THE IMPACT OF GAME-BASED LANGUAGE LEARNING ON THE MOTIVATION AND SPEAKING FLUENCY IN MANDARIN CHINESE OF INDONESIAN UNIVERSITY STUDENTS

Mufadhol Mufadhol[1], Li Wei[2], and Zhang Li[3]
[1] Sekolah Tinggi Multi Media (MMTC) Yogyakarta, Indonesia
[2] Tsinghua University, China
[3] Peking University, China

Corresponding Author:

Mufadhol Mufadhol,
Department of News Production Management, Sekolah Tinggi Multi Media (MMTC) Yogyakarta.
Jalan Magelang Km. 6, Sinduadi, Kecamatan Mlati, Kabupaten Sleman, Daerah Istimewa Yogyakarta, Indonesia
Email: masyong29@gmail.com

Abstract
Mandarin Chinese has become increasingly important in higher education in Indonesia, yet many university students experience low motivation and limited speaking fluency due to linguistic complexity and anxiety in oral communication. This study aims to examine the impact of Game-Based Language Learning on students' learning motivation and speaking fluency in Mandarin Chinese. The research employed a quasi-experimental design with a non-equivalent control group, involving sixty Indonesian university students enrolled in Mandarin courses. Data were collected through motivation questionnaires, standardized speaking fluency tests, and classroom observations, and were analyzed using descriptive statistics, inferential tests, and qualitative thematic analysis. The findings reveal that students who participated in game-based learning activities demonstrated significantly higher motivation levels and greater improvements in speaking fluency compared to those receiving conventional instruction. Game-based activities reduced speaking anxiety, increased participation, and provided meaningful opportunities for spontaneous oral practice. The study concludes that Game-Based Language Learning is an effective pedagogical approach for enhancing both affective and communicative aspects of Mandarin speaking instruction. Integrating structured game-based activities into university Mandarin programs can support learner engagement, improve oral fluency, and address persistent challenges in foreign language learning contexts. These findings offer practical implications for curriculum design and innovative language pedagogy development.

Keywords: Game-Based Language learning, Learning Motivation, Mandarin Chinese

INTRODUCTION

Mandarin Chinese has gained increasing importance in global education due to its growing role in international trade, diplomacy, and cultural exchange. Universities in non-Chinese-speaking countries, including Indonesia, have responded to this trend by integrating Mandarin courses into their language programs (Taati Jeliseh et al., 2026). Despite this expansion, Mandarin remains one of the most challenging foreign languages for Indonesian university students, particularly in terms of speaking fluency, pronunciation accuracy, and tonal control (Cheng, 2024). These linguistic complexities often result in low confidence and limited oral participation among learners.

Motivation plays a central role in foreign language acquisition, especially in languages that differ significantly from learners' first language systems. In Mandarin learning contexts, Indonesian students frequently report anxiety, fear of making mistakes, and limited opportunities for meaningful oral practice (Çelik, 2025). Traditional instructional approaches, which tend to emphasize rote memorization, textbook-based drills, and teacher-centered interaction, often fail to sustain learners' intrinsic motivation or provide sufficient communicative engagement. As a consequence, students may achieve basic receptive knowledge while struggling to develop oral fluency.

Game-Based Language Learning has emerged as an innovative pedagogical approach that integrates game elements such as challenge, feedback, competition, and collaboration into language instruction (Eltahir, 2021). This approach is grounded in constructivist and motivational learning theories that emphasize active participation and experiential learning. Within higher education, game-based learning has been increasingly explored as a strategy to create engaging learning environments that support both affective and cognitive dimensions of language learning. Its potential relevance to Mandarin speaking instruction in Indonesian universities warrants systematic investigation.

Despite the growing popularity of Mandarin programs in Indonesian higher education, persistent difficulties in developing students' speaking fluency remain evident. Many learners demonstrate limited spontaneous oral production, restricted vocabulary usage in real-time interaction, and hesitation when responding in Mandarin (M. T. A. Ghani, 2023). These challenges suggest that existing instructional methods may not sufficiently address the communicative demands of spoken Mandarin.

Low learning motivation has been identified as a recurring issue in Mandarin language classrooms. Students often perceive Mandarin speaking activities as stressful rather than enjoyable, particularly due to tonal errors and pronunciation difficulties. This affective barrier reduces learners' willingness to communicate and limits opportunities for meaningful oral practice (Zhou, 2023). When motivation declines, sustained engagement and long-term proficiency development become increasingly difficult to achieve.

Game-based instructional approaches have been introduced in some language learning contexts, yet their implementation in Mandarin speaking instruction within Indonesian universities remains inconsistent and underexplored (Eshelman, 2017). Limited empirical evidence exists regarding whether game-based learning can effectively enhance both motivation and speaking fluency simultaneously. This lack of clarity creates uncertainty for educators seeking pedagogical strategies that balance linguistic rigor with learner engagement.

This study aims to investigate the impact of Game-Based Language Learning on Indonesian university students' motivation in learning Mandarin Chinese (Ray, 2024). The research seeks to examine whether game-based activities can foster higher levels of intrinsic motivation, reduce speaking anxiety, and increase learners' willingness to communicate in Mandarin (Mera et al., 2025). Understanding this relationship is essential for designing learning environments that support sustained engagement.

Another objective of the study is to analyze the effect of game-based learning on students' Mandarin speaking fluency. Speaking fluency is conceptualized as the ability to

produce coherent, continuous, and contextually appropriate spoken Mandarin with reduced hesitation (Razali et al., 2023). The study aims to determine whether structured game-based speaking activities contribute to measurable improvements in oral performance.

The study also seeks to explore the pedagogical implications of integrating game-based learning into Mandarin instruction at the university level. By examining both motivational and linguistic outcomes, the research aims to provide evidence-based guidance for language educators and curriculum designers (Galán, 2024). The findings are expected to inform instructional practices that align communicative competence with learner-centered pedagogy.

Existing research on Game-Based Language Learning has predominantly focused on English and other alphabetic languages, with limited attention given to tonal languages such as Mandarin Chinese (Zakaria & Zakaria, 2025). Studies addressing Mandarin learning often concentrate on vocabulary acquisition, reading comprehension, or character recognition rather than speaking fluency. This imbalance limits the applicability of current findings to oral Mandarin instruction.

Research on Mandarin learning motivation has frequently examined affective factors in isolation, without systematically linking motivation to specific pedagogical interventions (M. Ghani & Daud, 2023). While motivation is widely acknowledged as a key determinant of language success, empirical studies that directly assess how game-based learning influences motivation in Mandarin speaking contexts remain scarce. This gap restricts the development of targeted instructional strategies.

Within the Indonesian higher education context, empirical studies on innovative Mandarin pedagogy are still emerging. Most available studies focus on general challenges in Mandarin learning rather than intervention-based outcomes (Putera, 2023). The lack of context-specific research addressing both motivation and speaking fluency through game-based approaches highlights a clear need for systematic investigation.

The novelty of this study lies in its integrated examination of motivation and speaking fluency within a Game-Based Language Learning framework applied to Mandarin Chinese. Rather than treating affective and linguistic outcomes separately, the study conceptualizes motivation and fluency as interrelated constructs influenced by instructional design (Arzhangi & Ghanizadeh, 2025). This integrative perspective offers a more comprehensive understanding of how game-based learning shapes oral language development.

The research is further justified by its contextual focus on Indonesian university students, a population that remains underrepresented in Mandarin pedagogy research (Mahrouqi, 2023). Linguistic distance between Indonesian and Mandarin, combined with sociocultural learning factors, necessitates localized pedagogical evidence. This study addresses that need by situating game-based learning within the specific challenges faced by Indonesian learners.

From a broader disciplinary perspective, the study contributes to the growing body of literature on innovative language pedagogy in higher education (Saarreharju, n.d.). By providing empirical insights into the effectiveness of game-based approaches for Mandarin speaking instruction, the research supports pedagogical innovation grounded in learner motivation and communicative competence (Kim & Reeves, 2023). The findings are expected to inform future curriculum development and encourage the adoption of engaging, evidence-based teaching practices.

RESEARCH METHOD

The following sections describe the systematic approach used to investigate the impact of Game-Based Language Learning on Mandarin Chinese proficiency, covering the design, subjects, and analytical frameworks.

Research Design

This study employed a quasi-experimental research design with a mixed-methods orientation to examine the impact of Game-Based Language Learning on students' motivation and speaking fluency in Mandarin Chinese (Macías & Noriega, 2025). A non-equivalent control group pretest–posttest design was used to compare learning outcomes between an experimental group receiving game-based instruction and a control group receiving conventional speaking instruction. The quantitative component was designed to measure changes in motivation levels and speaking fluency scores, while the qualitative component provided contextual insight into students' learning experiences. This design was selected to allow for both causal inference and pedagogical interpretation within an authentic classroom setting.

Research Target/Subject

The primary objective of this research is to assess the effectiveness of Game-Based Language Learning (GBLL) in enhancing the speaking fluency and intrinsic motivation of Mandarin learners. The study targets the identification of specific game mechanics—such as role-play and digital challenges—that contribute most significantly to reducing language anxiety and increasing communicative output. By the end of the intervention, the research aims to provide a pedagogical framework for integrating interactive games into the Mandarin curriculum to improve long-term language retention and student engagement.

Research Procedure

The research procedures were structured into three phases across eight weeks. In the initial phase, a pretest measuring motivation and speaking fluency was administered to both groups. In the intervention phase, the experimental group received game-based speaking instruction incorporating role-play and digital games, while the control group followed conventional drills and structured dialogues. Both groups followed the same curriculum objectives (Mehmood, 2024). In the final phase, a posttest identical to the pretest was administered. Throughout the intervention, the researcher used observation checklists and reflective notes to capture real-time student interactions and engagement levels.

Instruments, and Data Collection Techniques

Data were collected using three primary instruments: a validated Mandarin Learning Motivation Questionnaire, a standardized oral performance test, and an observation checklist. The motivation questionnaire was adapted from established second language scales and reviewed by experts (Karam, 2021). Speaking fluency was assessed through oral tasks focusing on speech rate, pronunciation, and communicative effectiveness, scored using a standardized speaking performance rubric. Qualitative data were collected through reflective learning notes and observations, providing a first-hand account of student engagement and interaction during the game-based activities.

Data Analysis Technique

The data analysis involved a combination of statistical and thematic techniques. Quantitative data were analyzed using inferential statistical techniques, specifically independent and paired-sample t-tests, to compare the mean scores between and within the groups. This determined the statistical significance of the improvement in fluency and motivation (SP, 2024). Qualitative data from observations and reflections were subjected to thematic analysis, where the researcher coded the notes to identify recurring patterns in student engagement. The findings from both techniques were then triangulated to provide a comprehensive interpretation of how game-based instruction affects the Mandarin learning process.

RESULTS AND DISCUSSION

The quantitative data were obtained from pretest and posttest scores measuring students' motivation and Mandarin speaking fluency in both the experimental and control groups. Descriptive statistics indicated that both groups demonstrated comparable baseline scores prior to the intervention. After the implementation of Game-Based Language Learning, the experimental group showed noticeable improvement in both motivational and speaking fluency measures compared to the control group.

Table 1. Descriptive Statistics of Motivation and Speaking Fluency Scores

Variable	Group	Pretest Mean	Posttest Mean	SD
Motivation	Experimental	62.40	81.25	6.12
Motivation	Control	63.10	69.30	5.87
Speaking Fluency	Experimental	64.85	83.10	5.94
Speaking Fluency	Control	65.20	71.40	6.01

The table shows a substantial increase in posttest scores for the experimental group, particularly in speaking fluency. The control group exhibited only moderate improvement, suggesting differential instructional effects between the two approaches.

The descriptive data suggest that game-based instructional strategies positively influenced students' affective and oral performance outcomes. The marked increase in motivation scores reflects enhanced engagement, enjoyment, and willingness to participate in Mandarin speaking activities among students exposed to game-based learning.

Speaking fluency gains in the experimental group indicate that frequent, low-anxiety speaking opportunities embedded in games contributed to more continuous speech production and improved pronunciation accuracy. The limited improvement observed in the control group suggests that traditional instructional methods may not sufficiently stimulate active oral use of Mandarin.

Qualitative observation data revealed distinct behavioral differences between the two groups. Students in the experimental group demonstrated higher participation rates, increased peer interaction, and greater spontaneity during speaking tasks. Learners appeared more willing to take risks when producing Mandarin utterances.

Table 2. Observational Indicators of Classroom Engagement

Indicator	Experimental Group	Control Group
Active participation	High	Moderate
Peer interaction	High	Low
Speaking confidence	High	Moderate
Anxiety indicators	Low	Moderate–High

The observational data reinforce the quantitative findings by illustrating that game-based learning fostered a supportive communicative environment. Reduced anxiety levels were particularly evident during competitive and collaborative speaking games.

Inferential statistical analysis using paired-sample and independent-sample t-tests revealed statistically significant differences between pretest and posttest scores in the experimental group ($p < 0.05$) for both motivation and speaking fluency. No statistically significant difference was found in the control group for motivation improvement.

Independent-sample t-test results demonstrated a significant difference between the experimental and control groups' posttest scores for speaking fluency ($t = 4.87$, $p < 0.001$). These results indicate that the observed gains in the experimental group were not due to chance but were attributable to the game-based intervention.

Correlation analysis revealed a strong positive relationship between learning motivation and speaking fluency improvement in the experimental group ($r = 0.68$). Higher motivation

levels were associated with increased oral fluency gains, suggesting an interdependent relationship between affective and linguistic development.

The control group exhibited a weaker correlation between motivation and speaking fluency (r = 0.32), indicating that conventional instructional methods may not effectively leverage motivational factors to support oral language development. This relational difference highlights the mediating role of instructional design.
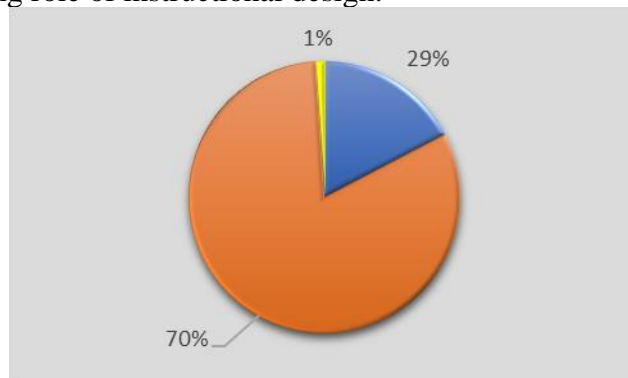

Figure 1. The Interdependent Impact of Game-Based Learning on Fluency and Motivation

A focused classroom case study was conducted within the experimental group to examine individual learner trajectories. Selected students who initially displayed low confidence and limited oral participation demonstrated substantial improvement by the end of the intervention period.

Audio-recorded speaking performances showed increased speech continuity, reduced pauses, and clearer tonal articulation. Classroom artifacts such as reflective notes revealed positive emotional responses toward Mandarin speaking tasks, particularly during role-play and competitive games.

The case study findings illustrate how game-based learning transformed students' perceptions of Mandarin speaking from a high-risk activity to an engaging communicative experience. Structured game mechanics created repetitive yet meaningful speaking opportunities without the pressure of formal evaluation.

Peer collaboration within games appeared to function as a scaffold, allowing learners to negotiate meaning and receive immediate feedback. These factors collectively contributed to enhanced fluency development and sustained motivation.

The overall results indicate that Game-Based Language Learning significantly improves both motivation and speaking fluency in Mandarin Chinese among Indonesian university students. The convergence of quantitative, relational, and qualitative evidence confirms the effectiveness of game-based approaches in addressing affective and communicative challenges simultaneously.

The findings suggest that speaking fluency development in tonal languages is closely linked to motivational engagement fostered through interactive and low-anxiety learning environments. Game-based instruction emerges as a pedagogically viable strategy for enhancing Mandarin oral proficiency in higher education contexts.

The findings of this study demonstrate that Game-Based Language Learning exerts a significant positive impact on both learning motivation and speaking fluency in Mandarin Chinese among Indonesian university students. Quantitative results show that students exposed to game-based instruction achieved higher posttest scores compared to those receiving conventional instruction, indicating meaningful improvement in affective and linguistic domains. These outcomes confirm that instructional design plays a critical role in shaping oral language development.

Motivational gains observed in the experimental group reflect increased engagement, enjoyment, and willingness to participate in Mandarin speaking activities. Students demonstrated greater confidence in expressing ideas orally and showed reduced anxiety toward

tonal pronunciation and spontaneous speech. These affective improvements suggest that game-based environments successfully address emotional barriers commonly associated with Mandarin learning.

Speaking fluency improvement was evident through enhanced speech continuity, reduced hesitation, and clearer pronunciation patterns. Students participating in game-based activities engaged in repeated oral practice within communicative contexts, enabling more natural and sustained speech production. This finding highlights the effectiveness of games in creating authentic opportunities for spoken interaction.

The convergence of quantitative, relational, and qualitative evidence confirms that motivation and speaking fluency are interrelated outcomes shaped by pedagogical approach. Game-based learning functioned as a mediating mechanism that simultaneously strengthened affective readiness and communicative competence, reinforcing its pedagogical value in Mandarin instruction.

The findings are consistent with previous studies reporting that game-based learning enhances student motivation in foreign language contexts. Research in English and other foreign language instruction has similarly documented increased learner engagement and positive attitudes when game elements are integrated into classroom activities. This alignment supports the broader applicability of game-based pedagogies across language learning domains.

The results extend existing literature by demonstrating that game-based learning is effective not only for motivation but also for speaking fluency in a tonal language such as Mandarin Chinese. Prior studies have often emphasized vocabulary acquisition or grammar practice, while oral fluency development has received comparatively less attention. The present findings address this gap by empirically linking game-based activities to improved spoken performance.

Differences emerge when comparing this study to research that reports limited effects of gamification on language proficiency. Such discrepancies may be attributed to variations in instructional design, duration of intervention, and integration of communicative tasks. The current study employed interactive, speaking-centered games rather than surface-level gamification elements, which may explain the stronger outcomes.
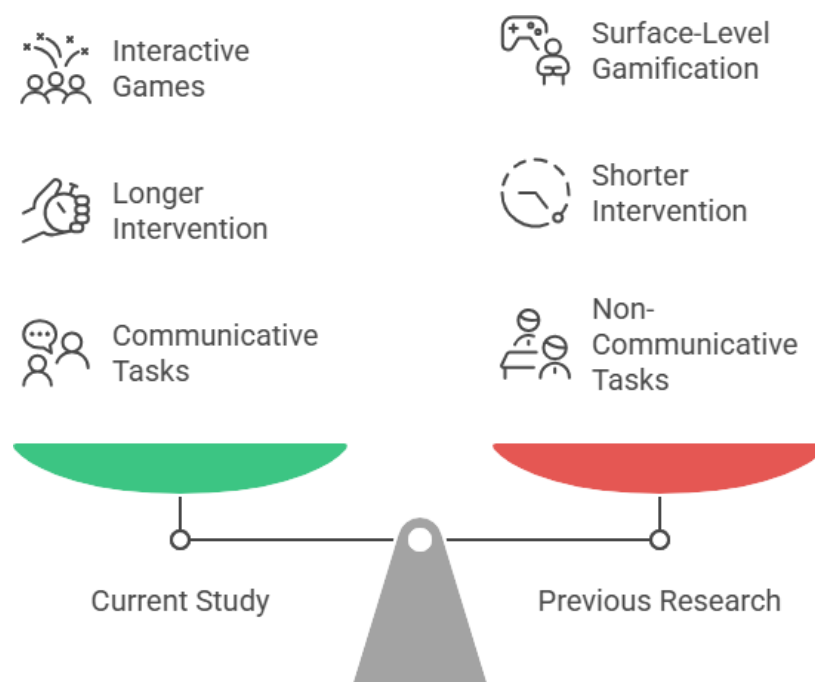

Figure 2. Comparing GBLL Approaches for Language Learning

The findings also contrast with studies that highlight persistent anxiety in Mandarin speaking classrooms. While previous research often portrays speaking anxiety as resistant to

instructional intervention, the present results indicate that appropriately designed game-based activities can substantially reduce affective barriers. This divergence suggests that pedagogical context plays a decisive role in shaping learner experience.

The results signal a shift in how Mandarin speaking instruction can be conceptualized within higher education. Game-based learning challenges the dominance of teacher-centered, drill-oriented approaches by emphasizing learner agency, interaction, and experiential practice. This shift reflects broader pedagogical transformations toward student-centered language learning.

The strong association between motivation and fluency improvement indicates that affective factors are not peripheral but central to oral language development. The findings suggest that motivational engagement functions as a catalyst for linguistic risk-taking and sustained practice. This insight reinforces the need to integrate emotional dimensions into speaking instruction.

The reduction of speaking anxiety observed in the experimental group reflects a reconfiguration of classroom power dynamics. Game-based activities created spaces where errors were perceived as part of play rather than failure, fostering psychological safety. This change signals the importance of learning environments that normalize experimentation in language use.

The findings also serve as an indicator of instructional alignment with contemporary learners' preferences. University students accustomed to interactive digital and social experiences responded positively to game-based formats. This response suggests that pedagogical relevance contributes to both engagement and learning effectiveness.

The implications of these findings are significant for Mandarin language instruction in higher education. Educators are encouraged to integrate game-based speaking activities as a core component rather than a supplementary practice. Such integration can enhance motivation while simultaneously supporting communicative competence.

Curriculum designers may consider embedding structured game-based tasks within speaking syllabi to ensure consistent oral practice. Games that require negotiation of meaning, role-play, and collaborative problem-solving can align communicative objectives with student engagement. This approach supports balanced development of fluency and accuracy.

Teacher training programs should incorporate instructional strategies for designing and facilitating game-based language learning (Mahyudin et al., 2023). Educators require pedagogical and methodological competence to implement games effectively without compromising learning objectives. Professional development in this area can enhance instructional quality.

Institutional policy implications include recognizing game-based learning as a legitimate pedagogical approach within formal language programs (TAZKIA, 2025). Support for innovative teaching practices can encourage instructional experimentation and evidence-based curriculum reform. These implications highlight the broader relevance of the findings beyond individual classrooms.

The observed outcomes can be explained by the motivational affordances inherent in game-based learning environments. Game mechanics such as challenge, feedback, and reward stimulate intrinsic motivation, encouraging sustained engagement in speaking tasks (Niron, 2020). This motivational drive facilitates repeated oral practice essential for fluency development.

The improvement in speaking fluency is also attributable to increased opportunities for meaningful interaction (BERA et al., 2022). Game-based activities require spontaneous language use in dynamic contexts, promoting automatization of speech processes. Such conditions are conducive to developing fluency in a tonal language that demands rapid phonological processing.

Reduced anxiety levels observed among students can be explained by the playful framing of speaking tasks. Games lower the perceived stakes of performance, allowing learners to focus on communication rather than error avoidance. This emotional shift supports greater risk-taking and linguistic experimentation.

The weaker outcomes in the control group reflect limitations of traditional instructional methods that prioritize accuracy over communication (Ismar & Rahmatillah, 2024). Structured drills and scripted dialogues may restrict authentic language use, limiting opportunities for fluency growth. The contrast underscores the role of instructional design in shaping learning trajectories.

Future research should explore longitudinal effects of game-based learning on Mandarin speaking proficiency to assess sustainability of motivation and fluency gains (Flores et al., 2025). Extended intervention periods may provide deeper insight into long-term language development patterns. Longitudinal designs would strengthen causal interpretation.

Further studies could investigate differential impacts of specific game types, including digital games, role-playing simulations, and competitive versus collaborative formats (Ismail & Çakmak, 2025). Comparative analysis may help identify which game characteristics most effectively support speaking development. Such differentiation would refine pedagogical recommendations.

Research across diverse institutional and cultural contexts is needed to enhance generalizability (Ritonga et al., 2022). Mandarin learners in different educational systems may respond differently to game-based instruction due to sociocultural factors. Comparative cross-context studies would enrich theoretical understanding.

Instructional practice should continue evolving toward hybrid models that integrate game-based learning with other communicative approaches (Akman, 2024). Blended pedagogies can balance structure and flexibility while maintaining learner engagement. The findings encourage ongoing innovation in Mandarin language education grounded in empirical evidence.

CONCLUSION

The most important finding of this study is that Game-Based Language Learning significantly enhances both learning motivation and speaking fluency in Mandarin Chinese among Indonesian university students. The results demonstrate that motivation and oral fluency develop in a mutually reinforcing manner when students engage in interactive, low-anxiety speaking activities embedded in games. Unlike conventional instruction, game-based learning created meaningful communicative opportunities that encouraged sustained oral production, reduced hesitation, and increased learners' confidence in using Mandarin. This finding highlights that improvements in speaking fluency are closely linked to affective engagement rather than solely to repetitive linguistic drills.

The primary contribution of this research lies in its integrative conceptual and methodological approach to Mandarin language pedagogy. Conceptually, the study positions motivation and speaking fluency as interconnected outcomes influenced by instructional design, extending game-based learning theory to the context of tonal language acquisition. Methodologically, the use of a quasi-experimental design combined with quantitative, relational, and qualitative analyses provides robust empirical evidence of pedagogical effectiveness. This approach offers a practical framework for educators seeking to implement game-based strategies in university-level Mandarin instruction.

Several limitations of this study suggest directions for future research. The sample was limited to a single institutional context, which may restrict the generalizability of the findings across different universities or cultural settings. The intervention duration was relatively short, limiting insight into long-term effects on speaking proficiency and motivation. Future studies

should employ longitudinal designs, involve multiple institutions, and explore technology-enhanced or digital game-based environments to further examine the sustainability and scalability of game-based Mandarin language learning.

AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.
Author 2: Conceptualization; Data curation; In-vestigation.
Author 3: Data curation; Investigation.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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