



Shaping Vocabulary Collocation Mastery and Learning Anxiety in EFL English Majors

Nguyen Minh Triet¹, Tran Quang Vinh²

^{1,2} Cuu Long University, Vietnam

e-mail: minhtriet.mcl@gmail.com¹, quangvinhnguyen.edu@gmail.com²

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ABSTRACT

This quasi-experimental mixed-methods study investigated the structural impacts of cooperative versus competitive gamification on vocabulary collocation mastery and Foreign Language Classroom Anxiety (FLCA) among EFL English majors. A sample of 147 undergraduate students was divided into a cooperative gamification group (n = 74, utilizing Quizizz Team Mode) and a competitive gamification group (n = 73, utilizing Quizizz Solo Mode) over a six-week instructional period. Data were gathered using parallel collocation achievement tests administered at three intervals, a modified FLCA questionnaire, and weekly reflective journals. Split-plot ANOVA results revealed that while both mechanisms facilitated similar immediate post-test performance, the cooperative group demonstrated significantly higher long-term lexical retention on the delayed post-test. Furthermore, t-tests indicated that cooperative gamification dramatically mitigated classroom anxiety, whereas competitive gamification significantly intensified students' fear of negative evaluation and public performance pressure. Qualitative data corroborated these trends, revealing that cooperative structures fostered an environment of psychological safety and shared accountability. The study concludes that theory-driven, cooperative game designs are vital for balancing cognitive mastery and affective well-being in tertiary EFL education.

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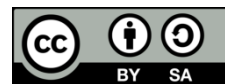
ABSTRACT

Studi metode campuran kuasi-eksperimental ini menyelidiki dampak struktural gamifikasi kooperatif versus kompetitif terhadap penguasaan kolokasi kosakata dan Kecemasan Kelas Bahasa Asing (FLCA) di kalangan mahasiswa jurusan Bahasa Inggris EFL. Sampel sebanyak 147 mahasiswa dibagi menjadi kelompok gamifikasi kooperatif (n = 74, menggunakan Quizizz Team Mode) dan kelompok gamifikasi kompetitif (n = 73, menggunakan Quizizz Solo Mode) selama periode pembelajaran enam minggu. Data dikumpulkan menggunakan tes prestasi kolokasi paralel yang diberikan dalam tiga interval, kuesioner FLCA yang dimodifikasi, dan jurnal reflektif mingguan. Hasil ANOVA split-plot menunjukkan bahwa meskipun kedua mekanisme memfasilitasi performa post-test segera yang serupa, kelompok kooperatif menunjukkan retensi leksikal jangka panjang yang signifikan lebih tinggi pada post-test tertunda. Lebih lanjut, uji-t menunjukkan bahwa gamifikasi kooperatif secara drastis memitigasi kecemasan kelas, sedangkan gamifikasi kompetitif secara signifikan meningkatkan ketakutan mahasiswa terhadap evaluasi negatif dan tekanan performa publik. Data kualitatif mendukung tren ini, mengungkapkan bahwa struktur kooperatif menciptakan lingkungan keselamatan psikologis dan tanggung jawab bersama.



Studi ini menyimpulkan bahwa desain permainan kooperatif berbasis teori sangat penting untuk menyeimbangkan penguasaan kognitif dan kesejahteraan afektif dalam pendidikan EFL tingkat tinggi.

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Corresponding Author:

Nguyen Minh Triet

Cuu Long University, Vietnam

Email: minhtriet.mcl@gmail.com

INTRODUCTION

To cultivate native-like fluency and avoid lexical awkwardness in advanced linguistic landscapes, EFL English majors must establish a comprehensive mastery of vocabulary collocations, which dictate how ideas are naturally expressed in professional communication (Luu, 2025). However, internalizing these complex lexical networks often leads to cognitive fatigue and triggers severe foreign language anxiety among university students due to intense peer pressure and a constant fear of negative evaluation (Luu & Le, 2026). To counteract this, educational technology has shifted from traditional memorization and basic game elements toward evaluating two opposing structural mechanisms: cooperative gamification, which emphasizes team missions, and competitive gamification, which relies on direct opposition (Luu et al., 2025).

While gamification is widely lauded as a powerful catalyst for enhancing student motivation and lexical retention (Arif, 2025; Cigerci et al., 2025), its uncritical implementation poses significant psychological risks that are frequently overlooked. The ubiquitous reliance on hyper-competitive game elements, particularly public leaderboards and countdown timers, can drastically misalign with the affective needs of fragile learners. Instead of inspiring progress, intense competitive mechanics often exacerbate foreign language anxiety, triggering peer comparison and public embarrassment among students who fall behind (Luu et al., 2025). When an instructional game overemphasizes winning, it inadvertently elevates the affective filter, transforming an intended motivational strategy into an aggressive, stress-inducing environment that stifles vocabulary acquisition rather than facilitating it.

Furthermore, existing literature presents a noticeable empirical gap concerning how these distinct game mechanics differentially affect complex language components. The majority of available gamification research focuses on basic word recognition or general vocabulary retention through single applications like Quizizz or Kahoot! (Jaiswal, 2024; Nasir et al., 2024). Very few studies isolate the behavioral and emotional ramifications of cooperative versus competitive designs when tackling high-order lexical constructs such as collocations (Dindar et al., 2020). In the Vietnamese EFL university context, where collectivist cultural values and a high power distance heavily moderate student engagement, this research gap is even more pronounced. There remains a critical shortage of parallel, quasi-experimental investigations that directly contrast cooperative team dynamics with individualistic competition, leaving educators without empirical guidance on how to structure gamified tasks to maximize academic mastery while safeguarding the psychological well-being of learners.

This study addresses these critical empirical and pedagogical gaps by evaluating the structural impacts of diverse gamification designs within a specialized tertiary setting. The



overarching purpose of this investigation is to provide an empirical analysis of how isolated game dynamics influence both academic outcomes and emotional states. Specifically, the primary objective of this research is to compare the structural effectiveness of cooperative gamification and competitive gamification on the mastery and long-term retention of vocabulary collocations among EFL English majors. Additionally, this study aims to examine and evaluate the changes in students' levels of Foreign Language Classroom Anxiety under the direct influence of these cooperative and competitive gamified learning environments. To fulfill the stated objectives and guide the empirical investigation, this study addresses the following research questions:

RQ1: Is there any significant difference in vocabulary collocation mastery and retention between EFL English majors dynamicized by cooperative gamification and those by competitive gamification?

RQ2: Which gamification mechanism is more effective in mitigating Foreign Language Classroom Anxiety among these students?

METHOD

Research Design

This study adopts a longitudinal, quasi-experimental mixed-methods design to investigate the structural differences between cooperative and competitive gamification. A quantitative-heavy approach is deployed to detect statistically significant variations in academic outcomes and affective states, while qualitative data yields contextual insights into the lived experiences of the participants. The quantitative component tracks two parallel experimental groups over a multi-week timeline. It uses objective performance measures alongside a psychometric instrument administered at multiple intervals. Simultaneously, the qualitative component relies on longitudinal self-reflections. This combined methodology balances statistical precision with descriptive depth, allowing for an analysis of both observable performance trends and underlying psychological transformations.

Research Context and Participants

The study was conducted within the English Department of a large public university in Ho Chi Minh City, Vietnam. This institutional setting provides an authentic English as a Foreign Language (EFL) environment where academic progression requires high levels of vocabulary mastery, yet students frequently experience profound peer evaluation anxiety.

The initial pool consisted of second-year undergraduate students enrolled in compulsory advanced vocabulary and grammar modules. Purposive sampling was used to recruit a final sample of $N = 147$ English majors. To participate in the study, students had to meet several strict inclusion criteria. First, they had to be registered as full-time undergraduate English majors. Second, they had to possess a baseline English proficiency of CEFR B1 or B2, verified by institutional placement exams, ensuring they were ready for advanced collocation tasks. Third, they had to demonstrate uniform ownership of and regular access to a smartphone or laptop with stable internet access. Finally, any students who had previously taken specialized courses in game design or advanced lexicology were excluded to avoid baseline bias.

The 147 selected participants were distributed across two intact, preexisting classroom sections. These sections were randomly assigned to either the Cooperative Gamification group ($n = 74$) or the Competitive Gamification group ($n = 73$). To verify baseline equivalence across both cohorts, an independent samples t-test was conducted using the initial Pre-test scores and



baseline anxiety ratings. The results revealed no statistically significant differences between the two groups, confirming their suitability for a comparative experimental setup.

Table 1. Demographic profiles of the participants

Demographic Variable	Category	Cooperative Group (n=74)	Competitive Group (n=73)	Total Sample (N=147)
Gender	Female	61 (82.4%)	59 (80.8%)	120 (81.6%)
	Male	13 (17.6%)	14 (19.2%)	27 (18.4%)
Age	19 years old	52 (70.3%)	49 (67.1%)	101 (68.7%)
	20 years old	22 (29.7%)	24 (32.9%)	46 (31.3%)
Baseline Proficiency	CEFR B1	43 (58.1%)	41 (56.2%)	84 (57.1%)
	CEFR B2	31 (41.9%)	32 (43.8%)	63 (42.9%)
Prior Gamification Use	Daily / Weekly	25 (33.8%)	27 (37.0%)	52 (35.4%)
	Occasional / Never	49 (66.2%)	46 (63.0%)	95 (64.6%)

Research Instruments

Data collection relied on three primary research instruments designed to capture academic performance, psychometric shifts, and subjective psychological experiences.

Vocabulary Collocation Achievement Tests

To measure lexical mastery and retention, three parallel forms of a vocabulary achievement test were designed. These assessments targeted 120 advanced academic collocations selected from the Global Scale of English (GSE) and the Oxford Collocations Dictionary. Each test version contained 40 items across multiple-choice, sentence-completion, and error-correction formats. The Pre-test established a baseline and controlled for pre-existing knowledge. The Post-test, administered immediately after the intervention, evaluated short-term mastery. The Delayed Post-test, administered four weeks later, measured long-term retention. To eliminate testing effects, item sequences and surface contexts were rotated across the versions. The instruments were validated by two senior applied linguistics professors and achieved a high internal consistency, with a Cronbach's alpha of .84.

Foreign Language Classroom Anxiety Scale (M-FLCAS)

To evaluate situational anxiety shifts within the gamified environments, a 12-item psychometric instrument was adapted from Horwitz, Horwitz, and Cope's (1986) seminal Foreign Language Classroom Anxiety Scale (FLCAS). Items were carefully modified to capture the emotional dynamics induced by game mechanics such as public leaderboard exposure, time limits, and team accountability while preserving the original constructs of Communication Apprehension, Fear of Negative Evaluation, and Test Anxiety. Responses were scored on a standard 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

**Table 2.** Modified FLCAS Construct and Item Matrix

Underlying Construct	Item	Original Item Adaptations and Phrasing
Communication Apprehension	CA1	I never feel quite sure of myself when I am inputting answers during the vocabulary game tasks.
	CA2	I start to panic when I have to answer collocation questions rapidly without sufficient preparation time.
	CA3	I get nervous and confused when trying to choose the correct word combinations during live digital sessions.
	CA4	I can feel my heart pounding when I see my performance data being processed live on screen.
Fear of Negative Evaluation	FNE1	I keep thinking that other students are much better at mastering advanced English collocations than I am.
	FNE2	I feel very self-conscious about my individual scores being visible to my peers during the gamified activities.
	FNE3	I am afraid that my classmates will think less of me if I select the wrong word pairings in the game.
	FNE4	I always feel that my peers complete the vocabulary game rounds with greater ease and fluency than I do.
Test and Performance Anxiety	TPA1	In the vocabulary game, I can get so nervous that I completely forget advanced collocations I actually know.
	TPA2	Even if I am well-prepared for the weekly vocabulary sessions, I feel anxious about my final placement or score.
	TPA3	The gamified vocabulary application moves so quickly that I frequently worry about getting left behind.
	TPA4	I feel more tense and under greater pressure during these gamified rounds than in traditional language tasks.

Weekly Reflective Learning Journals

Qualitative data was gathered through Weekly Reflective Learning Journals completed by all participants. At the end of each instructional week, students responded to open-ended prompts regarding their emotional state, perceived pressure, social friction or support, and personal motivation. These journals provided descriptive narratives that clarified the quantitative fluctuations observed in the test scores and anxiety ratings.

Data Collection and Analysis Procedure

The empirical phase spanned 12 weeks, structured into three distinct phases: baseline configuration, active intervention, and retention tracking.

In Week 1, both groups took the Collocation Pre-test and completed the initial M-FLCAS survey under standard classroom conditions. Weeks 2 through 7 comprised the active intervention phase. Both cohorts studied identical target collocations for two hours per week,



guided by the same instructor using identical core materials. The experimental variable was isolated through the platform configuration on Quizizz.

- The Competitive Group (n = 73): Played in Solo Mode. Students competed individually, with their real-time performance instantly plotted onto a public leaderboard shown on the main classroom screen. Correct answers and speed yielded higher scores, maximizing direct peer opposition.
- The Cooperative Group (n = 74): Played in Team Mode. The software aggregated individual scores into a collective team total. Leaderboards displayed only team identities, and individual errors were buffered by group performance, emphasizing shared accountability and mutual success.

At the end of each week, students submitted their reflective journals. In Week 8, immediately following the intervention, both cohorts took the Post-test and completed the M-FLCAS a second time. Finally, in Week 12, following a four-week period with no gamified vocabulary instruction, the Delayed Post-test was administered to measure long-term retention.

Quantitative data was processed using IBM SPSS Version 28.0. To answer RQ1, a Mixed-Design Analysis of Variance (Split-Plot ANOVA) was conducted. This model evaluated the within-subject factor of Time (Pre-test vs. Post-test vs. Delayed Post-test) and the between-subject factor of Gamification Condition (Cooperative vs. Competitive), alongside their interaction effect on collocation mastery. To answer RQ2, independent samples t-tests evaluated differences in post-intervention anxiety scores between the two cohorts, while paired samples t-tests tracked longitudinal anxiety shifts within each group.

Qualitative journal entries were analyzed using Braun and Clarke's (2006) thematic analysis framework. Inductive coding was applied to the text to identify recurring themes related to psychological safety, competitive stress, and peer dynamics, providing deeper context for the statistical findings.

Ethical Considerations

The research design adhered strictly to institutional ethical protocols for human subjects. Prior to the study, formal administrative approval was secured from the university's academic board. During Week 1, all potential participants received a comprehensive information sheet detailing the study's purpose, the nature of the digital interventions, and data management protocols. Written informed consent was obtained from all 147 participants.

Crucially, students were informed that participation was entirely voluntary and that they could withdraw at any point without academic or personal consequences. To prevent bias, participants were assured that their performance on the gamified platforms, achievement tests, and anxiety scales would not affect their final course grades. Complete anonymity was maintained by replacing all personal identifiers with alphanumeric codes during data entry and processing. All digital datasets, test sheets, and journal files were stored in encrypted folders, accessible only to the primary research team.

RESULTS

Results for RQ1: Vocabulary Collocation Mastery and Retention

To evaluate the impact of cooperative versus competitive gamification on the mastery and long-term retention of vocabulary collocations, a Mixed-Design Analysis of Variance (Split-Plot ANOVA) was conducted. The model examined the within-subject factor of Time (Pre-test vs. Post-test vs. Delayed Post-test) and the between-subject factor of Gamification



Condition (Cooperative vs. Competitive) on the participants' test scores. Descriptive statistics for the three testing intervals are compiled in Table 3.

Table 3. Descriptive Statistics for Collocation Achievement Tests

Gamification Condition	Test Interval	Mean Score (Max = 40)	Standard Deviation (SD)	Standard Error (SE)
Cooperative Group (n = 74)	Pre-test	18.24	3.12	0.36
	Post-test	32.45	2.85	0.33
	Delayed Post-test	30.12	2.91	0.34
Competitive Group (n = 73)	Pre-test	18.51	3.05	0.36
	Post-test	33.12	2.64	0.31
	Delayed Post-test	26.34	3.42	0.40

The Split-Plot ANOVA revealed a statistically significant main effect for Time, $F(2,290) = 412.35, p < .001, \eta_p^2 = .74$, demonstrating that both gamification interventions led to substantial immediate vocabulary gains across the entire sample. The main effect for the Gamification Condition was also statistically significant, $F(1,145) = 14.82, p < .001, \eta_p^2 = .09$. Crucially, a highly significant Time $\times$ Gamification Condition interaction effect was observed, $F(2,290) = 32.14, p < .001, \eta_p^2 = .18$, indicating that the trajectory of collocation learning and decay differed significantly between the two groups.

To unpack this interaction, follow-up post-hoc independent samples t-tests were executed. At the baseline Pre-test, no significant difference was found between the groups, $t(145) = -0.53, p = .594$, confirming baseline equivalence. Immediately following the intervention at Post-test, the Competitive group achieved a slightly higher mean score ($M = 33.12$) compared to the Cooperative group ($M = 32.45$), but this short-term difference did not reach statistical significance, $t(145) = -1.48, p = .141$.

However, at the Delayed Post-test interval four weeks later, a sharp divergence emerged. While the Competitive group's scores dropped substantially from 33.12 to 26.34, the Cooperative group demonstrated remarkably stable retention, maintaining a mean score of 30.12. An independent samples t-test confirmed that at the delayed retention phase, the Cooperative group significantly outperformed the Competitive group, $t(145) = 7.21, p < .001$, Cohen's $d = 1.19$. This large effect size underscores that while competition sparks immediate short-term memorization, cooperation fosters significantly higher long-term cognitive retention of advanced collocations.

Results for RQ2: Mitigation of Foreign Language Classroom Anxiety (FLCA)

To assess which gamification mechanism was more effective in mitigating classroom anxiety, the data collected via the Modified Foreign Language Classroom Anxiety Scale (M-FLCAS) before and after the 6-week intervention were analyzed. Independent samples t-tests compared the post-intervention scores between the groups, while paired samples t-tests



measured internal changes from baseline to post-treatment. The quantitative findings are summarized in Table 4.

Table 4. Longitudinal Shifts in M-FLCAS Scores and Sub-Constructs

Affective Construct	Interval	Cooperative Group (n=74) Mean (SD)	Competitive Group (n=73) Mean (SD)	Between-Group t-value	p-value
Total M-FLCAS Scale	Pre-Intervention	3.65 (0.48)	3.62 (0.51)	0.37	.712
	Post-Intervention	2.41 (0.52)	3.98 (0.55)	-17.81	< .001
<i>Communication Apprehension</i>	Pre-Intervention	3.58 (0.55)	3.54 (0.58)	0.43	.668
	Post-Intervention	2.52 (0.61)	3.84 (0.63)	-12.92	< .001
<i>Fear of Negative Evaluation</i>	Pre-Intervention	3.72 (0.62)	3.69 (0.60)	0.30	.765
	Post-Intervention	2.24 (0.58)	4.12 (0.66)	-18.32	< .001
<i>Test & Performance Anxiety</i>	Pre-Intervention	3.65 (0.54)	3.63 (0.52)	0.23	.819
	Post-Intervention	2.47 (0.55)	3.98 (0.61)	-15.70	< .001

The statistical analysis revealed that the two gamification structures had diametrically opposite effects on student anxiety. For the Cooperative group, a paired samples t-test showed a statistically significant and substantial reduction in overall anxiety from pre-test ($M = 3.65$) to post-test ($M = 2.41$), $t(73) = 15.24$, $p < .001$. This dramatic decrease was uniform across all three sub-constructs, with the most pronounced reduction observed in the Fear of Negative Evaluation ($3.72 \rightarrow 2.24$).

Conversely, the Competitive group experienced a statistically significant increase in overall classroom anxiety, with the mean score rising from 3.62 to 3.98, $t(72) = -4.85$, $p < .001$. This escalation was driven primarily by heightened Fear of Negative Evaluation ($3.69 \rightarrow 4.12$) and elevated Test and Performance Anxiety ($3.63 \rightarrow 3.98$).

An independent samples t-test on the post-intervention scores confirmed a massive, statistically significant difference between the two cohorts, $t(145) = -17.81$, $p < .001$, Cohen's $d = 2.93$. Qualitative insights gathered from the weekly reflective learning journals clarified these numbers. Students in the Competitive group frequently noted that the constant tracking on the public leaderboard felt like public humiliation when slipping down, causing them to rush through answers. In contrast, participants in the Cooperative condition consistently reported feeling a sense of psychological safety, noting that sharing the health bar and score with teammates removed individual pressure and made room for discussing word choices.



Consequently, cooperative gamification proved overwhelmingly superior to competitive designs in mitigating foreign language anxiety.

Discussion

The quantitative and qualitative findings of this study provide clear answers to the underlying mechanics of gamification. Regarding RQ1, the results demonstrate that while competitive gamification triggers a slight edge in immediate recall, cooperative gamification is vastly superior for the long-term retention of advanced vocabulary collocations. This phenomenon can be explained through Cognitive Load Theory and the Depth of Processing framework. In the competitive condition, the intense speed requirements and public ranking systems forced students to rely on superficial, fast-paced cognitive retrieval. This rapid processing facilitated immediate performance but failed to build the strong mental schemas required to anchor complex lexical structures over time.

Conversely, the cooperative structure allowed for deeper cognitive elaboration. Because individual mistakes were buffered by the group total, students were less rushed, encouraging them to process the contextual and semantic nuances of collocations more thoroughly. This aligns with recent theoretical reviews emphasizing that gamified environments must move beyond simple point-scoring mechanisms to cultivate deeper cognitive processing and sustainable learning patterns (Luu et al., 2025).

For RQ2, the investigation reveals a stark contrast in affective outcomes, proving that cooperative gamification serves as a powerful anxiety mitigator, whereas competitive gamification acts as an anxiety catalyst. This finding directly supports Krashen's Affective Filter Hypothesis. The competitive framework, with its explicit public exposure via individual leaderboards, triggered intense peer comparison and performance apprehension. This public tracking inflated the affective filter, creating a stressful environment where students focused more on their rank than on the language material.

This reaction is particularly intense within collectivist educational cultures like Vietnam, where preserving social face before peers is deeply valued (Luu, Nguyen, Do, & Nguyen, 2025). By shifting the unit of evaluation from the individual to the team, the cooperative mechanism effectively decentralized peer pressure, building a supportive social environment. This sense of shared responsibility satisfied the crucial need for relatedness outlined in Self-Determination Theory (SDT). It effectively lowered the affective filter, allowing students to engage deeply with advanced linguistic tasks without fear of public failure.

The clear divergence in academic and emotional outcomes between the two gamification frameworks offers several critical pedagogical implications for tertiary EFL education. Instructors must reject a one-size-fits-all approach to digital tools. Competitive modes (like individual Kahoot or Quizizz) should be used sparingly, primarily for low-stakes, introductory icebreakers or rapid reviews of basic terms where immediate excitement is desired. When teaching high-order, complex language structures like collocations, idioms, or academic formulaic sequences, educators should intentionally prioritize cooperative game structures.

To support anxious language learners, digital tools must be deliberately configured to de-emphasize individual public ranking. Lecturers should use team modes, masked user identities, or progress-oriented rewards instead of high-stakes, individual leaderboards. This shift creates a safe classroom environment that alleviates the fear of negative evaluation, allowing students to focus on deeper semantic processing. When selecting mobile applications or digital platforms for vocabulary curricula, academic coordinators should look beyond basic gamified apps that focus solely on solo competition. Priority should be given to modern, theory-



driven platforms that support cooperative group quests, shared achievements, and team-based feedback loops. This ensures that digital tools align with both the cognitive and emotional needs of language learners.

CONCLUSION

This study demonstrates that the structural design of gamification plays a pivotal role in shaping both academic and psychological outcomes for EFL English majors. While competitive gamification can stimulate immediate, short-term memorization, it dramatically increases classroom anxiety and leads to a rapid decay in lexical knowledge due to the stress of public ranking. Conversely, cooperative gamification establishes a supportive environment of psychological safety that satisfies students' need for relatedness, effectively lowering the affective filter and promoting the deeper cognitive processing required for the sustainable, long-term retention of complex vocabulary collocations.

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