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Gamification in Language Learning Experimental Evidence from University Students in Thailand

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ABSTRACT

This experimental study investigates the effectiveness of gamification strategies in English language learning among 180 undergraduate students at a Thai university over one academic semester. Participants were randomly assigned to three conditions: gamified learning environment, traditional digital learning, and conventional classroom instruction. The gamification intervention incorporated points, badges, leaderboards, narrative elements, and collaborative challenges designed to enhance motivation and engagement. Pre-test and post-test assessments measured language proficiency gains across reading, writing, speaking, and listening skills, while questionnaires evaluated motivational dimensions and learning satisfaction. Results demonstrate that gamified instruction produced significantly higher achievement gains compared to both control conditions, with effect sizes ranging from moderate to large across skill areas. Students in the gamification group reported enhanced intrinsic motivation, greater persistence, and increased enjoyment of learning activities. However, findings also reveal that competitive elements generated anxiety among certain learners, suggesting the importance of balanced design. These results contribute empirical evidence supporting gamification's potential in Asian EFL contexts while identifying implementation considerations for maximizing educational benefits.

INTRODUCTION

Language education in the twenty-first century faces unprecedented challenges and opportunities as digital technologies transform pedagogical possibilities and student expectations (Muhsyanur, 2022; Muhsyanur et al., 2021). Traditional instructional approaches, centered on teacher-directed grammar explanation and repetitive drill exercises, increasingly struggle to engage learners accustomed to interactive digital environments and multimedia stimulation (Reinders & Wattana, 2018). Gamification, defined as the application of game design elements and gaming principles in non-game contexts, has emerged as a promising pedagogical innovation that potentially addresses motivation deficits while enhancing learning outcomes. The integration of mechanics such as points, badges, leaderboards, challenges, and narratives into educational activities aims to leverage the inherent appeal of games to increase engagement, persistence, and achievement. As Deterding et al. (2011) articulate, gamification differs from educational games themselves by incorporating specific game elements into existing learning structures rather than creating entirely game-based experiences.

The theoretical foundations of gamification in education draw from multiple psychological and educational frameworks that explain how game mechanics might enhance learning processes. Self-Determination Theory, as elaborated by Ryan and Deci (2020), posits that human motivation depends on satisfying three fundamental psychological needs: autonomy, competence, and relatedness. Gamification potentially addresses these needs through providing meaningful choices, clear competence feedback via progression systems, and social connection through collaborative or competitive elements. Flow Theory, developed by Csikszentmihalyi (2014), suggests that optimal learning occurs when task difficulty matches skill level, creating immersive engagement states that gamification can facilitate through adaptive challenges and immediate feedback. Additionally, behaviorist principles regarding reinforcement and reward systems, though critiqued when applied simplistically, offer insights into how game mechanics can shape behavior and sustain engagement through carefully designed incentive structures (Muhsyanur et.al, 2025; Muhsyanur, 2025)Language learning represents a particularly suitable domain for gamification applications due to its inherently skill-based, progressive nature and the motivational challenges many learners face. Acquiring proficiency in a foreign language requires sustained practice across multiple competency areas, tolerance for initial incompetence, and willingness to take communicative risks that many learners find anxiety-provoking (Kapp, 2019). Traditional language instruction often fails to provide sufficient practice opportunities, immediate feedback, or intrinsic motivation, leading to high attrition rates and limited proficiency development. Gamified language learning environments can potentially address these limitations by making practice more enjoyable, providing immediate performance feedback, scaffolding difficulty progression, and creating low-stakes

contexts for experimentation. Research by Prensky (2017) suggests that game-based approaches align particularly well with contemporary students' preferences for interactive, visually engaging, and socially connected learning experiences.

The English as a Foreign Language context in Thailand presents specific challenges that motivate exploration of alternative pedagogical approaches including gamification. Despite significant educational investment and policy emphasis on English proficiency development, Thai students consistently demonstrate limited communicative competence and rank below regional peers on international assessments (Baker & Phakiti, 2019). Multiple factors contribute to these outcomes, including large class sizes, teacher-centered instruction emphasizing grammatical knowledge over communicative practice, limited authentic language use opportunities, and cultural factors that discourage risk-taking and oral participation. Many Thai students report low motivation for English learning, viewing it as an academic requirement rather than a meaningful communicative tool. According to Darasawang and Reinders (2021), Thai educational culture emphasizes examination performance and rote memorization, creating misalignment with communicative language teaching principles that value interaction, experimentation, and functional language use.

Existing research on gamification in language learning demonstrates promising but mixed results, with outcomes varying based on implementation design, learner characteristics, and cultural contexts. A meta-analysis by Huang and Hew (2018) examining gamification effects across educational domains found moderate positive impacts on learning outcomes and strong effects on learner engagement, though with considerable variability across studies. Language learning specifically shows benefits in vocabulary acquisition, grammar practice, and motivation enhancement, though evidence regarding speaking and writing skill development remains limited. Studies conducted primarily in Western contexts may not generalize to Asian educational settings with different cultural values, learning preferences, and instructional traditions. Importantly, several researchers caution that poorly designed gamification can produce superficial engagement focused on rewards rather than learning, potentially undermining intrinsic motivation through overjustification effects (Dichev & Dicheva, 2017).

The design of effective gamification interventions requires careful attention to pedagogical principles rather than merely adding superficial game elements to existing instruction. Nicholson (2015) distinguishes between meaningful gamification, which integrates game mechanics with learning objectives and creates genuine connections to learner goals, and shallow gamification that simply overlays points and badges without deeper engagement. Effective language learning gamification should provide authentic communicative contexts, scaffold skill development through progressive challenges, offer immediate and informative feedback, support both individual and collaborative learning, and accommodate diverse learner preferences and proficiency levels. The selection of specific game mechanics should align with intended learning outcomes, whether emphasizing

individual achievement through points and progression systems, social learning through team challenges, or exploration through narrative-based activities.

Despite growing interest in gamification, significant gaps remain in empirical evidence regarding its effectiveness in specific contexts, optimal design principles, and potential limitations. Most existing studies employ small sample sizes, short intervention periods, or lack appropriate control groups, limiting causal inference regarding gamification effects. The predominance of research in Western educational contexts leaves uncertain how gamification functions in Asian cultures with different values regarding competition, collaboration, and learning. Additionally, few studies examine effects across multiple language skill areas simultaneously or investigate how gamification impacts different learner profiles, including variations in initial proficiency, motivation levels, and learning preferences. The current study addresses these gaps by implementing a rigorous experimental design comparing gamified instruction to traditional alternatives over an extended period with Thai university students, measuring outcomes across comprehensive language competencies while investigating motivational and affective dimensions.

METHOD

This study employed a quasi-experimental pretest-posttest control group design to investigate gamification effects on English language learning outcomes among Thai university students. Participants included 180 undergraduate students enrolled in required English courses at a mid-sized public university in central Thailand, randomly assigned to three conditions: gamified learning (n=60), traditional digital learning (n=60), and conventional classroom instruction (n=60). All participants were Thai nationals aged 18-21 with intermediate English proficiency levels (CEFR B1) determined through institutional placement testing. The intervention period spanned one academic semester (15 weeks), with all groups receiving equivalent instructional time (three hours weekly) and covering identical curricular content focused on general English communication skills. Following Dörnyei's (2007) recommendations for language learning research design, the study incorporated multiple measurement points, controlled for instructor effects through training protocols, and employed validated assessment instruments to ensure reliability and validity.

The gamified learning condition utilized a custom-designed digital platform incorporating multiple game mechanics aligned with language learning objectives, informed by Werbach and Hunter's (2020) gamification framework emphasizing dynamics, mechanics, and components. Core mechanics included experience points awarded for completing activities and demonstrating skill mastery, achievement badges recognizing specific accomplishments (vocabulary milestones, grammar accuracy, communicative tasks), progressive levels representing advancing proficiency, leaderboards displaying top performers to foster healthy competition, and narrative contexts framing learning activities within adventure scenarios. The platform provided immediate feedback on exercises, adaptive difficulty adjustment

based on performance, and both individual and collaborative challenges. The traditional digital learning group used commercial language learning software (identical content without gamification elements), while the conventional group received standard face-to-face instruction emphasizing textbook exercises and teacher-led activities. Data collection included standardized language proficiency tests (adapted from Cambridge Assessment English) measuring reading, writing, listening, and speaking skills administered pre- and post-intervention, alongside motivation questionnaires based on Gardner's (2020) Attitude/Motivation Test Battery and learning experience surveys. Following Creswell and Creswell's (2018) mixed-methods principles, quantitative outcome data were supplemented with qualitative feedback through open-ended survey questions and focus group discussions examining student perceptions and experiences.

RESULT AND DISCUSSION

Language Proficiency Outcomes Across Skill Areas

The primary research question examined whether gamified instruction produced superior language learning outcomes compared to traditional approaches. Analysis of covariance (ANCOVA), controlling for pretest scores, revealed significant group differences in post-test performance across all measured language skills. Students in the gamified condition demonstrated the highest achievement gains, followed by the traditional digital group, with conventional instruction producing the smallest improvements. Reading comprehension showed a moderate effect, with gamified learners improving by an average of 18.3 points on the 100-point scale compared to 12.7 points for digital learners and 9.4 points for conventional instruction students. These differences proved statistically significant at $p < 0.01$, with effect size calculations (partial eta-squared) indicating that instructional condition explained approximately 23% of variance in reading gains after controlling for baseline proficiency.

Writing skill development demonstrated particularly pronounced gamification benefits, possibly reflecting the platform's structured practice opportunities and immediate corrective feedback. Gamified condition students improved their writing scores by an average of 21.5 points compared to 13.8 points for digital learners and 10.2 points for conventional students, representing a large effect size (partial eta-squared = 0.31). Qualitative analysis of writing samples revealed that gamified learners produced more complex sentence structures, demonstrated greater vocabulary range, and showed improved organizational coherence. These outcomes align with research by Hwang and Chang (2021) suggesting that gamification's scaffolding mechanisms and motivational features particularly benefit productive skill development that requires sustained effort and iterative practice. The badge system rewarding various writing accomplishments (descriptive language use, grammatical accuracy, revision completion) appeared to encourage students to engage more deeply with writing processes rather than viewing assignments as mere requirements to complete minimally.

Listening comprehension improvements, while significant, showed smaller between-group differences than reading and writing outcomes. Gamified students gained an average of 15.2 points, traditional digital learners 12.9 points, and conventional instruction students 11.3 points, with a moderate effect size. The relatively modest advantage for gamification in listening skills may reflect that this competency depends heavily on input exposure and cognitive processing capacity rather than the repetitive practice and feedback that gamification particularly supports. However, engagement data revealed that gamified learners completed significantly more listening activities than control groups, suggesting that even if per-activity learning remained similar, increased practice volume translated to enhanced outcomes. This finding supports arguments by Reinders and Benson (2017) that gamification's primary benefit may be sustaining engagement and practice persistence rather than fundamentally changing learning processes during individual activities.

Speaking proficiency, assessed through recorded oral tasks evaluated by independent raters, demonstrated complex patterns requiring nuanced interpretation. Overall speaking scores improved more in the gamified condition (16.8 points) compared to traditional digital (10.4 points) and conventional instruction (12.1 points), though the conventional group outperformed the digital condition. This unexpected pattern likely reflects that conventional face-to-face instruction provided more authentic speaking practice opportunities than the digital platform, which despite gamification elements offered limited conversational interaction. The gamified platform's speaking activities emphasized pronunciation practice, vocabulary retrieval under time pressure, and structured response tasks rather than spontaneous communication. These findings underscore that gamification cannot overcome fundamental pedagogical limitations when the learning environment lacks essential practice modalities. Future gamification designs must incorporate synchronous communication features, peer interaction opportunities, or hybrid formats combining digital gamified practice with face-to-face communication activities to fully develop speaking competencies.

Motivational Dimensions and Learner Engagement

Beyond achievement outcomes, the study investigated gamification effects on motivational constructs and engagement behaviors that potentially mediate learning processes. Post-intervention motivation questionnaires revealed significant group differences across multiple dimensions. Intrinsic motivation, measured through items assessing enjoyment, interest, and inherent satisfaction from learning activities, proved substantially higher in the gamified condition (M = 4.32 on a 5-point scale) compared to traditional digital (M = 3.54) and conventional instruction (M = 3.61). These differences suggest that gamification successfully created more enjoyable learning experiences without necessarily requiring external rewards, contradicting concerns that game mechanics undermine intrinsic motivation through overjustification. The narrative contexts and varied activity formats appeared

particularly important for generating interest, with focus group participants frequently mentioning how the adventure storyline made practice feel purposeful rather than arbitrary.

Extrinsic motivation patterns, encompassing external regulation and identified regulation dimensions, revealed more complex dynamics. Students across all conditions reported similar levels of external regulation, reflecting that required courses inherently involve external motivators regardless of instructional approach. However, identified regulation—internalized motivation where individuals recognize learning's personal value—proved significantly higher in the gamified group. This finding aligns with Self-Determination Theory predictions that autonomy-supportive environments facilitate motivation internalization. The gamified platform's provision of choice in activity sequencing, optional challenge tasks, and multiple pathways to achievement apparently helped students develop personal investment in learning beyond mere compliance with requirements. According to Ryan and Deci (2020), this internalization process represents a critical pathway through which initially external motivations can become self-sustaining.

The following table presents comprehensive motivation and engagement data comparing the three instructional conditions:

Table 1. Motivation and Engagement Indicators Across Instructional Conditions

Measure	Gamified (n=60)	Traditional Digital (n=60)	Conventional (n=60)	F-statistic	p-value	Effect Size (η^2)
Intrinsic Motivation (1-5)	4.32 (0.58)	3.54 (0.71)	3.61 (0.68)	28.45	<0.001	0.24
Identified Regulation (1-5)	4.18 (0.62)	3.72 (0.65)	3.69 (0.71)	12.33	<0.001	0.12
Effort Investment (1-5)	4.25 (0.64)	3.48 (0.73)	3.52 (0.69)	26.17	<0.001	0.23
Persistence (weekly hours)	6.8 (1.4)	4.2 (1.1)	3.9 (1.3)	82.91	<0.001	0.48
Activity Completion (%)	87.3 (8.2)	68.5 (12.3)	71.2 (11.7)	67.54	<0.001	0.43
Learning Satisfaction (1-5)	4.41 (0.55)	3.62 (0.68)	3.58 (0.74)	31.28	<0.001	0.26
Anxiety Level (1-5)	2.87 (0.82)	2.51 (0.76)	2.64 (0.79)	4.12	0.018	0.04

Note: Values represent means with standard deviations in parentheses. Higher scores indicate greater levels except for anxiety where higher scores indicate more negative affect.

These data reveal that gamification's strongest effects emerged in behavioral engagement indicators rather than merely attitudinal dimensions. Students in the gamified condition invested significantly more time in learning activities (6.8 hours weekly outside class versus approximately 4 hours for control groups) and completed substantially more practice exercises. This behavioral evidence suggests that gamification succeeded in making practice sufficiently engaging that students voluntarily increased effort investment beyond required minimums. The activity completion rates particularly underscore engagement differences, with gamified students finishing 87.3% of available activities compared to approximately 70% in control conditions, despite all groups facing identical course requirements.

Anxiety levels, though lower than might be expected given competitive leaderboard elements, proved slightly but significantly higher in the gamified condition. Qualitative data illuminated this finding, with approximately 30% of gamified condition students reporting stress related to leaderboard positions and concerns about falling behind peers. Several participants noted that while competition motivated increased effort, it also generated social comparison anxiety and fear of public failure visible through ranking displays. These findings resonate with concerns raised by Hanus and Fox (2015) regarding potential negative effects of competitive gamification elements, particularly in collectivist Asian cultures where maintaining social harmony and avoiding face loss carry significant weight. The anxiety differential, while statistically significant, remained relatively small in magnitude, suggesting that for most students, gamification's motivational benefits outweighed competitive stress. However, the finding underscores the importance of design choices that balance competitive elements with collaborative features and options for private progress tracking.

Individual Differences and Implementation Considerations

Analysis of individual difference variables revealed that gamification effects varied across student subgroups, suggesting that universal gamification approaches may prove less effective than designs accommodating learner diversity. Initial proficiency level significantly moderated gamification effects, with lower-proficiency students benefiting more substantially than higher-proficiency peers. Among students scoring in the bottom third of pretest distributions, gamified instruction produced achievement gains averaging 24.3 points compared to 11.6 points for combined control conditions, representing a large effect size. In contrast, high-proficiency students showed more modest gamification advantages (14.2 points versus 12.8 points for controls), suggesting that advanced learners may require less external motivation support and more sophisticated challenge levels than the

intervention provided. This pattern aligns with research by Sailer and Homner (2020) indicating that gamification particularly benefits struggling students who need additional engagement support and structured practice opportunities.

Gender differences emerged in engagement patterns and preference for specific game mechanics, though not in ultimate achievement outcomes. Female students reported significantly higher appreciation for collaborative challenges and narrative elements, while male students demonstrated stronger responses to competitive leaderboards and individual achievement badges. However, both genders showed equivalent overall motivation increases and learning gains from gamification, suggesting that platforms incorporating diverse mechanics can appeal broadly despite individual preference variations. Cultural background variables, assessed through acculturation scales measuring traditional versus Western orientation, showed minimal moderation effects, indicating that gamification effectiveness transcended cultural dimensions within this sample. This finding contradicts concerns that gamification represents a culturally-specific Western pedagogical approach incompatible with Asian educational values, though further research across more diverse cultural contexts remains necessary.

Learning style preferences, measured through adapted instruments assessing visual, auditory, and kinesthetic modalities, revealed interesting interactions with gamification effects. Visual learners demonstrated particularly strong responses to the gamified platform's graphics, progress visualizations, and badge displays, while auditory learners showed relatively weaker engagement with the predominantly visual-textual platform. Kinesthetic learners, who prefer active experimentation and physical engagement, reported moderate satisfaction levels despite the digital platform's inherent limitations for hands-on activities. These findings suggest that truly inclusive gamification requires multimodal design incorporating varied activity types, sensory inputs, and interaction modes. The current intervention's emphasis on visual elements, while generally effective, potentially limited appeal for learners preferring alternative modalities.

Implementation challenges identified through instructor interviews and student feedback illuminate practical considerations for gamification adoption in educational contexts. Technical issues, including platform glitches, internet connectivity problems, and device compatibility limitations, frustrated some students and occasionally disrupted learning continuity. Several participants noted that initial navigation confusion and learning the platform's mechanics consumed time that could have been devoted to language practice, suggesting that onboarding processes and interface design require careful attention. Instructors reported challenges integrating the gamified platform with existing curricula, grading systems, and institutional requirements, indicating that successful implementation requires not just effective platform design but supportive organizational structures and teacher professional development. According to Dicheva et al. (2015), these implementation factors frequently receive insufficient attention despite critically influencing whether theoretically sound gamification designs translate into practical

educational benefits. The Thai educational context's emphasis on standardized examinations sometimes created tensions between gamified platform activities and test preparation priorities, with some students viewing gamification as supplementary enrichment rather than core learning, potentially limiting engagement and undermining integration into serious study routines.

CONCLUSION

This experimental investigation provides robust evidence that carefully designed gamification can significantly enhance language learning outcomes and motivation among Thai university students, though effects vary across skill areas, learner characteristics, and implementation contexts. Gamified instruction produced superior achievement gains compared to both traditional digital and conventional classroom approaches across reading, writing, listening, and speaking competencies, with particularly pronounced benefits for writing development and behavioral engagement. Students experiencing gamified learning demonstrated substantially higher intrinsic motivation, greater persistence in practice activities, and increased learning satisfaction, though some individuals reported elevated anxiety related to competitive elements. Individual difference analyses revealed that lower-proficiency learners, visual learning style preferences, and students with lower initial motivation benefited most substantially from gamification, suggesting that targeted rather than universal implementation may optimize outcomes.

These findings contribute valuable empirical evidence supporting gamification's pedagogical potential in Asian EFL contexts while highlighting critical design considerations including balancing competitive and collaborative elements, accommodating diverse learner preferences, ensuring technical reliability, and providing adequate institutional support for implementation. Future research should investigate long-term retention effects, examine gamification impacts across broader proficiency ranges and cultural contexts, explore optimal combinations of game mechanics for specific learning objectives, and develop adaptive systems that personalize gamification elements to individual learner profiles and preferences.

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