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Original Article

The Impact Of Gamified Learning On Enhancing Metaphorical Vocabulary Acquisition And L2 Writing Quality

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ABSTRACT

This mixed-methods quasi-experimental study investigated the effects of a theory-driven gamified instructional model on metaphorical vocabulary acquisition and its subsequent transfer to academic writing among 80 non-English majors at a Vietnamese public university. Over an eight-week intervention, the experimental group engaged with target conceptual metaphors through gamified platforms (Classcraft/Quizizz), while the control group received traditional print-based instruction. Quantitative data from parallel pre-, post-, and delayed tests alongside analytical writing rubrics were analyzed using ANCOVA, complemented by qualitative thematic analysis of semi-structured interviews. The results revealed that the gamified model led to significantly higher immediate lexical gains and robust long-term retention compared to traditional instruction, which suffered from significant decay. Furthermore, these lexical gains successfully manifested in writing production, yielding substantial improvements in metaphorical accuracy, lexical density, and overall essay coherence. Qualitatively, gamification acted as an affective buffer, lowering writing anxiety and enhancing intrinsic motivation, though some cognitive friction occurred during formal composition transfer.

Keywords: Gamification, Metaphorical Competence, Academic Writing, Self-Determination Theory, EFL, Lexical Transfer.

INTRODUCTION

In advanced L2 writing, grammatical accuracy alone cannot foster natural, nuanced academic expression. Learners must develop metaphorical competence specifically, the mastery of metaphorical vocabulary (e.g., conceptual metaphors and fixed metaphorical expressions) to transform abstract concepts into vivid, persuasive discourse. Despite its importance, this aspect of language acquisition is often neglected or relegated to rote, mechanical memorization in traditional classrooms. Consequently, EFL learners frequently struggle to deeply internalize these expressions or successfully transfer them into their actual writing performance (Luu, 2025; Luu & Le, in press; Luu et al., 2025).

To bridge this pedagogical gap, gamification offers a promising alternative. By integrating core game mechanics such as points, badges, leaderboards, and quests, gamified instruction transitions language learning from passive consumption to active engagement. Grounded in Self-Determination Theory, Flow Theory, and the ARCS framework, a theory-driven gamified environment fosters intrinsic motivation by satisfying learners' basic psychological needs. Additionally, it provides immediate feedback and lowers affective barriers like writing anxiety, which heavily impedes student achievement (Luu & Nguyen, in press; Luu et al., 2025; Luu, Nguyen, Do, & Nguyen, 2025).

However, major empirical gaps persist regarding the application of gamification to abstract, high-level writing skills. While existing research validates the use of educational apps for basic vocabulary retention or surface-level grammar drills (Gamal et al., 2025; Jabbar & Usman, in press), studies on cognitively demanding lexical domains like metaphorical vocabulary remain scarce. Crucially, whether game-

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mediated vocabulary gains can effectively transfer to independent essay composition rather than remaining confined to isolated lexical tasks remains unanswered (Eanga et al., 2025; Luu, Nguyen, Anh, et al., 2025; Nilubol & Sitthitikul, 2025). Therefore, investigating the dual mechanisms of metaphor acquisition and productive writing transfer is essential for designing sustainable, context-sensitive EFL methodologies (Calero Sánchez et al., 2024; Muralei et al., 2025).

This study addresses these gaps by evaluating the impact of gamified instruction on EFL learners' acquisition of metaphorical vocabulary and its subsequent transfer to essay writing. Specifically, the study aims to measure learners' retention and contextual understanding of metaphorical vocabulary following a gamified intervention; evaluate improvements in overall writing quality across fluency, accuracy, and lexical diversity; and explore learners' perceptions of and experiences with this instructional model. To guide the empirical inquiry, three research questions are addressed:

- RQ1: How does gamified instruction affect learners' acquisition and retention of metaphorical vocabulary?
- RQ2: How do gamification-mediated gains in metaphorical vocabulary manifest in the quality of learners' writing in terms of fluency, accuracy, and lexical diversity?
- RQ3: What are the learners' perceptions and attitudes toward integrating gamification into metaphorical vocabulary learning for academic writing?

METHODOLOGY

Research Design

To capture a comprehensive understanding of the intervention, this study employs a mixed-methods concurrent embedded design grounded in a quasi-experimental framework (Nilubol & Sitthitikul, 2025). Given the administrative constraints of the university setting, randomized assignment of individual participants is not feasible. Consequently, intact, pre-existing classrooms are utilized to maintain ecological validity.

The design features an Experimental Group (EG), which receives gamified vocabulary instruction, and a Control Group (CG), which undergoes traditional vocabulary instruction. Quantitative data from linguistic assessments and psychological scales serve as the primary source of evidence, while qualitative insights from semi-structured interviews are embedded to couch the statistical trends in a deeper contextual understanding, helping to clarify the specific cognitive and affective mechanisms at play (Eanga et al., 2025).

Participants

The study sample comprises 80 non-English major students enrolled in general English courses at a public university in Vietnam. To eliminate confounding variables, all participants were administered a standardized baseline proficiency test to ensure an equivalent linguistic starting point corresponding to the B1/B2 levels of the Common European Framework of Reference for Languages (CEFR). The two intact groups were designated as the Experimental Group (n = 40) and the Control Group (n = 40).

In terms of specific breakdown, the gender distribution consists of 18 males and 22 females in the Experimental Group, compared to 16 males and 24 females in the Control Group, yielding a total of 34 male and 46 female participants. The mean age of the sample is 19.45 years, with the Experimental Group averaging 19.4 years (SD = 0.6) and the Control Group averaging 19.5 years (SD = 0.5). Across both cohorts, participants represent three main academic majors: Information Technology (n = 29, with 15 in the EG and 14 in the CG), Business Administration (n = 25, with 12 in the EG and 13 in the CG), and Food Technology (n = 26, with 13 in each group). Finally, baseline assessments of prior gamification exposure revealed relatively balanced distributions across both classes: 15 students reported high daily app usage (8 EG, 7 CG), 42 reported moderate occasional exposure (20 EG, 22 CG), and 23 had low or no prior exposure (12 EG, 11 CG).

Demographic Variable	Category	Experimental Group (EG)	Control Group (CG)	Total (N=80)
Gender	Male	18	16	34
	Female	22	24	46
Age	Mean (SD)	19.4 (0.6)	19.5 (0.5)	19.45 (0.55)
Major Field of Study	Information Technology	15	14	29
	Business Administration	12	13	25
	Food Technology	13	13	26
Prior Gamification Exposure	High (Daily app use)	8	7	15
	Moderate (Occasional)	20	22	42
	Low/None	12	11	23

Table 1. Participants' demographic (N=80)

Experimental Procedure

The instructional intervention spans a total of eight weeks, structured across three distinct operational phases to monitor both progressive development and immediate learning outcomes.

During Phase 1, which takes place in Week 1, both groups undergo identical baseline testing procedures. This phase requires students to complete a metaphorical vocabulary pre-test to gauge their initial receptive and productive lexical knowledge, followed immediately by a diagnostic pre-writing prompt designed to assess their baseline academic writing quality prior to any instructional treatment.

Phase 2 encompasses the core instructional intervention running from Week 2 through Week 7. During this six-week period, both cohorts cover an identical vocabulary syllabus focused on specific target conceptual metaphors, such as ARGUMENT IS WAR and TIME IS MONEY, alongside their associated formulaic expressions (Luu, 2025; Luu, in press). However, the pedagogical delivery varies sharply between the classes. Students in the Experimental Group interact with the target vocabulary via digital gamified platforms like Classcraft and Quizizz, where lexical acquisition is driven by structural game mechanics, including quest-based progressions, narrative challenges, points accumulation, digital badges, and live leaderboards to support intrinsic motivation (Luu et al., 2025; Luu, Nguyen, Do, & Nguyen, 2025). Conversely, students in the Control Group study the exact same metaphorical sets through conventional, paper-based methods, relying on contextual fill-in-the-blank drills, explicit definitions, traditional sentence writing, and rote memorization without digital or game-based incentives.

Phase 3 marks the post-intervention stage conducted in Week 8. Both groups are required to complete parallel forms of the vocabulary post-test and a post-writing task to measure empirical performance gains. To capture the qualitative and psychological dimensions of the intervention, the Experimental Group also completes an attitude survey, and a

representative subset of these students participates in semi-structured interviews.

Data Collection Instruments

To ensure robust data triangulation, multiple instruments are mapped to specific research variables, ensuring that both linguistic output and learner psychology are evaluated through validated metrics. The quantitative data stream relies on four distinct instruments: a 30-item multiple-choice and contextual cloze test to measure receptive and productive metaphorical vocabulary knowledge; time-constrained argumentative essay writing prompts addressing abstract themes like Success and Time Management to prompt metaphor utilization; a standardized analytical writing rubric to evaluate lexical diversity and writing quality; and a 24-item student psychological survey using a 5-point Likert scale adapted from the Technology Acceptance Model (TAM) and Self-Determination Theory (SDT). Complementing these instruments, the qualitative data stream utilizes 15–20 minute semi-structured digital audio-recorded interview protocols designed to explore deeper cognitive engagement, writing anxiety, and perceived learning barriers.

To operationalize writing quality and monitor lexical transfer, the student essays are blind-scored by two independent inter-raters utilizing a specialized rubric matrix (Gamal et al., 2025; Jabbar & Usman, in press). Under the metric of Lexical Diversity and Transfer, raters evaluate Metaphorical Accuracy, which assesses the precision of embedding targeted conceptual metaphors within correct registers, alongside Lexical Density, measured as the ratio of metaphorical and idiomatic items to the overall word count. Under the metric of Writing Quality and Structure, raters evaluate Coherence and Cohesion, focusing on the logical sequencing of arguments and the functional use of cohesive devices, alongside Grammatical Complexity, which evaluates sentence structure variation and overall syntactic control.

Data Analysis

Quantitative Analysis

All numerical data will be cleaned and processed using SPSS. First, tests of normality (Shapiro-Wilk) and homogeneity of variance will be conducted to confirm parametric assumptions. To measure intra-group lexical growth from baseline to post-intervention, a Paired-Samples t-test will be applied to the pre- and post-test scores of each cohort.

To determine the comparative efficacy of the gamified model over traditional instruction, an Analysis of Covariance (ANCOVA) will be performed on the post-test and post-writing scores. In this model, the treatment type (EG vs. CG) serves as the independent variable, while the respective pre-test scores are integrated as covariates to statistically control for any initial baseline variations. Descriptive statistics (M, SD) will be computed to summarize the psychological constructs from the survey.

Qualitative Analysis

The qualitative data from the semi-structured interviews will be transcribed verbatim and analyzed using Braun and Clarke's (2006) six-phase framework for thematic analysis. The workflow moves systematically from raw audio to verified themes, beginning with transcription and check-backs for accuracy, followed by line-by-line open coding to capture initial student reactions regarding task authenticity, game mechanics, and cognitive load.

During the axial coding phase, these codes are gathered into broader, conceptual themes that illustrate the psychological effects of the intervention, such as contrasting the intrinsic drive generated by leaderboard validation against the cognitive friction experienced during productive composition transfer. Finally, the synthesized themes are reviewed, refined, and verified against the broader dataset and existing second language acquisition literature to ensure theoretical cohesion (Luu, Nguyen, Anh, et al., 2025; Luu & Nguyen, in press).

RESULTS

Results for RQ1: Effects of Gamified Instruction on Metaphorical Vocabulary Acquisition and Retention

To evaluate the impact of gamified instruction on the acquisition and retention of metaphorical vocabulary, a series of Paired-Samples t-tests and an Analysis of Covariance (ANCOVA) were executed. Table 1 presents the descriptive statistics and intra-group

developmental progress from the pre-test to the post-test and the delayed post-test administered two weeks after the treatment concluded.

Group	Assessment Stage	Mean (M)	Standard Deviation (SD)	Paired t-test	Effect Size (d)
Experimental Group (EG) (n = 40)	Pre-test	14.25	2.15	t(39) = -18.42	2.91
	Post-test	24.60	1.84	p < .001	
	Delayed Post-test	23.85	1.92	t(39) = 1.88, p = .068	—
Control Group (CG) (n = 40)	Pre-test	14.40	2.08	t(39) = -9.11	1.44
	Post-test	19.15	2.34	p < .001	
	Delayed Post-test	16.90	2.21	t(39) = 4.95, p < .001	0.78

Table 2. Paired-Samples t-tests

The intra-group analysis indicates that both instructional conditions yielded statistically significant improvements in vocabulary scores immediately following the six-week intervention. The Experimental Group exhibited an increase in mean score from 14.25 to 24.60, representing a substantial effect size (d = 2.91). The Control Group also registered a significant gain from 14.40 to 19.15, though with a markedly smaller effect size (d = 1.44).

Regarding long-term lexical retention, the Paired-Samples t-test comparing the post-test and delayed post-test scores for the Experimental Group revealed no statistically significant decay (M = 24.60 vs. M = 23.85, p = .068), indicating robust cognitive permanence of the targeted metaphorical items. Conversely, the Control Group suffered a statistically significant drop in performance over the two-week non-intervention period (M = 19.15 vs. M = 16.90, p < .001, d = 0.78).

To determine whether the post-intervention differences between the two groups were statistically meaningful when accounting for baseline variance, a one-way ANCOVA was conducted. The independent variable was the treatment type (EG vs. CG), the dependent variable was the vocabulary post-test score, and the pre-test score was entered as the covariate. The preliminary testing confirmed that the assumptions of normality and homogeneity of regression slopes were fully satisfied.

Source of Variance	Sum of Squares	Degrees of Freedom (df)	Mean Square	F-value	Significance (p)	Partial Eta Squared (ηp2)
Covariate (Pre-test)	12.45	1	12.45	2.81	.098	.035
Instructional Group	583.22	1	583.22	131.62	< .001	.631

Error	341.18	77	4.43			
Total	38825.00	80				

Table 3. Analysis of Covariance

The ANCOVA results in Table 2 confirm a highly significant main effect for the instructional intervention, demonstrating that students who learned through the gamified model achieved significantly higher immediate post-test scores than those exposed to traditional print materials, even when initial scores were statistically controlled. The partial eta squared value (ηp2 = .631) signifies that the gamified model accounted for 63.1% of the post-intervention variance in metaphorical vocabulary acquisition, verifying its pedagogical efficacy.

Results for RQ2: Manifestation of Lexical Gains in Essay Writing Quality

To investigate how gamification-mediated vocabulary developments manifested in the productive academic writing performance of the learners, the parallel pre- and post-writing essays were evaluated by two independent, blind raters. Inter-rater reliability was confirmed via a Pearson correlation analysis, yielding an r value of .89 ($p < .001$), which establishes high scoring consistency. Essays were explicitly scored on Lexical Diversity and Transfer (the precision and density of metaphorical structures) and global Writing Quality (coherence, cohesion, and grammatical complexity).

Group	Writing Metric	Pre-Writing Mean (SD)	Post-Writing Mean (SD)	ANCOVA F-value	Significance (p)	Partial Eta Squared (ηp2)
EG (n = 40)	Metaphorical Accuracy	1.85 (0.58)	4.10 (0.64)	114.28	< .001	.597
	Lexical Density	2.10 (0.61)	4.35 (0.52)	98.44	< .001	.561
CG (n = 40)	Metaphorical Accuracy	1.90 (0.62)	2.85 (0.71)			
	Lexical Density	2.15 (0.59)	3.10 (0.68)			
EG (n = 40)	Coherence & Cohesion	12.15 (1.84)	18.20 (1.42)	48.16	< .001	.385
	Grammatical Complexity	11.90 (1.71)	16.85 (1.55)	14.22	< .001	.156
CG (n = 40)	Coherence & Cohesion	12.30 (1.91)	14.65 (1.68)			
	Grammatical Complexity	12.05 (1.66)	14.10 (1.62)			

Table 4. Pearson correlation analysis

As shown by the ANCOVA outcomes summarized in Table 3, the experimental group achieved substantially higher scores across all evaluated productive metrics. The manifestation of gamification-mediated gains is most pronounced within the Lexical Diversity and Transfer dimension.

For Metaphorical Accuracy, the EG expanded its mean score from a baseline of 1.85 to 4.10, whereas the CG only progressed from 1.90 to 2.85 ($F = 114.28$, $p < .001$, $\eta p2 = .597$). A similar margin was noted for Lexical Density ($F = 98.44$, $p < .001$, $\eta p2 = .561$), confirming that experimental participants injected a higher concentration of appropriately contextualized metaphorical structures into their essays.

Furthermore, the integration of these lexical resources visibly influenced global writing indices. The EG outperformed the CG in Coherence and Cohesion ($M = 18.20$ vs. $M = 14.65$, $p < .001$, $\eta p2 = .385$), as the target metaphors served as cognitive frameworks that streamlined paragraph transitions and conceptual framing. The smallest, yet still statistically significant, benefit was noted in Grammatical Complexity ($F = 14.22$, $p < .001$, $\eta p2 = .156$), showing that while syntax improved, the primary impact of the intervention remained tied to lexical and conceptual organization.

Results for RQ3: Learner Perceptions and Attitudes toward Gamified Lexical Learning

To chart the psychological profile of the intervention, the 40 participants in the Experimental Group completed a post-experimental survey measuring constructs from SDT and the Technology Acceptance Model (TAM). Table 4 lists the items, means, and standard deviations.

Survey Subscale and Instrument Items	Mean (M)	Standard Deviation (SD)
Perceived Competence (SDT)		
1. The gamified tasks made me feel capable of understanding complex metaphors.	4.38	0.54
2. Tracking my progress via the leaderboard gave me confidence in my word choices.	4.22	0.61
3. I felt a sense of mastery as I unlocked new vocabulary levels.	4.45	0.50
Autonomy Support (SDT)		
4. Selecting my own learning quests gave me a sense of control over my vocabulary study.	4.12	0.68
5. The system allowed me to learn advanced expressions at my own comfortable pace.	4.25	0.59
Relatedness (SDT)		
6. Collaborating and competing with classmates made me feel connected to my peers.	4.30	0.60
7. The collective team challenges made vocabulary acquisition feel like a shared goal.	4.18	0.64
Perceived Usefulness & Ease of Use (TAM)		
8. Using game elements made it much easier to remember abstract meanings over time.	4.52	0.51
9. The digital interface was intuitive, allowing me to focus directly on the language tasks.	4.40	0.55

10. The game-like feedback helped me understand how to apply metaphors in actual essays.	4.15	0.70

Table 5. Descriptive statistics

The survey data reveals highly favorable learner perceptions across all parameters, with the highest mean score centered on Perceived Usefulness for memory retention (Item 8: M = 4.52, SD = 0.51) and Perceived Competence regarding mastery accumulation (Item 3: M = 4.45, SD = 0.50). The structural features designed to foster Autonomy Support and Relatedness also registered strong endorsement, averaging above 4.10 on the 5-point scale.

To enrich these quantitative metrics, the qualitative thematic analysis of the semi-structured interviews extracted key experiential threads that clarify these scores. The first major theme, Intrinsic Drive via Real-Time Progress Validation, indicated that the immediate feedback loops of points and badges altered the psychological experience of language learning, transforming abstract vocabulary acquisition into a concrete series of achievable milestones. Students explained that seeing their progress visualised on a leaderboard validated their efforts, which sustained their attention during cognitively demanding tasks.

The second major theme, Affective Buffering and Anxiety Reduction, showed that the gamified setting mitigated the traditional fear of negative evaluation. Participants noted that the playful environment softened the stakes of failure, encouraging them to experiment with complex language structures without worrying about immediate point deductions.

However, a third theme emerged highlighting a critical challenge: Cognitive Friction during Composition Transfer. Several interviewees noted that while retrieving word meanings within the game framework was seamless, deploying those same metaphorical items under the formal structural constraints of an independent, time-limited academic essay required a demanding cognitive shift, illustrating the split between game-based reception and independent written production.

DISCUSSION

The quantitative and qualitative findings of this study provide clear evidence supporting the integration of theory-driven gamification into the EFL writing curriculum. The results for RQ1 demonstrate that gamified instruction not only accelerates the immediate acquisition of abstract metaphorical vocabulary but also dramatically enhances long-term lexical retention. This performance trend supports previous research that links gamified structures with vocabulary gains (Gamal et al., 2025; Jabbar & Usman, in press). However, it extends current literature by demonstrating that game mechanics can successfully facilitate the acquisition of highly abstract, cognitively demanding conceptual domains, rather than being limited to surface-level grammar drills or literal vocabulary matching.

The clear retention advantage seen in the Experimental Group can be explained through cognitive and psychological mechanisms. In traditional instructions, lexical items are often introduced out of context, leading to rapid decay over time, as observed in the Control Group's delayed post-test scores. Conversely, the gamified platform provides contextualized feedback loops and situated quest narratives. These features encourage repeated retrieval and deeper cognitive processing of the target language.

Psychologically, these game elements satisfy the core components of Self-Determination Theory: autonomy, competence, and relatedness (Luu et al., 2025; Luu, Nguyen, Do, & Nguyen, 2025). Rather than relying on external pressure or rote repetition, learners develop an intrinsic drive sustained by level-based progressions and peer interaction. This internal engagement helps anchor new linguistic structures within long-term memory.

Regarding RQ2, the significant improvements in Metaphorical Accuracy and Lexical Density confirm that these vocabulary gains successfully transfer into productive writing. This finding addresses a

prominent concern in second language acquisition: whether gamified tools only support isolated word recognition or if they can enhance complex language production (Eanga et al., 2025; Nilubol & Sitthitikul, 2025). The results show that the intervention did lead to transfer, with experimental participants embedding metaphorical structures into their essays with higher density and contextual precision.

Interestingly, this lexical growth also enhanced broader measures of writing quality, particularly Coherence and Cohesion. This occurs because conceptual metaphors function as cognitive schema; when a student masters a metaphor network, it provides a structured mental framework that helps organize arguments and refine paragraph transitions. The modest improvement in Grammatical Complexity suggests that while game mechanics effectively promote lexical experimentation and conceptual framing, explicit syntax instruction remains necessary to drive comprehensive grammatical growth (Jabbar & Usman, in press).

The perceptual insights gathered for RQ3 clarify the underlying reasons for these linguistic advancements. The alignment between high survey ratings and positive interview responses shows that lowering the affective filter is essential for successful language learning. Traditional academic writing instruction often causes high levels of writing anxiety due to rigid rubrics and a constant fear of negative evaluation (Luu & Nguyen, in press). The gamified environment addresses this issue by functioning as an affective buffer. By framing mistakes as informative, low-stakes data points within a game loop rather than final punitive marks, the system reduces anxiety and gives students the confidence to experiment with advanced language structures.

However, the qualitative theme regarding *Cognitive Friction* highlights an important boundary condition of educational gamification. The mental effort required to transition from quick, gamified vocabulary recognition to producing structured, formal essays represents a distinct cognitive bottleneck. This indicates that while gamification is an exceptional tool for introducing and reinforcing language input, it cannot entirely replace explicit, teacher-led writing instruction. Instead, it serves as a powerful supplementary component within a broader instructional framework.

IMPLICATIONS

This study contributes to the literature by refining the application of SDT and TAM frameworks within the field of second language acquisition, particularly in collectivist Asian EFL settings. It challenges earlier views that critiqued gamification as a superficial system of external rewards that might undermine long-term engagement. Instead, this study presents a conceptual model showing that when game elements are aligned with learning objectives, they support intrinsic motivation by fulfilling the core psychological needs of competence, autonomy, and relatedness. Furthermore, this study connects cognitive metaphor theory with digital pedagogy. It demonstrates that abstract conceptual mappings can be effectively categorized and internalized through structured digital tasks, providing an empirical model for exploring how technology assists in developing high-level conceptual competence.

For classroom practice, these findings offer a clear blueprint for educators looking to revitalize advanced writing and vocabulary instruction. Teachers should move away from mechanical, rote memorization and instead use blended instructional designs that utilize accessible digital tools like Quizizz or Classcraft to introduce complex vocabulary. Crucially, syllabus designers must ensure that gamified activities are explicitly linked to productive writing tasks to ease the cognitive friction of language transfer. For example, short game sessions focused on target metaphors should be followed by collaborative writing activities or peer-assessment tasks (Eanga et al., 2025). This approach helps translate game-based vocabulary recognition directly into formal essay writing. Finally, by utilizing leaderboards and team challenges, instructors can foster a supportive collaborative environment that lowers writing anxiety and encourages students to take creative risks with their language choices.

CONCLUSION

This study investigated the impact of a gamified instructional model on metaphorical vocabulary acquisition and its subsequent transfer to academic writing among Vietnamese non-English major

university students. The empirical results show that integrating structural game elements into vocabulary instruction significantly improves immediate lexical acquisition and enhances long-term retention compared to traditional methods. Furthermore, these vocabulary developments successfully transferred to productive writing performance, as evidenced by significant increases in metaphorical accuracy, lexical density, and overall essay coherence.

Psychologically, the gamified environment served as an effective affective buffer, lowering writing anxiety and boosting intrinsic motivation by fulfilling students' needs for competence, autonomy, and relatedness. While students experienced some cognitive friction when transitioning from game tasks to formal essay production, the overall findings demonstrate that theory-driven gamification is an effective approach for developing complex, abstract linguistic skills in the EFL classroom.

Despite the clear empirical trends, several limitations must be acknowledged. First, this study utilized a quasi-experimental design with intact classes rather than randomized individual assignment, which limits the ability to fully control for pre-existing group dynamics. Second, the sample was drawn from non-English major undergraduates at a single public university in Vietnam, which may restrict the generalizability of the findings to English majors or learners in different cultural contexts with distinct power-distance dynamics. Third, the long-term evaluation was limited to a two-week delayed post-test; consequently, the enduring effects of gamification on lexical retention over months or semesters remain unexamined. Finally, the intervention relied primarily on specific commercial platforms, meaning the results may vary when using different gamified architectures or configurations.

To build on these findings, future research should implement true experimental designs with randomized longitudinal tracking over longer periods to monitor the durability of gamified language gains across multiple semesters. Researchers should also explore the effectiveness of this model among diverse student demographics, including various proficiency levels, age groups, and cultural backgrounds, to see how individual traits influence engagement. It would be highly valuable to investigate the specific effects of individual game mechanics such as separating the impact of competitive leaderboards from collaborative team quests to determine which elements best support productive language transfer. Finally, subsequent investigations should explore how integrating artificial intelligence with gamified writing platforms can create adaptive learning pathways that offer personalized feedback tailored to each student's unique writing challenges.

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