

The Impact Of Gamified Pronunciation Training On EFL Learners' Intercultural Communicative Competence And Intelligibility

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ABSTRACT

This quasi-experimental study investigated the impact of gamified pronunciation training on English as a Foreign Language (EFL) learners' English intelligibility and Intercultural Communication Apprehension (ICA). Utilizing an intact-group pre-test/post-test design, 74 non-English major undergraduate students at a Vietnamese public university were assigned to either an experimental group receiving a six-week gamified curriculum grounded in Self-Determination Theory or a control group exposed to traditional audio-lingual drilling. Data collected via the Pronunciation Intelligibility Performance Test and a validated psychological survey were analyzed using SPSS through paired-samples t-tests and ANCOVA. The statistical results revealed that the experimental group achieved significantly higher gains in acoustic intelligibility and experienced a dramatic reduction in cross-cultural speech anxiety compared to the control group. The study concludes that theory-driven gamification acts as an effective instructional accelerator and an affective buffer, enhancing real-world communicative readiness.

Keywords: Gamification, English Intelligibility, Intercultural Communication Apprehension, Self-Determination Theory, EFL Pedagogy.

INTRODUCTION

Driven by the global status of English as a Lingua Franca (ELF), modern English as a Foreign Language (EFL) pedagogy increasingly prioritizes Intercultural Communicative Competence (ICC) and global intelligibility over near-native accents (Fong et al., 2025; Nafisah et al., 2024). Language learning is inherently bounded by socio-cultural dynamics, requiring learners to effectively handle cultural differences during international exchanges (Klimova & Chen, 2024). Consequently, achieving absolute native-like pronunciation has been replaced by the intelligibility principle, which values speech clarity over rigid articulatory perfection (Wang & Wen, 2023).

However, pronunciation instruction remains marginalized in traditional EFL settings, often overshadowed by grammar and vocabulary (Luu et al., 2025). When integrated, instruction frequently relies on mechanical drilling and repetitive imitation, inducing student disengagement, boredom, and academic anxiety (Barcomb & Cardoso, 2020; Cad &

Giménez, 2025). These instructional deficiencies impair speech accuracy particularly individual vowels and consonants, leading to miscommunication in cross-cultural encounters (Luu & Nguyen, 2026). Given that psychological determinants like motivation, self-efficacy, and learning attitudes heavily predict pronunciation success (Luu et al., 2025), a structural re-engineering of phonetics instruction is required.

To counter these limitations, gamification—the integration of game elements like points, badges, progression indicators, and challenges into educational settings—offers a viable solution (Luu et al., 2025). Grounded in Self-Determination Theory (SDT), gamified structures satisfy learners' needs for autonomy, competence, and relatedness, thereby fostering intrinsic motivation and sustained engagement (Luu, Nguyen, Do, & Nguyen, 2025). Empirical evidence shows that gamifying pronunciation training via digital platforms directly supports phonological development, making the classroom highly interactive (Barcomb & Cardoso,

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2020; Cad & Giménez, 2025). Furthermore, by embedding tasks within a secure, play-oriented environment, gamification acts as an affective buffer that lowers the affective filter, reduces speech anxiety, and normalizes errors to enhance real-world communication readiness (Barcomb & Cardoso, 2020; Luu, 2026).

Despite its pedagogical potential, gamification in language learning remains unevenly applied. Implementations heavily skew toward vocabulary or grammar acquisition, leaving gamified pronunciation instruction under-researched (Barcomb & Cardoso, 2020). Moreover, existing literature often relies on Western-centric models that treat game mechanics merely as external rewards, ignoring how these structures interact with collectivist EFL learners operating under high power distance (Luu et al., 2025). This empirical gap is highly visible in Vietnam, where research on the synergy between gamified pedagogy, intercultural awareness, and speech production remains scarce.

This lack of instructional innovation exacerbates linguistic and psychological anxieties among non-English majors. In Vietnamese public universities, learners consistently struggle with segmental features, lexical ambiguity, and pronunciation-spelling inconsistencies (Luu & Le, 2026; Luu & Nguyen, 2026). These deficits impair their communication psychology, causing severe Intercultural Communication Apprehension (ICA). Consequently, Vietnamese learners experience pervasive hesitation, fear of mistakes, and dread of negative evaluation regarding their speech clarity (Luu, 2025). Because intercultural willingness to communicate relies heavily on language competence, emotional empathy, and confidence (Feng et al., 2025; Luu, 2026), traditional drill methods fail to alleviate this anxiety. Without a theory-driven, gamified framework targeting both acoustic intelligibility and speech apprehension, Vietnamese learners remain structurally hindered from engaging in successful cross-cultural interactions.

To address these empirical and pedagogical gaps, this study primary aims to measure the improvement in English pronunciation intelligibility among Vietnamese EFL learners within simulated intercultural contexts following a gamified training

program. Concurrently, it seeks to evaluate changes in learners' levels of Intercultural Communication Apprehension (ICA) under the influence of need-supportive, gamified structures. The study is guided by two specific research questions:

RQ1: To what extent does gamified pronunciation training improve EFL learners' English intelligibility in intercultural communication contexts?

RQ2: How does the integration of gamification in pronunciation instruction affect learners' intercultural communication apprehension (anxiety)?

METHOD AND MATERIAL

Research Design

This study employs a quantitative quasi-experimental design utilizing an intact-group, pre-test and post-test approach to evaluate the educational intervention without disrupting established academic tracks. The design comprises an experimental group subjected to a theory-driven gamified pronunciation curriculum and a control group exposed to conventional teacher-led drills. Both groups undergo a identical pre-intervention assessment phase consisting of an acoustic intelligibility performance test and a standardized psychological survey. Following a rigorous six-week intervention period, a post-intervention assessment phase identical to the baseline measure is executed. This cross-sectional, comparative setup allows the researcher to statistically isolate the pedagogical effects of game-responsive dynamics while controlling for baseline variances in linguistic ability and affective barriers.

Research Context and Participants

The investigation is situated at a prominent Vietnamese public university where English non-majors face constrained classroom exposure and acute speech anxiety. To ensure pedagogical feasibility and avoid systemic disruption, a convenience sampling technique was combined with purposive criteria to select two intact classrooms representing non-English major demographics.

Participants were explicitly screened based on three strict inclusion criteria: they must be first-year undergraduate students, must possess a validated baseline English proficiency equivalent to the B1

level of the Common European Framework of Reference (CEFR), and must not have prior prolonged exposure to specialized automated speech evaluation software or gamified pronunciation systems. The final

sample consists of 74 undergraduate students divided into the Experimental Group (n = 38) and the Control Group (n = 36).

Demographic Variable	Category	Experimental Group (n=38)	Control Group (n=36)	Total (N=74)
Gender	Male	16	17	33
	Female	22	19	41
Age	18 years old	31	29	60
	19 years old	7	7	14
Academic Major	Information Technology	14	12	26
	Business Administration	15	13	28
	Food Technology	9	11	20
English Proficiency	Validated B1 CEFR	38	36	74

Table 1. Participants' demographic (N=74)

Research Instruments

Primary data collection relies on two distinct instruments designed to operationalize the core linguistic and psychological constructs. The first instrument is the Pronunciation Intelligibility Performance Test (PIPT), engineered to measure phonological clarity within simulated cross-cultural interactions. The PIPT requires participants to audio-record their production of controlled intercultural role-play scripts containing high-frequency phonetic traps, specifically focusing on segmental vowel-consonant contrasts and suprasegmental elements. These recordings are independently evaluated by two trained human raters using an analytical intelligibility rubric, with inter-rater reliability monitored via Cohen's Kappa coefficients.

The second instrument is the Intercultural Communication Apprehension and Gamification Survey (ICAGS). The psychological survey contains a total of 15 closed-ended items scored on a uniform 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The survey is divided into two operationalized subscales. Items 1 to 8 comprise the Intercultural Communication Apprehension Subscale, which adapts McCroskey's standardized Personal Report of Communication Apprehension (PRCA-24) to target cross-cultural communication anxiety and fear of negative evaluation. Items 9 to 15 form the Gamified Motivation and Engagement Subscale, specifically formulated based on the core constructs of SDT to measure perceived competence, autonomy, and relatedness within gamified instructional spaces.

Item Code	Survey Subscale and Construct Items	Underlying Theoretical Source
ICA1	I feel tense and nervous when communicating in English with people from different cultures.	Adapted from McCroskey's PRCA-24

ICA2	My mind goes blank when I have to pronounce difficult words in front of foreign interlocutors.	Adapted from McCroskey's PRCA-24
ICA3	I am afraid that my pronunciation errors will lead to severe miscommunication in global contexts.	Adapted from McCroskey's PRCA-24
ICA4	I feel confident when engaging in self-initiated conversations with international peers. (R)	Adapted from McCroskey's PRCA-24
ICA5	I worry about being negatively evaluated by others because of my Vietnamese English accent.	Adapted from McCroskey's PRCA-24
ICA6	I experience high speech anxiety when practicing English pronunciation in a traditional classroom.	Adapted from McCroskey's PRCA-24
ICA7	I tend to hesitate or remain silent during cross-cultural communicative tasks due to my pronunciation.	Adapted from McCroskey's PRCA-24
ICA8	I feel calm and relaxed when speaking English in simulated multicultural environments. (R)	Adapted from McCroskey's PRCA-24
GME9	The points, badges, and progress indicators make me feel more competent in my pronunciation skills.	Grounded in Self-Determination Theory
GME10	I feel a strong sense of autonomy when choosing my learning paths within the gamified system.	Grounded in Self-Determination Theory
GME11	Collaborative challenges and leaderboards enhance my sense of relatedness with my classmates.	Grounded in Self-Determination Theory
GME12	The instant feedback loops in the game motivate me to practice my pronunciation errors repeatedly.	Grounded in Self-Determination Theory
GME13	Playing educational games reduces the psychological pressure and anxiety of learning phonetics.	Grounded in Self-Determination Theory
GME14	The gamified activities satisfy my internal desire to improve my English intelligibility.	Grounded in Self-Determination Theory
GME15	I feel highly engaged and intrinsically motivated when pronunciation tasks are designed as missions.	Grounded in Self-Determination Theory

Table 2. Item of the survey

(Note: Items marked with (R) denote reverse-coded items).

To guarantee rigorous psychometric validity, the initial items were subjected to a comprehensive panel expert review consisting of two senior applied linguists and an educational psychologist, resulting in minor phrasing adjustments to fit the Vietnamese educational context. Pilot testing with 30 non-participating students established baseline structural

construct validity. Construct dimensionality was statistically verified through Exploratory Factor Analysis (EFA) using principal axis factoring with Promax rotation, which successfully extracted two clean latent factors with eigenvalues above 1.0 and factor loadings exceeding 0.50, demonstrating no cross-loading items. Internal reliability was

confirmed via Cronbach's alpha coefficients, yielding values of 0.86 for the ICA subscale and 0.89 for the GME subscale, well exceeding the acceptable academic threshold of 0.70.

Data Collection and Analysis

Data collection occurred over three phases, starting with the baseline administration of the pre-test and survey, followed by a six-week instructional intervention, and concluding with identical post-intervention instruments. Quantitative datasets were cleaned and analyzed using IBM SPSS software. Descriptive statistics established demographic characteristics, while inferential statistical procedures were applied to answer the research questions. Paired-samples t-tests evaluated the internal, longitudinal progression of speech accuracy and anxiety reduction within each group. Independent-samples t-tests and Analysis of Covariance (ANCOVA), using pre-test scores as covariates were executed to compare post-intervention mean differences between the experimental and control cohorts, setting statistical significance at $p < 0.05$.

Ethical Considerations

Ethical clearance was strictly maintained by securing institutional administrative authorization prior to participant recruitment. All students received comprehensive written disclosures detailing the study's precise pedagogical scope, data confidentiality measures, and their right to voluntary withdrawal without academic penalty. Formal informed consent forms were signed, and complete anonymity was protected by replacing all personal identities with encrypted alphanumeric codes during data processing.

FINDINGS AND DISCUSSION

Findings

Research Question 1: Impact on English Intelligibility

To address the first research question regarding the extent to which gamified pronunciation training improves learners' English intelligibility in intercultural contexts, descriptive statistics and inferential statistical analyses were executed. Baseline equivalents were first confirmed, showing no statistically significant difference in the Pronunciation Intelligibility Performance Test (PIPT) pre-test scores between the Experimental Group ($M = 54.21$, $SD = 7.14$) and the Control Group ($M = 53.89$, $SD = 6.98$), where $t(72) = 0.19$, $p = 0.846$. This indicates an identical baseline proficiency before the pedagogical intervention.

Following the six-week instructional period, a paired-samples t-test revealed that both cohorts achieved significant longitudinal growth in speech clarity. However, the experimental group demonstrated a vastly superior increase in performance. To isolate the direct effect of the gamified intervention, an Analysis of Covariance (ANCOVA) was conducted, utilizing the pre-test scores as the covariate to control for any initial individual variances. The ANCOVA results yielded a significant main effect for the instructional method, $F(1, 71) = 42.18$, $p < 0.001$, with a large partial eta squared ($\eta_p^2 = 0.373$). This robust statistical outcome confirms that the integration of game-responsive mechanics led to a significantly higher level of acoustic intelligibility in intercultural interactions compared to conventional teacher-led audio-lingual drilling.

Group Metric	Pre-test Mean (SD)	Post-test Mean (SD)	Paired t-test (df=37/35)	ANCOVA F-value (df=1,71)	Effect Size (η_p^2)
Experimental Group (n=38)	54.21 (7.14)	71.58 (5.82)	$t = -14.32$, $p < 0.001$	42.18	0.373
Control Group (n=36)	53.89 (6.98)	59.44 (6.12)	$t = -4.81$, $p < 0.001$		

Table 3. Paired-samples t-test

Research Question 2: Impact on Intercultural Communication Apprehension

The second research question examined how the integration of gamification affects learners' Intercultural Communication Apprehension (ICA). Initial survey assessments indicated that both the experimental group ($M = 3.88$, $SD = 0.49$) and control group ($M = 3.85$, $SD = 0.52$) exhibited moderately high baseline levels of cross-cultural speaking anxiety, showing no significant initial variance, $t(72) = 0.26$, $p = 0.798$.

Post-intervention survey data analyzed via an independent-samples t-test and subsequent ANCOVA

established a substantial reduction in affective barriers within the gamified environment. The experimental group's self-reported ICA scores decreased dramatically, whereas the control cohort experienced only a negligible, statistically non-significant reduction in speech anxiety. The ANCOVA test confirmed that the post-intervention differences between the two groups were highly significant, $F(1, 71) = 56.44$, $p < 0.001$, $\eta^2 = 0.443$. This large effect size underscores that need-supportive, play-oriented structures were uniquely effective at mitigating psychological strain and lowering the affective filter during intercultural speech tasks.

Group Metric	Pre-survey Mean (SD)	Post-survey Mean (SD)	Paired t-test (df=37/35)	ANCOVA F-value (df=1,71)	Effect Size (η^2)
Experimental Group (n=38)	3.88 (0.49)	2.24 (0.41)	$t = 18.11$, $p < 0.001$	56.44	0.443
Control Group (n=36)	3.85 (0.52)	3.71 (0.48)	$t = 1.34$, $p = 0.189$		

Table 4. ANCOVA result

DISCUSSION

The statistical findings provide empirical evidence supporting the integration of gamification within EFL phonetics classrooms. Regarding the first research question, the superior intelligibility gains observed in the experimental group align directly with previous empirical evidence indicating that digital game-based activities built into educational platforms facilitate L2 phonological production (Barcomb & Cardoso, 2020; Cad & Giménez, 2025). This clear progression in acoustic clarity can be explained through the lens of Self-Determination Theory (SDT), where the systemic inclusion of points, badges, progress indicators, and constant feedback loops directly satisfies learners' perceived need for competence (Luu et al., 2025). Rather than experiencing the monotony of traditional audio-lingual repetition, which often leaves students passive and disengaged (Luu et al., 2025), the experimental participants engaged in repetitive, self-directed rehearsal driven by clear progression markers. The instant feedback loops inherent in the gamified structure allowed for self-regulated error correction, pushing learners to fine-

tune segmental features and acoustic precision within meaningful, simulated intercultural scenarios.

In terms of the second research question, the dramatic decline in Intercultural Communication Apprehension (ICA) among the experimental group provides a clear confirmation of Krashen's Affective Filter Hypothesis. Traditional pronunciation instructions in public universities frequently amplify students' fear of negative evaluation and accent-related anxiety (Luu, 2025; Luu & Nguyen, 2026). By embedding speech tasks into an emotionally safe, gamified environment, the experimental framework successfully minimized the social penalties associated with phonetic errors. The system normalized mistakes by framing them as natural game-replays rather than academic failures (Barcomb & Cardoso, 2020). Consequently, reducing the psychological pressure allowed participants to overcome the acute hesitation typically caused by a perceived lack of vocabulary or phonetic clarity (Luu, 2025; Luu & Le, 2026). As anxiety dropped, learners developed higher communication confidence and cultural empathy, confirming that willingness to communicate across

cultures is a dynamic state that can be positively altered through supportive instructional spaces (Feng et al., 2025; Luu, 2026).

The findings yields several practical implications for EFL curriculum designers and university educators. First, traditional drill-and-kill phonetics teaching must be re-engineered to include interactive, technology-mediated structures. Teachers should actively design pronunciation tasks as mission-oriented quests where students can practice segmental and suprasegmental features without immediate fear of academic grading. Second, game mechanics must be theory-driven rather than deployed as superficial rewards. Points, badges, and collaborative leaderboards should be carefully aligned with clear learning goals to fulfill students' underlying psychological needs for autonomy, competence, and relatedness (Luu et al., 2025). Finally, pronunciation course materials should move away from isolated word lists and incorporate simulated intercultural scenarios. This integration ensures that while students improve their acoustic clarity, they simultaneously lower their communication anxiety, preparing them for real-world global communication (Klimova & Chen, 2024; Wang & Wen, 2023).

CONCLUSION

This study investigated the impact of gamified pronunciation training on Vietnamese EFL learners' English intelligibility and intercultural communication apprehension. The quantitative results demonstrated that a six-week gamified intervention led to statistically significant improvements in speech clarity during simulated cross-cultural interactions, while concurrently achieving a substantial reduction in speaking anxiety. Traditional instruction, conversely, yielded minimal changes in students' communicative confidence and limited phonological progress. By blending SDT and the intelligibility principle, this research concludes that gamification serves as both an effective instructional accelerator and an affective buffer. Ultimately, restructuring phonetics classrooms with theory-driven game elements represents a crucial step toward turning anxious EFL students into highly intelligible, self-assured global communicators.

Several limitations must be acknowledged to guide future research. First, this study utilized a convenience sample of 74 non-English major undergraduate students from a single public university over a brief six-week intervention, which limits the immediate generalizability of the findings across wider Vietnamese EFL populations. Second, the reliance on an intact, quasi-experimental design means that unmeasured variables, such as external digital media exposure or individual technological literacy, could have partially influenced the outcomes. Third, this research focused exclusively on immediate post-intervention data, leaving the long-term retention of phonological gains unexamined.

Future investigations should incorporate larger, randomly assigned samples across multiple institutional settings to enhance external validity. Longitudinal research designs are highly recommended to track whether the improvements in acoustic intelligibility and anxiety reduction persist over an extended academic period. Additionally, mixed-methods approaches combining quantitative tests with qualitative student diaries or semi-structured interviews could offer deeper insights into how distinct cultural traits, such as high power distance or collectivist mindsets, shape student interactions within gamified learning systems.

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