Enhancing EFL Learners' Motivation and Engagement Through Digital Gamified Learning in EMI Classrooms

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Abstract

English as a Foreign Language (EFL) learners in English-Medium Instruction (EMI) classrooms often face challenges such as linguistic anxiety, unfamiliar instructional practices, and high participation demands. This classroom-based study applied Elliott's (1991) reflective action research model to investigate how technology-integrated gamified learning supports learners' motivation and multidimensional engagement in an intensive EMI bridging course at a Sino-foreign university in China. Drawing on Dörnyei's (2009) L2 Motivational Self System and Fredricks et al.'s (2004) multidimensional engagement framework, a mixed-methods design was employed, including pre- and post-questionnaires, classroom observations, reflective teaching journals, and semi-structured student interviews. Gamified activities, such as Kahoot and Quizizz, were embedded in instruction to promote interaction, participation, and learner autonomy. Descriptive comparisons of questionnaire data showed that students maintained high motivation and engagement, with slight changes reflecting experience-informed judgments. Qualitative findings provided deeper insights into learners' engagement and experiences, highlighting the practical value of gamified learning compared with non-gamified learning environments. Overall, the study offers implications for designing context-sensitive, motivating, and engaging EMI EFL courses in higher education, and provides recommendations for optimizing future English bridging programs.

Introduction

English as a Foreign Language (EFL) education in China has traditionally emphasized reading, writing, and linguistic accuracy often at the expense of oral communication and interactive language use. While such approaches support examination performance, they may limit

learners' communicative competence and reduce sustained motivation and classroom engagement (Lamb, 2017). These limitations are especially pronounced in English-Medium Instruction (EMI) programs, where students are expected to listen, speak, and collaborate in English across academic and social contexts. For learners transitioning from Chinese public high schools to an EMI university, this shift can produce a pronounced language learning "shock", highlighting the need for transitional supports, such as English bridging programs, which scaffold both academic and linguistic adjustment.

Contemporary Chinese EFL learners, mostly Gen Z, are accustomed to interactive digital environments. Gamified learning, which integrates game design elements into non-game educational contexts, has emerged as a promising pedagogical strategy (Panmei & Waluyo, 2023). Systematic reviews have confirmed that gamification can significantly enhance motivation (Ashfiah et al., 2025), engagement (Zhang & Crawford, 2024), and learning outcomes (Tsai, 2024) in EFL and ESL contexts. Empirical studies also showed that technology-integrated game-based tools, such as Kahoot, could improve classroom interaction and learner engagement from teacher perspectives in English language teaching settings (Tampubolon et al., 2025). In EMI bridging contexts, gamification could help learners overcome initial learning "shock" (Panmei & Waluyo, 2023), reduce language anxiety (Tsai, 2024), and encourage participation at the start of a course while sustaining motivation and engagement over time. Gamified interventions, including Duolingo and Quizizz, have been found to foster self-efficacy (Yang & Ying, 2026), learner autonomy, and reading performance (Zhang & Crawford, 2024), particularly in short-term, technology-integrated EFL courses.

Despite growing interest in gamified learning, relatively few studies have explored its application in authentic EMI classroom practice, particularly in short-term bridging programs. There is also limited research adopting an action research perspective that integrates teacher reflection, iterative adjustments, and learner feedback. These considerations point to practical challenges and concerns for investigating how gamified learning can support motivation and engagement in context-specific EMI classrooms in higher education.

The present study addresses these opportunities by investigating a technology-integrated gamified learning intervention in an EMI bridging course at a Sino-foreign university. The study draws on Dörnyei's (2009) L2 Motivational Self System and Fredricks et al.'s (2004) multidimensional engagement framework and employs Elliott's (1991) reflective action research model to integrate quantitative and qualitative data. Gamification is treated not as a fixed technique but as a dynamic, learner-centered process shaped through classroom interaction and reflective practice.

The study is guided by two research questions:

RQ1: To what extent does gamified learning influence EFL learners' motivation and multidimensional engagement in an EMI context?

RQ2: What pedagogical affordances and constraints emerge from the implementation of gamified learning in EMI classrooms, and how can its design be optimized?

Methods

Study Context

The study was conducted at a Sino-foreign cooperative university located in eastern China, which offers English-Medium Instruction (EMI) courses from undergraduate to doctoral levels, providing an immersive academic environment. The bridging program is a free, two-week pre-semester preparatory course from the university designed to help Chinese freshmen adapt to EMI and the Western-style curriculum, strengthen their English proficiency, and increase their confidence in participating in academic courses. The program also familiarizes students with academic expectations, classroom routines, and learning strategies commonly used in EMI courses. Students receive four hours of English instruction each day, excluding additional self-study and homework time. The instructors are faculty selected from the university's international academic staff, representing diverse national backgrounds. The Bridging Program curriculum focuses on overall academic skills and collaborative tasks, serving as a mini rehearsal for the demands of their upcoming semester.

Participants

The study involved 28 freshmen (16 female, 12 male) enrolled in an intensive English bridging program as they transitioned from a public English learning environment to an EMI program. All participants were EFL learners preparing for various STEM-related undergraduate majors and had previously studied English under the Chinese national curriculum, meeting the program's English requirement of at least 105/150 on the China National University Entrance Exam, roughly equivalent to IELTS 6.0 or TOEFL iBT 79. Their English proficiency ranged from intermediate to upper-intermediate (B1 and above, CEFR), with 6 to 15 years of English learning experience (average 11.5 years). Students came from over 20 cities across China, providing broad regional representation. The program offered instruction in English language and academic skills, and prior to data collection, participants were fully informed of the study's purpose and procedures. Ethical guidelines were strictly followed to ensure voluntary participation, confidentiality, and anonymity.

Instruments and Data Sets

Pre- and post-intervention questionnaires

Students' motivation and engagement were measured using pre- and post-intervention questionnaires (see Appendices A & B) specifically designed for this study. The questionnaires included items assessing multidimensional engagement (behavioural, cognitive, and emotional) based on Fredricks et al.'s (2004) framework, as well as L2 motivational components informed by Dörnyei's (2009) L2 Motivational Self System. Items were rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Twenty-eight participants completed the pre-intervention questionnaire, which provided baseline measures for instructional planning and reflected students' initial attitudes toward English learning. Twenty-one participants completed the post-intervention questionnaire, as some were absent due to illness, and participation was voluntary. These post-intervention responses captured changes in motivation and engagement after participating in the gamified learning activities.

Classroom observations

During the Bridging Program, structured classroom observations (see Appendix C) were conducted to capture participants' behavioural engagement, interaction patterns, and responses to gamified learning activities. Observations were guided by a standardized protocol, recording participation frequency, collaborative interactions, and evidence of cognitive engagement such as problem-solving or strategy use. These observational data complemented questionnaire results and provided contextual insight into classroom dynamics.

Reflective teaching logs

The researcher-instructor (the first author) maintained daily reflective logs (see Appendix D) throughout the intervention. Logs documented instructional decisions, student responses, challenges encountered, and emerging patterns in engagement and motivation. These qualitative notes supported interpretation of both questionnaire and observational data and facilitated continuous refinement of instructional strategies in line with action research principles (Elliott, 1991).

Semi-structured group interviews

Following the intervention, semi-structured group interviews (see Appendix E) were conducted with twenty-three participants (four groups) to explore their perceptions of the gamified learning experience. Interview questions focused on motivational transformations, engagement experiences, pedagogical affordances and constraints, and suggestions for optimizing future gamified learning activities. Interviews were audio-recorded, transcribed verbatim, and analysed to identify recurring themes and insights into participants' experiences.

Procedure

The intervention and data collection were carried out both during and outside of class throughout the Bridging Program, following five stages (Figure 1). Stage 1 (Day 1) involved orientation and completion of a pre-questionnaire. Stages 2 and 3 (Day 1–Day 10) consisted of initial instruction and skill practice through gamified activities, with classroom observations and teaching reflection logs maintained to provide ongoing insight into learners' engagement and experiences. Stage 4 (Day 3–Day 9) included group interviews to capture learners' reflections, and Stage 5 (Day 10) involved the post-questionnaire. Triangulation of data minimized potential researcher bias and ensured that learners' perspectives remained central to the analysis.

During instructional time, gamified learning tools were systematically integrated into classroom activities to support specific learning objectives, as summarized in Table 1. These digital tools were employed in a progressive sequence throughout the program to enhance motivation, collaborative engagement, and academic skill development. For instance, Kahoot! was used to review content and stimulate competition, Quizizz reinforced core skills, such as plagiarism awareness, note-taking, and punctuation, through team-based exercises, and H5P interactive modules facilitated decision-making and scenario-based tasks, Canvas supported digital literacy and academic organization.

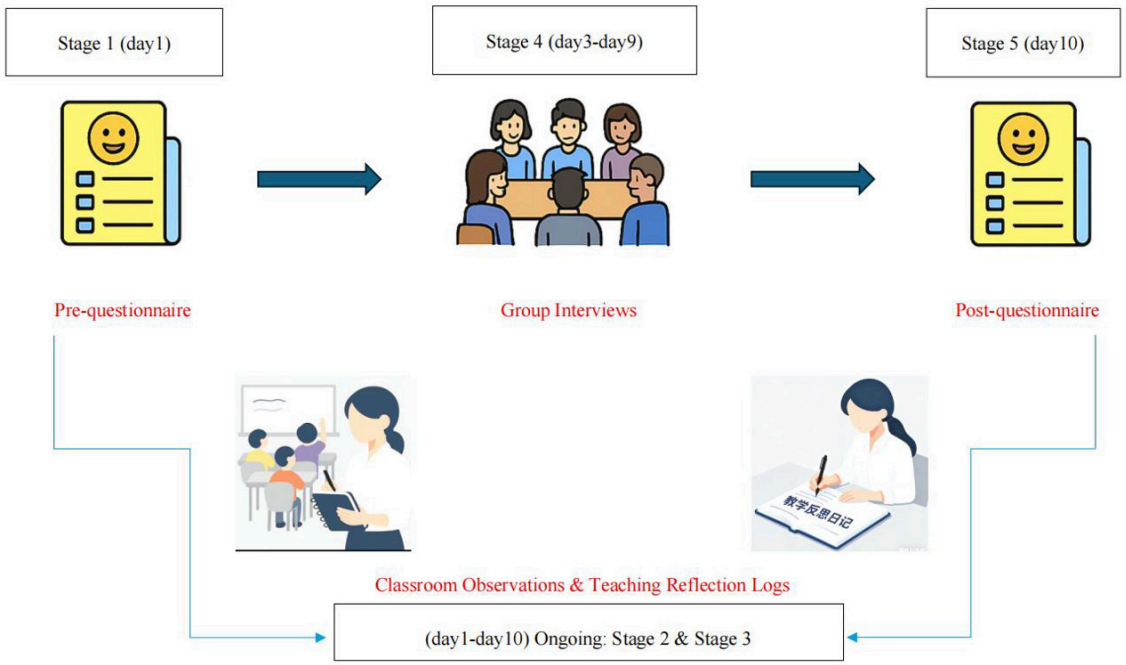

Figure 1.
Data Collection Sequence Across the Action Research

Table 1.
Digital Gamified Tools Used in the Intervention

Day	Digital Tool	Purpose	Duration / Frequency
2	Kahoot!	Team-based quiz to review Day 1 content (crossing-culture, university expectations)	15–20 min
4	Quizizz	Formative review of plagiarism, note-taking, and presentation skills	10–15 min
5	H5P Virtual + Real Scavenger Hunt	Interactive campus exploration with quizzes; submission via WeChat, Padlet, or Goose Chase	100–110 min
6	NYT Image Prompts	Online visual prompts to practice inference-making and collaborative discussion	45–50 min
7	Canvas Platform	Submission of annotated readings, organization of course folders, and practice of digital literacy skills	55–60 min
8	H5P Branching Scenario: Office Hours	Decision-based interactive scenario; students recorded choices in a graphic organizer and shared findings in teams	45–50 min

Data Analyses

Quantitative questionnaire data were analyzed using descriptive statistics, including means and standard deviations, to examine changes in motivation and engagement over the intensive English bridging program. Given the small sample size and the exploratory nature of classroom-based action research, inferential statistics were not employed. Qualitative data,

comprising interview transcripts, observation notes, and reflective teaching logs, were analyzed thematically through iterative coding. The integration of both quantitative and qualitative findings guided reflective instructional decisions and informed ongoing optimizations.

Results and Discussion

This classroom-based action research study was conducted in response to the adjustment challenges that EFL learners often experience in English-Medium Instruction (EMI) classrooms. In Sino-foreign higher education programs in China, students frequently encounter linguistic anxiety, unfamiliar instructional practices, and higher expectations for active classroom participation (Ou, Hult, & Gu, 2022). These challenges are partly shaped by differences between Chinese and Western teaching approaches and classroom interaction norms, which may create difficulties for learners transitioning into EMI learning environments.

To address these classroom realities, the present study implemented a technology-integrated gamified learning intervention within an intensive EMI bridging course. The intervention aimed to explore practical ways of supporting learners' motivation and engagement while facilitating their adaptation to interactive EMI classroom practices. Drawing on both quantitative questionnaire data and qualitative evidence from interviews, classroom observations, and reflective teaching journals, the study examined how digital gamified tools functioned within this instructional context.

Overall, the findings suggest that the integration of digital gamified tools supported sustained levels of learner motivation while encouraging behavioural, cognitive, emotional, and social engagement during classroom activities. At the same time, the results also revealed several pedagogical affordances and constraints that may influence how gamified learning is implemented in EMI classrooms. Although the study was situated in a specific Sino-foreign bridging program, the insights generated may offer useful pedagogical references for similar EMI courses in higher education, particularly in joint-degree or transnational education programs.

(RQ1) Effects of Gamified Learning on Motivation and Multidimensional Engagement

To address the first research question (RQ1) and examine the effects of gamified learning on learners' motivation and engagement, quantitative results were analyzed. As shown in Table 2, the pre- and post-intervention mean scores and standard deviations for both constructs are presented. Participants entered the program with relatively high levels of motivation and engagement. Following the gamified intervention, mean scores showed slight decreases, and standard deviations increased, reflecting greater variability in participants' responses over time.

Table 2.
Pre–Post Comparison of Motivation and Engagement

Construct	Pre-Mean	Post-Mean	Pre-SD	Post-SD
Motivation	4.72	4.48	0.44	0.66
Engagement	4.56	4.24	0.49	0.75

To provide a clearer visual comparison of trends and changes, Figures 2 and 3 entail the pre–post mean scores and standard deviations in line and bar graph formats, respectively.

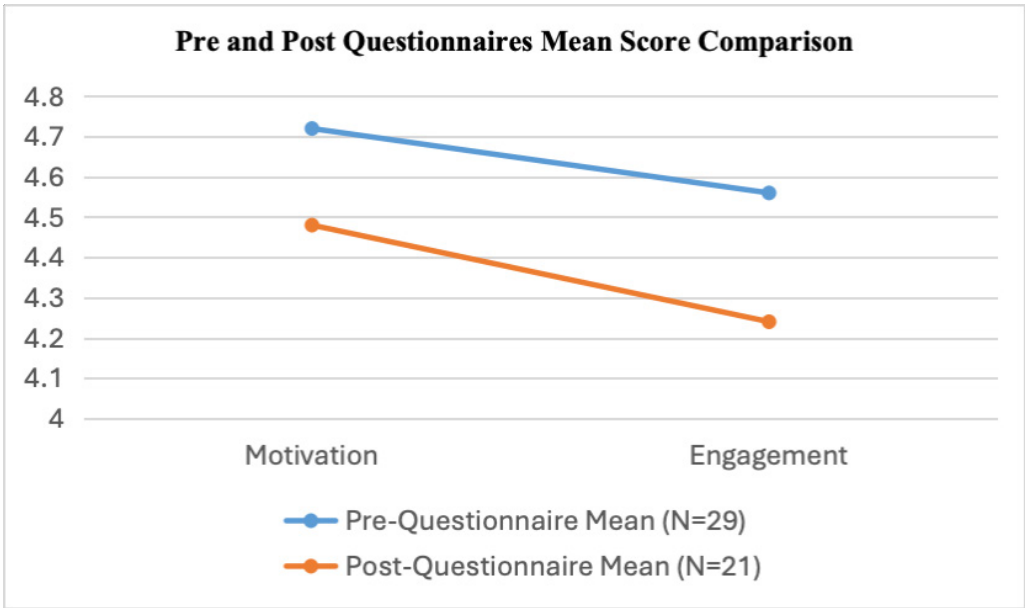

Figure 2.
Pre- and Post- Questionnaires Mean Score

Rather than indicating a substantial decline, the overall mean scores remained high (above 4.2 out of 5), demonstrating that learners maintained high levels of motivation and engagement following the gamified intervention. The observed increase in standard deviations likely reflected individual differences and the novelty of the gamified activities, rather than a reduction in overall engagement. In particular, variability in learners' responses to gamified learning, as evidenced by interview data, reflected differences in individual engagement, with some participants responding more positively than others. This variability contributed to the increased post-intervention score dispersion and suggests a normalization process, in which initial novelty-driven enthusiasm gradually stabilized into more contextually grounded and sustainable forms of motivation and engagement.

Qualitative evidence provided insight into the motivational transformation observed during the gamified intervention. The analysis was guided by Dörnyei's (2009) L2 Motivational Self System, which comprises three interrelated constructs: Ought-to L2 Self (external obligations and responsibilities), Ideal L2 Self (learners' aspirational vision of themselves as future competent language users), and L2 Learning Experience. As shown in Table 3, participants initially engaged in activities primarily out of group responsibility and external expectations (Ought-to L2 Self) but gradually shifted toward aspiration-oriented engagement aligned with their Ideal L2 Self. For example, learners first coordinated to ensure all group members' involvement (Quote 2) and strived to avoid letting their teams down and secure higher scores (Quote 4), both rooted in obligation-based external motivation. As the intervention progressed, they moved to aspiring to become competent English users for flexible real-world communication (Quotes 12 & 13), reflecting a clear transition from obligation-driven participation to motivation anchored in personal language identity and their future-oriented Ideal L2 Self.

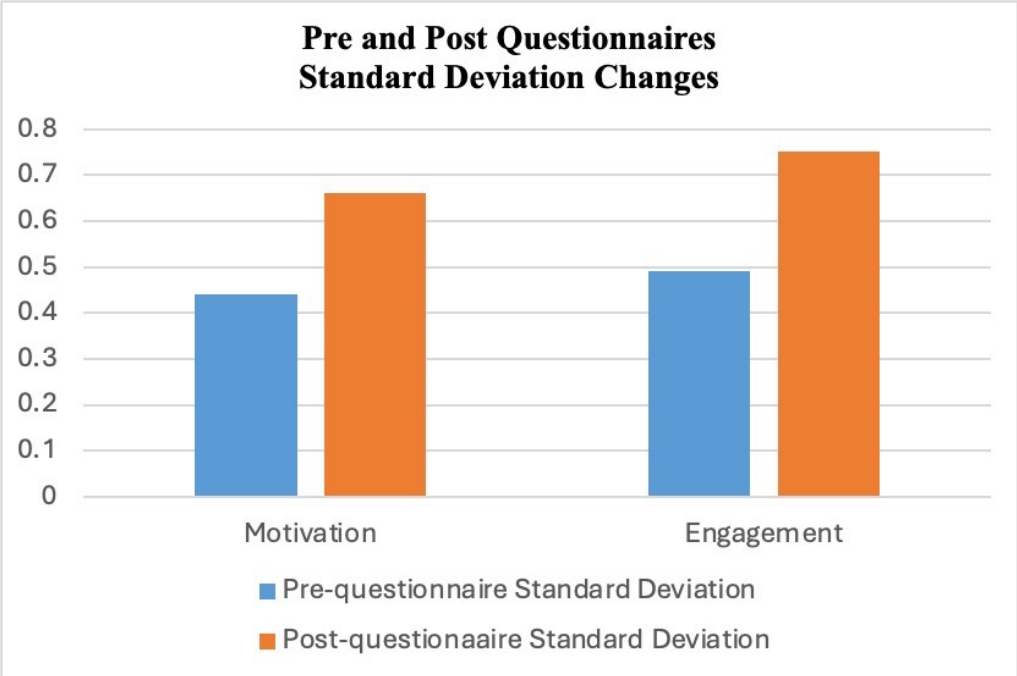

Figure 3.
Pre- and Post-Questionnaires Standard Deviation

Learners' direct experiences with gamified activities (L2 Learning Experience) further facilitated this shift. Interactive tasks encouraged participation and reduced anxiety, fostering confidence in using English (see Quotes 7 & 8 in Table 3). Enjoyable and achievement-oriented elements of the program promoted autonomous learning and intrinsic motivation (see Quotes 10 & 11). Additionally, competitive mechanisms, team-based challenges, and authentic tasks reinforced learners' commitment to continuous improvement, connecting classroom practice with future-oriented language identities (see Quotes 12, 13 & 16).

Taken together, these findings suggest that digital gamified learning supported the internalization of motivation by linking classroom activities to learners' Ideal L2 Self and meaningful learning experiences. The structured progression from external obligation to personally meaningful engagement illustrates how digital gamified tools can strengthen learners' initial motivation and facilitate a shift from externally driven expectations toward more aspirational and self-directed forms of language learning. Such motivational developments provided an important foundation for learners' subsequent classroom participation.

Building on this motivational transformation, gamified learning also positively influenced learners' overall engagement in the EMI classroom. Students demonstrated active participation, enthusiasm, and collaboration, suggesting that gamified activities fostered a dynamic and interactive learning environment. These patterns of participation were reflected across multiple dimensions of engagement, including behavioural, emotional, cognitive, and social aspects, which are examined in the following paragraphs.

Table 3.
Enhancing Motivation Through Gamified L2 Learning Experience

Quote No.	Source (G=Group, S=Speaker)	Quote Content	Theoretical Affiliation	Corresponding Argument
1	G4:S3	"Share mistakes collectively and catch up with scores together." "In Shandong Province, we mostly learn silent English; gamified activities let us practice listening and speaking."	Ought-to L2 Self	Obligation-driven participation; group responsibility Aligned with academic requirements, external expectations
2	G1:S2	"Coordinating to ensure every member's involvement."	Ought-to L2 Self	Obligation-driven participation; group responsibility
3	G2:S4	"I didn't want to let my group down, so I focused on every task."	Ought-to L2 Self	Social accountability drives participation
4	G3:S1	"Making sure my team scored well motivated me to keep trying."	Ought-to L2 Self	Responsibility toward peers motivates effort
5	G1:S3	"Competitive mechanism made us pay more attention in class, hoping to perform better next time."	L2 Learning Experience	Interactive and competitive engagement facilitates aspiration
6	G4:S2	"As a team, we wanted to win and get a higher score."	L2 Learning Experience	Team-based motivation enhances engagement and social accountability
7	G2:S2	"It's easier to speak up; there's more interaction than in traditional classes."	L2 Learning Experience	Reduced anxiety; encourages active communication
8	G3:S6	"Everyone actively shares ideas, encouraging even shy girls to participate."	L2 Learning Experience	Inclusive participation strengthens active contributor identity
9	G2:S6	"The light-hearted atmosphere makes people want to participate more."	L2 Learning Experience	Intrinsic motivation through enjoyment; encourages engagement
10	G4:S5	"Gamified learning feels more relaxed; I'm willing to learn independently without teacher prompting."	L2 Learning Experience	Autonomous learning motivation; proactive learning stance
11	G1:S2	"We won first place and felt happy, wanting to keep doing well."	L2 Learning Experience	Achievement feedback strengthens drive for excellence
12	G3:S5	"Organizing English ideas quickly feels like real-world communication, aspiring to be such a competent user."	Ideal L2 Self	Competence aspiration; planning and strategy in language use
13	G4:S6	"Speak up without fear of mistakes and become someone who dares to use English." "Realize English is not just for exams but a life communication tool, and we wanted to become someone who can use it flexibly."	Ideal L2 Self	Identity vision; personal language confidence; Functional aspiration; linking classroom practice to real-life use
14	G3:S2	"Ranking visibility makes everyone want to be first, motivating us to improve English to compete."	Ideal L2 Self	Sustained motivation; deepening aspiration for linguistic excellence
16	G2:S2	"Willing to try different gamified programs to keep practicing English."	Ideal L2 Self	Desire for continuous engagement; commitment to lifelong language development

Behavioural engagement was particularly evident in learners' observable classroom participation. During gamified activities, students frequently displayed visible positive affect, such as smiling and laughing. When pairing or grouping was required, learners quickly located their randomly assigned peers and initiated collaboration in order to complete the game-based tasks efficiently (see Figure 4). These behaviours indicated a high level of task-oriented involvement and willingness to participate and were consistently documented in classroom observations.

Figure 4.
Observable Classroom Engagement during Gamified Activities

Emotional engagement was fostered by a classroom atmosphere that participants frequently described as "light-hearted," which appeared to encourage participation, particularly among learners from previously "silent classroom" environments (see Quotes 1, 9, and 13, in Table 3). Interview data suggested that the enjoyable and relaxed nature of the gamified activities encouraged students to take risks, speak up without fear of making mistakes, and remain actively involved in classroom interaction. As one participant reflected, "even shy girls could speak" (Quote 8), highlighting how peer interaction and a supportive emotional climate promoted more inclusive participation.

Cognitive engagement was reflected in learners' strategic thinking, including monitoring their performance, evaluating answers, and reflecting on mistakes, as documented in the reflective teaching logs. Several participants also described organizing their English ideas in advance to improve oral expression and participate more confidently in classroom tasks (see Quotes 12 and 16). These responses suggest that gamified learning supported autonomous and goal-directed cognitive effort, encouraging learners to plan, self-monitor, and actively engage in problem-solving during interactive activities.

Social engagement emerged as another key dimension, as peer scaffolding and collaborative problem-solving enabled participation from students who had previously been reluctant to speak. Learners reported sharing mistakes collectively, coordinating efforts to involve all members, and celebrating group achievements, which strengthened their sense of collective responsibility and collaboration (see Quotes 1, 2, and 14). These interactions illustrate how gamified learning fostered a supportive and inclusive classroom environment.

In contrast, students' interview responses regarding traditional classrooms consistently reflected lower levels of engagement and interaction across multiple dimensions. In this study, traditional classrooms refer to non-gamified, lecture-oriented, and teacher-centered environments with limited interactive tasks. As summarized in Table 4, participants distinguished gamified learning from traditional classroom experiences in terms of interaction patterns, classroom atmosphere, oral participation, task design, learning-related stress, and skill development.

Across groups, gamified learning was associated with multidirectional interaction, more equitable opportunities for participation, and collaborative goal pursuit. By contrast, traditional classrooms were commonly described as one-way, passive, and strongly exam-oriented. These

contrasts highlight clear experiential differences between gamified and traditional instructional modes in EMI classrooms. This pattern was further supported by classroom observations and reflective teaching logs, which documented heightened student activity during gamified tasks and comparatively limited participation during lecture-based instruction.

Table 4.
Comparison of Gamified and Non-Gamified Learning Experiences

No.	Dimension	Interview Quotes (G = Group, S = Speaker)	Key Differences / Comparison
1	Interaction & Collaborative Dynamics	G1:S3: "Gamified classroom is more interactive; in traditional classes, teaching is one-way." G4:S6: "Group activities go from icebreaking to deep engagement; traditional groups' goals unclear."	Gamified learning promotes multidirectional interaction, emphasizes student collaboration and group icebreaking, lowers participation barriers, and strengthens team cohesion. Non-gamified classrooms rely on one-way instruction, have unclear group activity goals, low interactivity, and higher participation thresholds.
2	Classroom Atmosphere & Format	G2:S6: "Class is light-hearted and cheerful; traditional classroom is dull." G4:S7: "Gamified classroom atmosphere is lively; traditional high school English classes were lifeless."	Gamified classrooms are relaxed, engaging, and visually/structurally stimulating, with novelty that attracts attention. Non-gamified classrooms are monotonous, rigid in format, and lack novelty or stimulating elements.
3	Oral Expression & Participation	G4:S6: "Gamified classroom gives everyone equal chance to speak; traditional classroom is one-way." G3:S3: "To do well in games, we read rules and communicate with the professor in English."	Gamified learning provides equal opportunities to speak, enhances oral confidence, and motivates active English use. Non-gamified classrooms provide few opportunities to speak, leaving students passive and with low willingness to participate verbally.
4	Task Design & Motivational Mechanisms	G4:S1: "Teams work to win or get high scores; traditional classroom lacks team goals." G3:S4: "Ranking drives proactive learning; traditional classroom lacks such mechanism."	Gamified learning incorporates competition, points/rankings, and countdowns, with team-oriented goals driving active engagement. Non-gamified classrooms are knowledge-centered, lack competitive or team-based mechanisms, and rely on passive information input.
5	Learning Experience & Stress	G3:S5: "Competition brings pressure but it is positive; traditional stress comes from exams." G4:S4: "Stress in gamified classroom is different from exams; more relaxed to complete tasks."	Gamified learning generates moderate, positive pressure that combines tension and excitement, supporting active and relaxed engagement. Non-gamified classrooms produce exam-oriented stress, leading to passive and anxiety-driven learning experiences.
6	Skill & Interest Development	G4:S5: "Gamified classroom makes learning English enjoyable; traditional classroom focuses on exams." G2:S5: "English content is simpler and easier to understand in gamified classroom."	Gamified learning enhances English skills, increases interest, and facilitates comprehension and enjoyment. Non-gamified classrooms focus on exam preparation, offer limited skill development, and present content that may be harder to understand.

Taken together, the findings for RQ1 suggest that digital gamified learning supported sustained motivation and multidimensional engagement in EMI classrooms, providing a foundation for examining pedagogical affordances, constraints, and design implications in subsequent analyses.

(RQ2) Pedagogical Affordances, Constraints, and Design Implications in EMI Contexts

Beyond motivational and engagement outcomes, the findings revealed a complex pattern of pedagogical affordances, constraints, and design implications associated with digital

gamified learning in EMI classrooms. For the affordances mentioned in this study (see Table 3 and Table 4), a key benefit was the enhancement of interaction and participation. Gamified tasks reduced classroom silence, especially among introverted learners, by lowering affective barriers and providing structured opportunities for contribution through peer support. Competitive elements, such as rankings and points, stimulated motivation, while collaborative mechanics fostered a sense of collective belonging. Learners also reported increased English use and perceived improvement in integrated language skills, including listening, speaking, reading, and writing. Cognitively, gamified learning promoted sustained attention and goal-directed behavior, with students engaging in strategic decision-making during tasks. Socially, peer scaffolding and collaborative problem-solving further strengthened engagement, shifting classroom dynamics from passive reception to participatory learning (see Tables 3–4). Together, these mechanisms demonstrate how digital gamified tools reinforce motivation and support meaningful, overall engagement, laying the foundation for discussing pedagogical constraints and design implications.

Table 5.
Representative Interview Quotes on the Disadvantages of Gamified Learning

Quote No.	Disadvantage dimension	Interview Quotes (G = Group, S = Speaker)	Core meaning interpretation
1	Time, Rhythm, and Role-Related Pressure	G4:S3: "My mind goes blank when I'm nervous"; G1:S2: "Gamification takes too long overall, and transmits less knowledge than traditional classes in the same time"; G2:S2: "As the person submitting answers via phone, I felt very nervous when urged by group members"; G3:S2: "Options were clicked arbitrarily before I could finish reading the questions"	Countdown design caused stress and insufficient thinking for some students; time-intensive activities reduced knowledge transmission efficiency; specific roles faced pressure from group members.
2	Insufficient Knowledge Content and Systematicity	G1:S2: "Contains a relatively small amount of information"; G1:S4: "Unfamiliar words are not explained, lacking follow-up feedback"; G1:S5: "Hope for more content related to vocabulary, grammar, or culture"	Activities lacked systematic design, with fragmented knowledge points that failed to meet in-depth learning needs.
3	Interference from Technical and Environmental Issues	G3:S2: "Hope the school maintains the network"; G3:S6: "The campus treasure hunt activity was held in summer with hot weather; we were very tired from walking, which tested physical strength rather than English proficiency"	Network lag, equipment failures, complex platform operations, or uncomfortable outdoor conditions negatively impacted student experience.
4	Monotonous Game Forms and Content	G2:S2: "It gets a bit boring if it's the same question format every time"; G3:S5: "Mostly multiple-choice questions, which are equivalent to doing it alone with insufficient interactivity"; G3:S5: "The form is a bit outdated and needs innovation"	Over-reliance on multiple-choice questions and speed answering led to aesthetic fatigue and reduced long-term motivation and participation due to lack of diversity and innovation.

At the same time, several pedagogical constraints shaped learners' experiences with digital gamified learning (see Table 5). Key issues included time pressure and task pacing, particularly in countdown-based activities, which for some learners caused anxiety, mental blocks, and reduced cognitive processing (G4:S3). Insufficient depth and systematicity of knowledge also emerged as a concern, with language input sometimes limited or fragmented, and a lack of explicit explanations or follow-up feedback for unfamiliar vocabulary and grammar (G1:S4), potentially encouraging surface-level processing rather than deeper

learning. Limited variation in game formats and content further constrained long-term engagement, as repeated multiple-choice or speed-based tasks reduced interactivity, novelty, and opportunities for authentic communication (G3:S5). Technical issues, including network lag and platform instability, occasionally disrupted task flow and increased cognitive load (G3:S2).

Overall, these findings highlight that while digital gamified learning offers significant pedagogical benefits, careful attention to task design, content depth, variation, feedback, and technical reliability is essential to maximize learning outcomes. Thoughtful, learner-centered implementation can balance engagement with cognitive and linguistic development, ensuring that gamified interventions support sustained motivation and multidimensional engagement in EMI classrooms.

Table 6.
Representative Interview Quotes for Future Pedagogical Design Implications

Quote No.	Solution dimension	Interview Quotes (G = Group, S = Speaker)	Core meaning interpretation
1	Enriched Game Forms and Content	G1:S5: "Hope to integrate more content such as culture, vocabulary, and grammar"; G3:S3: "More diversified game content and mechanisms"; G3:S5: "Increase interactive forms beyond multiple-choice questions"; G4:S4: "More opportunities to express in English to develop usage habits"	Added non-multiple-choice questions, situational simulations, role-plays, integrated with professional or cultural knowledge, and improved innovation.
2	Strengthened Knowledge Systematicity and Feedback	G1:S3: "Hope the teacher explains the answers and teaches related words after answering questions"; G1:S6: "Need systematic design of knowledge-based courses"	Added answer explanations, error review, and supplementary knowledge summaries to enhance learning depth.
3	Optimized Time, Rhythm, and Collaboration Design	G1:S2: "Hope the game contains more knowledge and the overall time allocation is more reasonable"; G4:S6: "Teamwork can reduce tension; discussion sessions can be added"; G4:S6: "Appropriately add discussion processes"	Balanced activity duration and knowledge density adjusted countdowns based on question types, and increased discussion sessions to reduce role pressure.
4	Improved Technical and Environmental Support	G3:S2: "The school should maintain the network"; G1:S6: "Simplify the answer platform interface and issue operation guides in advance"; G3:S6: "Avoid physical activities in high-temperature outdoor environments"	Tested networks/equipment in advance, simplified platform operations, optimized outdoor activity environments, or adjusted activity forms.
5	Added Rewards and Incentive Mechanisms	G3:S4: "Can add some small rewards"; G4:S6: "Appropriately add some reward and punishment mechanisms"	Increased small rewards, collective honor awards, etc., to strengthen participation motivation.

Reflections for Future Pedagogical Optimization

Based on insights from the action research intervention, daily teaching logs, and student interview feedback, several strategies were identified to optimize future gamified learning experiences, as summarized in Table 6. Learners consistently expressed a desire for more varied and interactive activities, systematic knowledge presentation with timely feedback,

optimized task pacing and collaborative structures, improved technical support, and mechanisms to sustain long-term motivation. Accordingly, future iterations of the program could incorporate diverse game formats such as role-play and situational simulations, integrate culturally and professionally relevant content, provide knowledge-mapping tasks and metacognitive debriefs, calibrate activity duration and collaborative processes, ensure platform stability, and include small rewards or collective honors.

Through this reflective process, pedagogical adjustments can be aligned with both student needs and broader theoretical frameworks, demonstrating how iterative, data-informed design can enhance motivation, engagement, and learning outcomes in gamified EMI contexts. These findings highlight the value of iterative, context-sensitive design for gamified EMI courses.

Limitations and Future Research

This study was conducted within a relatively short, intensive English bridging program, and participation in the pre- and post-intervention surveys varied, which may have affected the reliability and validity of quantitative measures. Additionally, the survey instruments used in this study were not formally validated, reflecting practical constraints in real classroom settings. To mitigate this limitation, triangulation with classroom observations, teaching logs, and interview data was employed, providing additional support for the interpretation of findings. Nevertheless, the results should be considered exploratory and trend-indicative rather than definitive causal evidence, as the study did not include a control or comparison group, limiting direct causal inference. While these limitations reflect the realities of action research in voluntary, time-constrained, and ethically sensitive classroom contexts, the findings still offer meaningful insights for similarly intensive, practice-oriented EMI programs in higher education in China.

Future research could extend the duration of gamified learning interventions to examine the sustainability of their effects. Studies may also adopt validated instruments and experimental or quasi-experimental designs to strengthen causal inferences, incorporate larger or more diverse samples, and refine survey instruments and assessment procedures to enhance reliability and validity. Such efforts would further support evidence-informed, iterative design of gamified learning experiences in EFL and EMI classrooms. Taken together, these considerations highlight both the value and the contextual boundaries of the current findings, providing guidance for subsequent research.

Implications for Learning and Teaching

The findings of this study highlight that digital gamified learning can meaningfully enhance motivation and multidimensional engagement in EMI classrooms in higher education. Beyond demonstrating practical benefits, the results suggest that instructors can leverage these insights to iteratively refine pedagogical design. By linking established theoretical frameworks, such as Dörnyei's L2 Motivational Self System, with actual classroom contexts, educators can compare expected outcomes with observed learner responses, identify areas for improvement, and implement theory-informed adjustments in successive cycles of action research.

This reflective, action-oriented approach allows for continuous optimization of digital gamified interventions, ensuring that instructional strategies not only address context-specific

challenges, such as linguistic anxiety, unfamiliar classroom practices, and high participation demands, but also promote student autonomy, collaboration, and sustained engagement. Thoughtful design and iterative refinement can therefore support meaningful learning experiences, reinforce learners' future-oriented language identities, and inform evidence-based pedagogical decisions in EMI EFL higher education settings.

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Appendix A

Pre-Intervention Questionnaire

Notification: This questionnaire aims to understand your learning experience in English classes. Your responses will help improve future teaching and learning. All answers are anonymous. Thank you for your participation!

***Notice:** 1 – Strongly Disagree 2 – Disagree 3 – Neutral 4 – Agree 5 – Strongly Agree

Background Information

What's your gender? ☐Male ☐Female

How long have you been learning English? _____ years, since ___ years old.

Part 1: Motivation in English Learning

1. Learning English was enjoyable for me.
   ☐1 ☐2 ☐3 ☐4 ☐5

2. I felt motivated to learn English in my regular English classes.
   ☐1 ☐2 ☐3 ☐4 ☐5

3. I found traditional English learning activities interesting.
   ☐1 ☐2 ☐3 ☐4 ☐5

4. I was willing to spend time learning English outside class.
   ☐1 ☐2 ☐3 ☐4 ☐5

5. I saw value in learning English through game-based methods.
   ☐1 ☐2 ☐3 ☐4 ☐5

Part 2: Engagement in EFL Learning

6. I participate actively in English class activities.
   ☐1 ☐2 ☐3 ☐4 ☐5

7. I enjoy learning English.
   ☐1 ☐2 ☐3 ☐4 ☐5

8. I feel excited when using English in fun or creative ways.
   ☐1 ☐2 ☐3 ☐4 ☐5

9. I try to understand English deeply, not just memorize.
   ☐1 ☐2 ☐3 ☐4 ☐5

10. I think about how I can improve my English outside of class.
    ☐1 ☐2 ☐3 ☐4 ☐5

Appendix B

Post-Intervention Questionnaire

Notification: This questionnaire aims to understand your learning experience after participating in gamified English classes. All answers are anonymous.

***Notice:** 1 – Strongly Disagree 2 – Disagree 3 – Neutral 4 – Agree 5 – Strongly Agree

Part 1: Motivation in Gamified English Learning

1. I found gamified English learning more enjoyable than regular English classes.
   ☐1 ☐2 ☐3 ☐4 ☐5
2. I like to attend English classes because of the gamified activities.
   ☐1 ☐2 ☐3 ☐4 ☐5
3. I am more willing to spend extra time learning English because of the gamified experience. ☐1 ☐2 ☐3 ☐4 ☐5
4. I see value in learning English through gamified methods.
   ☐1 ☐2 ☐3 ☐4 ☐5

Part 2: Engagement in Gamified English Learning

5. I participated more actively in class during gamified activities compared to traditional activities. ☐1 ☐2 ☐3 ☐4 ☐5
6. I felt more focused and involved when completing game-based English tasks.
   ☐1 ☐2 ☐3 ☐4 ☐5
7. The gamified activities helped me understand and use English in creative ways.
   ☐1 ☐2 ☐3 ☐4 ☐5
8. I tried harder to understand English deeply during gamified tasks, not just memorize.
   ☐1 ☐2 ☐3 ☐4 ☐5
9. I thought about how to apply strategies learned in gamified tasks to improve my English outside class. ☐1 ☐2 ☐3 ☐4 ☐5

Part 3: Overall Perception of Gamified Learning

10. The game elements (e.g., levels, badges, leaderboards) enhanced my learning experience. ☐1 ☐2 ☐3 ☐4 ☐5
11. I would recommend gamified English learning to other students.
    ☐1 ☐2 ☐3 ☐4 ☐5
12. Compared to traditional methods, gamified learning helped me remember English better. ☐1 ☐2 ☐3 ☐4 ☐5
13. I felt a sense of achievement when completing gamified tasks.
    ☐1 ☐2 ☐3 ☐4 ☐5
14. I would like to have more gamified activities in future English classes.
    ☐1 ☐2 ☐3 ☐4 ☐5

Optional Open-ended Questions

15. What did you like most about the gamified English learning experience?

16. What suggestions do you have to improve gamified English classes?

Appendix C

Classroom Observation Checklist

Observer Name: _____ Date: _____

Session Topic: _____

Dimension	Indicators	Rating (1–5)
Behavioral engagement	✓ Attentiveness during learning tasks ✓ On-task behavior and actions ✓ Visible engagement in learning activities or processes ✓ Active use of digital learning tools	☐1 ☐2 ☐3 ☐4 ☐5
Emotional response	✓ Positive facial expressions ✓ Demonstrated enthusiasm, interest, or enjoyment ✓ Laughter, emotional expression during tasks ✓ Changes in emotional energy level	☐1 ☐2 ☐3 ☐4 ☐5
Cognitive engagement	✓ Deep processing of learning content ✓ Independent thinking and reflection ✓ Self-regulated strategy uses ✓ Monitoring complex understanding	☐1 ☐2 ☐3 ☐4 ☐5
Social engagement	✓ Peer interaction and communication ✓ Help-seeking and help-giving ✓ Turn-taking and cooperative participation ✓ Joint engagement in group activities	☐1 ☐2 ☐3 ☐4 ☐5

Classroom Observation Notes

1. What worked well today?

2. What challenges did students face?

3. Any noticeable change compared to previous sessions?

4. Suggestions for next session's adjustment.

Appendix D

Daily Teaching Reflection Log

Instructions: Write no more than 300 words for each day's reflection.
Use single space, Times New Roman, size 12.

Day 1: Classroom observation

1. What was the overall classroom atmosphere like?

2. How did students interact with the teacher and with each other?

3. What did you notice about students' English proficiency levels?

4. Were some students particularly quiet or active?

5. What teaching strategies did you observe?

6. What did you learn from this observation?

Day 2–Day 10: Teaching reflection

1. What went well with your teaching today?

2. What didn't go as planned?

3. How did students respond to your teaching?

4. Were you happy with the level of teacher talk, student talk, and interaction?

5. Did you improve one thing you wanted to improve from the previous day? How?

6. What is one thing you would like to improve for your next lesson, and how?

7. Any other comments?

Appendix E

Semi-Structured Interview Questions

Opening & Rapport Building

1. How did you feel about the previous gamified learning activities you participated in?

2. Were you mostly active, passively cooperative, or occasionally engaged?

A. Core Dimensions of Motivation

1. What usually motivates you to learn English? Can you provide examples or scenarios?

2. Compared with traditional English classes, did the gamified activities affect your motivation? If so, how?

3. Which specific elements of the gamified activities influenced your motivation? Could you provide an example?

B. Core Dimensions of Engagement

1. What differences do you notice in your participation between gamified and traditional classes (non-gamified)?

2. During gamified activities, did you take initiative to communicate, share ideas, etc.?

3. Did gamified learning affect your interaction with group members? If so, how?

C. Opinions & Suggestions on Gamified Learning

1. Based on your experience, what do you consider the main advantages and disadvantages of gamified learning?

2. Regarding the challenges mentioned, what changes or improvements would you suggest for future gamified learning designs?

3. Do you have any additional comments, suggestions, or ideas that have not been covered?