo, Quizizz, Kahoot, Baicizhan, and Shanbay) on learners' motivation. A cross-sectional survey design was adopted, and 60 valid questionnaires were collected through convenience sampling, of which 50 respondents had used gamified tools. The research instrument was a self-designed Questionnaire. The study concludes that gamified English learning tools can effectively enhance learners' intrinsic motivation, with instant feedback being the most critical driver. In addition, higher usage frequency leads to stronger motivation, but social competition features have limited effects. No significant gender difference was found. It is recommended that developers optimize feedback systems and provide flexible options for social features, while educators may encourage daily usage to sustain motivation.

Keywords: gamified learning, English learning tools, learning motivation, instant feedback

Introduction

With advances in network technology and the widespread adoption of broadband, the integration of the "3Es"—education, entertainment, and e-commerce—has produced positive results. Therefore, developing game-based learning (GBL) is a promising new approach in e-learning (Chen, 2017). In this context, digital games no longer play the function of entertainment, but could assist students in more active learning and deeper and broader learning, when applied to instruction. Digital GBL involves linking subject content to gameplay, enabling students to apply their knowledge in real-world scenarios, thereby making learning more engaging and enjoyable (Nadeem, Oroszlanyova, & Farag, 2023). GBL can also be defined as semi-structured games with definite learning outcomes (Cheng, Chang, & Lin, 2025).

In English learning, especially vocabulary and grammar acquisition, learners often perceive the process as repetitive and tedious, which can weaken their motivation. To address this issue, gamified English learning tools, such as Duolingo, Quizizz, Kahoot, Baicizhan, and Shanbay have been widely adopted. These tools integrate game elements into language learning, aiming to enhance engagement and sustain motivation. Learning motivation is a key determinant of English learning success, as it influences learners' engagement, persistence, and achievement. Although gamified tools are often assumed to enhance motivation, the specific motivational mechanisms—such as instant feedback and social competition—remain insufficiently examined. In addition, some existing studies focus on a single gamified tool (Eltahir et al., 2021; Ingham, Terry, & Khader, 2025), and relatively few have

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compared how different gamification features influence motivation or examined usage frequency and gender differences. These gaps call for further empirical investigation that examines multiple gamified tools, compares different gamification features, and considers usage frequency and gender differences in English learning.

GBL has gained increasing popularity in educational settings. Some existing studies (Cheng et al., 2025; Eltahir et al., 2021; Nadeem et al., 2023; Park & Shin, 2025) have confirmed the positive effects of GBL on learning motivation, but further empirical investigation is still needed to examine how gamified tools specifically influence different dimensions of learning motivation in the context of higher education English learning. Therefore, this study adopts a questionnaire survey method, grounded in Self-Determination Theory (SDT) and the Attention, Relevance, Confidence, and Satisfaction (ARCS) motivation model as the theoretical framework, to systematically examine the impact of gamified English learning tools on learners' motivation, with the goal of generating empirical evidence for gamified English teaching practices (Deci et al., 2011; Fang et al., 2023).

The research questions of this study are as follows:

1. Do gamified English learning tool features differ significantly in their effects on learning motivation, particularly between instant feedback and social competition in motivational strength?

2. Are there significant differences in English learning motivation among learners with different usage frequencies?

3. Are there significant gender differences in the motivational effect of gamified tools?

The research significance of this study can be justified from two aspects: theoretical significance and practical significance. The theoretical contribution of this study lies not in merely verifying whether gamification is effective, but in decomposing gamification from a holistic intervention into specific features and in linking these features to motivational dimensions, thereby testing the explanatory power of SDT and the ARCS model in the context of English learning tools. At the same time, incorporating usage frequency into motivational analysis extends motivation research from static attitudes to behavioural engagement and sustained use. Treating gender as a potential moderator responds to existing discussions of gender differences in game preferences and shifts research from binary gender comparisons toward individual differences and feature-preference differences.

On the other hand, the practical value of this study lies in translating "whether gamified tools can enhance motivation" into design and usage recommendations that developers and educators can directly refer to. By comparing the differential effects of gamification elements, this study can help teachers make informed matches between specific instructional goals and learner characteristics. Meanwhile, the findings can offer strategic references for reducing English learning anxiety and enhancing classroom engagement. For educational developers, they can prioritize features widely recognized as effective, and design social comparison features to accommodate differences in competitive preferences and anxiety. Finally, situated in the Chinese English as a foreign language (EFL) context characterized by exam-oriented pressure, large class sizes, and limited speaking practice opportunities, this study can provide targeted suggestions for localized gamified teaching reform and explore both potential and boundaries of gamified tools in alleviating test-related stress, stimulating intrinsic motivation, and promoting sustainable English learning.

Literature Review

Gamification

Gamification refers to "the utilization of video game components in a nongame context" (Luo, 2022). Kocadere and Çağlar (2018) described gamification as "an educational approach using game design principles in

the learning environment to engender interest and motivation in learners." The core of GBL lies in integrating game mechanics into the learning process, enabling a more concrete, engaging, and interactive learning process (Cheng et al., 2025). It consists of two elements, one is used for non-entertainment purposes, and the other one is to draw inspiration from games (Chen, 2023). Gamification, as a student-centered teaching method, holds promise in cultivating students' motivation and problem-solving abilities, providing a practical solution within the teaching process (Zeng et al., 2024). Through the application of gamification, learning becomes a more immersive and engaging activity, inspiring individuals to overcome learning obstacles with dedication. Importantly, gamification does not replace the learning process but rather enhances it by fostering active participation and encouraging learners to overcome challenges over time. Therefore, gamification has been widely used to address the issue of learner distraction and stimulate students' involvement in the course.

While gamification in general learning systems is known to have a positive impact on student motivation, evidence on its effectiveness in higher education settings is mixed and still uncertain due to the complicated environment in the higher education context (Zeng et al., 2024). This uncertainty stems partly from the diversity of features in higher education and the increasing number of inter- and multi-disciplinary programs, which makes the process of applying gamification more complex. Specifically, tertiary education is characterized by the variety of students' profiles, needs, and learning methods, thereby, each game element and even each combination of game elements affects each student differently. Therefore, choosing the right combination of game elements remains a challenge for gamification designers and practitioners due to the lack of proven design approaches, and there is no one- size- fits- all approach that works regardless of the gamification context (Khaldi et al., 2023).

The Impact of GBL on English Learning Motivation

Learning motivation is an intervening variable between stimulus and response (Zoltan & Dörnyei, 2001). That is, learning motivation reflects personal opinions about affairs and learners would appear different knowledge needs because of distinct opinions (Chen, 2017). Games, like lubricant and catalyst, could help children learn without burden. Games could also assist children in changing role and transforming in the awareness phase to present better conservation (Chen, 2017).

Previous studies have shown that for students with varying English proficiency levels, incorporating the GBL approach in English instruction can enhance comprehension and increase their willingness to express themselves in the target language (Sailer & Homner, 2019). Through game-based activities, students are presented with challenges and obstacles that motivate them to work harder, increasing their sense of accomplishment and self-esteem upon overcoming these obstacles. Additionally, games involve social interactions with other players, allowing students to establish relationships and a sense of community, which can be crucial in online learning environments where students may feel isolated (Nadeem et al., 2023). As a result, it can promote an active learning process and reduce anxiety among EFL learners (Ahmed et al., 2022).

Compared to traditional learning methods, GBL with board games can enhance students' interpersonal interactions and allow them to construct knowledge together (Cheng et al., 2025). One study showed that using GBL was an effective strategy to increase and decrease Iranian EFL learners' motivation and anxiety, respectively (i.e., to increase motivation and decrease anxiety). Based on the promising results, the implementation of different types of instructional games is strongly recommended (Ahmed et al., 2022). It is worth noting that there are gender differences in learners' game preferences. Female learners prefer narrative-driven and immersive games, whereas male learners favor competitive and rule-based games (Cheng et al., 2025).

Specific Effects of Gamified Tools in Practice

A GBL translation app can play a large role in helping students learn and practice translation techniques and in applying these techniques. Moreover, a game-based app can provide increased and more equal participation than worksheet classroom-based activities can. It can also help reduce student anxiety and thus help them learn more effectively. In addition, it can shift a classroom from teacher centered to student centered (Chen, 2023).

Leaderboards are a vital component of game design and a powerful tool for motivating users through competition. Students can typically choose their own pace, select topics or levels of difficulty, and have the flexibility to revisit and review content as needed. This autonomy can foster a sense of ownership and control over their learning, which can positively impact their motivation (Landers, 2015). The immediate feedback allows students to quickly assess their progress and make improvements. This instant feedback can boost students' motivation by providing them with a clear understanding of their strengths and weaknesses and encouraging them to strive for better performance (Nadeem et al., 2023). Feedback type was found to be decisive. While praise, punishment, rewards, and corrective feedback yielded overall low-to-medium average effects, corrective feedback proved highly effective for facilitating the acquisition of new skills and tasks (Wisniewski et al., 2019).

Methodology

A quantitative cross-sectional survey approach was adopted in this study to examine the impact of gamified English learning tools (e.g., Duolingo, Quizizz, Kahoot, Baicizhan, and Shanbay) on learners' motivation.

The research instrument was a self-designed questionnaire entitled "Questionnaire on the Use of Gamified English Learning Tools and Motivation," which comprised three sections. The first section gathered demographic information, including gender, educational level, and self-rated English proficiency. The second section addressed participants' usage of gamified tools, specifically whether they had used them, their frequency of use, and the types of tools employed. The third section consisted of a nine-item Motivation Scale (Q7-Q15) measured on a 5-point Likert scale from 1 ("Strongly disagree") to 5 ("Strongly agree"). Items Q7-Q14 were positively worded, whereas Q15 was reverse-coded to examine response consistency. The internal consistency reliability of the scale was 0.86, indicating good reliability and high internal consistency among items.

The participants were domestic English learners. This study employed convenience sampling, with 60 valid questionnaires distributed and collected in total. The respondents covered four educational levels. The gender distribution was 50% male and 50% female. Among the 60 respondents, 83.3% had used gamified English learning tools, while 16.7% had never used them.

The questionnaire was distributed online via a survey platform. After providing informed consent, participants completed the questionnaire anonymously, taking approximately five minutes. Data analysis was performed using SPSS 26.0. Descriptive statistics, including means, standard deviations, and frequency distributions, were first computed to summarize the sample characteristics. Subsequently, independent samples *t*-tests were conducted to compare groups based on gender and usage status, while one-way analysis of variance (ANOVA) was employed to examine differences across frequency. The significance level was set at $\alpha = 0.05$.

Results

Descriptive Statistical Analysis

The participant sample comprised 60 students, with an equal gender distribution of 30 males and 30 females (50% each). In terms of educational background, the majority were college or university students ($N = 33$),

followed by those with postgraduate or above qualifications (N = 12), high school graduates (N = 9), and middle school graduates (N = 6). Regarding self-rated English proficiency, the largest group rated their level as average (N = 24), while 18 participants considered themselves good, 12 below average, and only six reported excellent proficiency.

Among the 50 users, usage frequency varied considerably. The largest proportion reported using the platform several times a week (N = 15), while daily users accounted for 10 participants. An equal number (N = 10) used it either once or twice a week or only occasionally, and a minority of five users reported rare usage. Regarding the most frequently used tools, which was a multiple-choice question, Duolingo ranked highest, being selected by approximately 45% of the respondents. This was closely followed by Baicizhan ≈ 40%, Quizizz ≈ 25%, and Kahoot ≈ 20%. Shanbay and other tools were mentioned by about 15% and 10% of the users, respectively. The sum of percentages exceeds 100% due to the multiple-response nature of the item.

Motivation Scale Scores (for 50 Users Only)

The means and standard deviations for each item are shown below:

Table 1

Mean Score and Standard Deviation of Each Item

Item	Content summary	Mean (M)	SD
Q7	Increased interest in learning English	3.86	0.926
Q8	Found learning more enjoyable	3.94	0.913
Q9	Gave sense of control over learning pace	3.82	0.825
Q10	Freedom to choose learning content	3.90	0.909
Q11	Enhanced confidence in English ability	3.84	0.955
Q12	Believed ability to overcome difficulties	3.86	0.926
Q13	Enjoyed sharing progress / competing	3.64	1.064
Q14	Instant feedback kept focus and engagement	4.08	0.900
Q7-Q14	Overall motivation level	30.94	6.428
Q15	Not satisfied (Reverse-scored item)	2.28	1.107

As Table 1 shows, the overall motivation level, measured by items Q7 to Q14 on a 5-point Likert scale (1 = "Strongly disagree," 5 = "Strongly agree"), yielded a total mean score of 30.94 (SD = 6.428), corresponding to an average item mean of 3.87. This value is well above the midpoint of 3.0, indicating a moderately high level of intrinsic motivation among the participants.

Among the individual items, the highest mean was observed for Q14 "Instant feedback kept focus and engagement" (M = 4.08, SD = 0.900), which is the only item exceeding 4.0. This finding underscores that the real-time feedback mechanism is the most robust driver of engagement and likely a key strength of the learning intervention. In contrast, Q13 "Sharing progress/competing" recorded the lowest mean (M = 3.64) and the largest standard deviation (SD = 1.064), suggesting polarizing perceptions, while Q9 "Pace control" showed the smallest standard deviation (SD = 0.825) alongside a high mean (M = 3.82), reflecting near-universal appreciation. For satisfaction, Q15 (negatively worded "Not Satisfied") had a raw mean of 2.28, after reverse-scoring Q15, the recoded satisfaction score was 3.72 (6-2.28), which is lower than the average motivation score of 3.87. This gap indicates that learners' overall satisfaction falls short of their perceived motivational benefits, suggesting a divergence between pedagogical effectiveness and experiential quality, possibly due to interface, navigation, or content difficulty issues. Practically, instant feedback and pacing control should be prioritized as core assets;

social-comparison features should be made optional; and non-pedagogical elements warrant further examination to align satisfaction with motivation.

Difference Analysis

A one-way ANOVA was conducted to examine whether usage frequency of gamified English learning tools significantly affects learners' motivation levels. Usage frequency (1 = "Rarely," 2 = "Occasionally," 3 = "Once/Twice a week," 4 = "Several times a week," and 5 = "Daily") served as the independent variable, and total motivation scores served as the dependent variable.

Table 2

Motivational Differences Across Varying Usage Frequencies

	Sum of squares	*df*	Mean square	*F*	*Sig.*
Between groups	940.450	4	235.112	9.757	0.000
Within groups	1084.370	45	24.097	/	/
Total	2024.820	49	/	/	/

Table 3

Detailed Pairwise Comparisons of Motivation Scores Across Frequency Groups

(I)Frequency	(J)Frequency	Mean difference (I-J)	Std. error	*Sig.*
1	2	-4.343	2.874	0.138
	3	-9.382*	2.648	0.001
	4	-9.585*	2.583	0.001
	5	-14.200*	2.557	0.000
2	1	4.343	2.874	0.138
	3	-5.039*	2.373	0.039
	4	-5.242*	2.301	0.028
	5	-9.857*	2.272	0.000
3	1	9.382*	2.648	0.001
	2	5.039*	2.373	0.039
	4	-0.203	2.011	0.920
	5	-4.818*	1.978	0.019
4	1	9.585*	2.583	0.001
	2	5.242*	2.301	0.028
	3	0.203	2.011	0.920
	5	-4.615*	1.891	0.019
5	1	14.200*	2.557	0.000
	2	9.857*	2.272	0.000
	3	4.818*	1.978	0.019
	4	4.615*	1.891	0.019

* The mean difference is significant at the 0.05 level.

Notes. 1 = "Rarely," 2 = "Occasionally," 3 = "Once/Twice a week," 4 = "Several times a week," and 5 = "Daily")

In Table 2, there was a highly significant difference in motivation among different frequency groups ($F(4,45) = 9.757$, $p < 0.001$). Table 3 further reveals that the Daily use group (Group 5) scored significantly higher than all other groups ($p < 0.05$), suggesting that daily use is the optimal frequency for sustaining the highest motivation. No significant difference was found between the Once/Twice a week group (Group 3) and the Several times a week group (Group 4) ($p = 0.920 > 0.05$), indicating that motivation increases significantly once learners

reach a threshold of at least weekly use, and the effect tends to stabilize thereafter. No significant difference was found between the Rarely group (Group 1) and the Occasionally group (Group 2) ($p = 0.138 > 0.05$), suggesting that low-frequency use (less than once a week) has a limited effect on motivation.

In conclusion, the findings reveal a clear positive association between usage frequency and learning motivation. Learners who used gamified tools more frequently scored significantly higher on motivation. Specifically, daily users outperformed all other groups, while low-frequency users (less than once a week) showed the lowest scores with no significant differences among them. This suggests a cumulative effect of gamified tool usage on motivation, only when usage reaches a certain threshold (at least 1-2 times per week) does a noticeable motivational effect emerge, with daily use yielding the optimal outcome.

Table 4

Group Statistics for Motivation Scores by Gender

Gender	*N*	*Mean*	Std. deviation	Std. error mean
male	25	30.48	6.709	1.342
female	25	31.40	6.238	1.248

Table 5

Independent Samples t-Test Results for Gender Differences in Motivation Scores

	F	*Sig.*	*t*	*df*	Sig. (2-tailed)	Mean difference
Total scores	1.012	0.319	-0.502	48	0.618	-0.920

As for gender differences, an independent-samples *t*-test was conducted to examine whether gender significantly affects learners' motivation levels when using gamified English learning tools. Gender served as the grouping variable, and total motivation scores served as the dependent variable.

Table 4 and Table 5 reveal no significant difference between male ($M = 30.48$, $SD = 6.709$) and female ($M = 31.40$, $SD = 6.238$) learners in their overall motivation scores, t (48) = -0.502, $p = 0.618$. Levene's test for equality of variances indicated that the assumption of homogeneity of variance was met ($F = 1.012$, $p = 0.319$).

These findings suggest that gender does not play a significant role in influencing motivation toward gamified English learning tools. Although female learners recorded a slightly higher average motivation score than male learners, this difference was not statistically significant, indicating that the two groups demonstrated comparable levels of motivation. Thus, gamified English learning tools appear to be equally motivating for both male and female learners.

Discussion

This study found that the overall motivation mean of the 50 users was 3.87 out of 5, significantly above the theoretical midpoint of 3.0, indicating that gamified English learning tools can effectively enhance learners' intrinsic motivation. This result is consistent with previous studies (Cheng et al., 2025; Eltahir et al., 2021; Nadeem et al., 2023). In these studies, all scholars also found that gamified learning environments can effectively enhance learners' motivation, engagement, and academic performance. However, the motivational level found in this study shows slight differences compared with theirs. The experimental group in (Cheng et al., 2025) reached a motivation mean of 3.90, while Eltahir et al. (2021) reported a mean of 4.16 for the Kahoot! group, which is considerably higher than the 3.87 found in this study. This might be due to the difference in research design. In their studies, gamified learning was implemented as a structured classroom intervention with

a single tool, whereas participants in this study used a variety of gamified English learning tools (Duolingo, Quizizz, Kahoot, Baicizhan, and Shanbay) in informal, self-directed learning contexts. Given the differences in tool types, learning contexts, and learner autonomy, the motivational level in this study is slightly lower but still consistently high, which confirms the cross-contextual stability of gamified learning in motivating English learners.

The findings of the questionnaire can also be a good indicator of this moderately high level of motivation. Among the 50 users, the highest-scoring item was Q14 "Instant feedback kept focus and engagement" ($M = 4.08$, $SD = 0.900$), which is the only item exceeding 4.0. This finding is consistent with Nadeem et al. (2023), who suggested that instant feedback can boost students' motivation by providing them with a clear understanding of their strengths and weaknesses and encouraging them to strive for better performance. Similarly, this finding is consistent with Cheng et al. (2025), who found that GBL provides positive reinforcement through immediate feedback, further enhancing learners' confidence and motivation. So, instant feedback cannot be overlooked in gamified English learning. Instead, it can be found in most gamified tools and serves as the most robust driver of engagement among Chinese English learners.

Another finding is that high motivation was common among users, regardless of their gender. The result shows that both gender groups report a similarly high level of motivation, with no statistically significant differences (t (48) = -0.502, $p = 0.618$). Similarly, Eltahir et al. (2021) found that there is no significant gender difference in motivation toward GBL ($p = 0.813$), which is in line with the results of this study. However, there is also a contrasting finding from (Cheng et al., 2025), who found that male students' learning motivation significantly improved in the GBL environment ($t = 2.91$, $p < 0.05$), whereas female students showed no significant change ($t = 1.26$). This is probably because of the sample difference. Their research focuses on a gender-imbalanced sample (87 females and 42 males), but this research centers on a gender-balanced sample. So, the future research should enlarge the sample size to have a deeper exploration into the gender difference.

Conclusions

This study examines the impact of gamified English learning tools on learners' English learning motivation. The results indicate that participants' overall motivation is moderately high, suggesting that gamified tools are associated with relatively strong learning motivation. Instant feedback is widely regarded as the most important motivational factor, helping learners maintain focus and engagement, whereas social competition and progress-sharing features play a more limited and individualized role. Usage frequency is positively associated with motivation, and the effect appears to stabilize after a certain level of use. No significant gender difference is found, suggesting that gamified tools may be similarly motivating for male and female learners. Theoretically, this study contributes by decomposing gamification into specific features and examining their relationships with motivation within the frameworks of SDT and the ARCS model. By incorporating usage frequency and gender, it also extends motivation research from static attitudes toward behavioural engagement and individual differences. Practically, it offers implications for developers to optimize feedback systems and design social comparison features more flexibly, and for educators to encourage regular use and align gamified features with instructional goals and learner characteristics.

Several limitations should be noted. First, the sample size is small. Second, the participants were recruited through convenience sampling, limiting generalizability. Third, the cross-sectional design cannot establish

causality and only reveals associations among variables. Fourth, motivation was assessed through participants' subjective self-ratings rather than objective instruments, so the findings may be susceptible to social desirability bias. Future research is recommended to conduct for avoiding these limitations in four respects.

First, the sample size should be enlarged and participants should be recruited from multiple resources to enhance statistical power and the stability of findings;

Second, probability sampling or stratified random sampling should be adopted to improve sample representativeness and the generalizability of results;

Third, longitudinal tracking or quasi-experimental designs should be adopted to move beyond cross-sectional associations and examine the causal relationship between gamified tools and learning motivation;

Fourth, in addition to self-report questionnaires, objective measures, such as behavioural logs, learning analytics, test scores, classroom observations, or physiological indicators should be incorporated.

By addressing these issues, future research can further enhance internal validity, external validity, and the robustness of its conclusions.

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