Gamification in Foreign Language Education: A Bibliometric and Thematic Analysis

Zhao Mei[1], Pan Qi[2], Hassan Abuhassna[3]

[1]School of Foreign Languages, Zao Zhuang University, Zao Zhuang, China, [2]School of Foreign Languages, Zao Zhuang University, Zao Zhuang, China, [3]School of Education, Sunway University, Malaysia
Email: 501875914@qq.com, hassanmma@sunway.edu.my
Corresponding Author Email: 187327639@qq.com

Abstract

Gamification has been widely integrated into foreign language learning to enhance students' motivation, engagement, and learning performance. Despite a growing body of studies demonstrating the effectiveness of gamified foreign language learning, a systematic review using a scientific and reliable approach to identify the developmental trajectory and research focus in this field remains limited. To address this gap, this study provides a comprehensive overview of gamified foreign language learning through bibliometric analysis. Following the PRISMA framework, a total of 214 peer-reviewed journal articles published from 2016 to 2025 were extracted from the Scopus database and analyzed through bibliometric and keyword co-occurrence analysis. The results revealed that research on gamified foreign language learning has entered a rapid expansion phase. However, research in this field is mainly concentrated in a limited number of regions, institutions, and journals, with a particular emphasis on EFL higher education contexts. Additionally, four major research themes were also discussed in this study. In conclusion, this study clarified the research landscape of gamified foreign language learning and highlighted the need for more theory-informed, context-diverse, and pedagogically grounded research in future studies.
Keywords: Gamification, Foreign Language Learning, Bibliometric Analysis, Thematic Analysis

Introduction

In recent years, the rapid advancement of digital technologies has transformed educational sector, particularly in technology-enhanced language learning. To address this transformation, educators should adopt innovative instructional approaches to sustain learners' motivation and engagement during learning processes. Within this context, gamification has therefore gained growing attention.

Foreign language learning is widely considered a long-term process that requires students' continuous engagement, motivation, and repeated practice(Arieșan, 2025; Hatamleh et al., 2025; Meng et al., 2020). However, improving students' foreign language learning remains challenging with constrained class time, assessment pressure, and teacher-led traditional learning settings. Therefore, gamified approaches have increasingly been integrated into foreign language education. By incorporating game elements like points, badges, challenges, and leaderboards into learning activities, gamified foreign language learning has been shown to boost students' motivation, engagement, and retention, which makes the learning process more fun and less stressful(Jing et al., 2024; Namaziandost et al., 2025; Nechifor, 2024).

Over the past ten years, gamification has been widely adopted as an instructional approach within foreign language education, and existing studies have further confirmed its effectiveness using empirical evidence. While these findings revealed the valuable potential of gamification in foreign language learning, the evidence has accumulated in a fragmented manner, without an integrated overview to capture the overall evolution, publication patterns, and emerging research focus of this field.

Moreover, as research output continues to expand, a traditional narrative review, lacking a quantitative and visualized approach, is difficult to capture the overall landscape of this field(Khalil et al., 2025; Marvi & Foroudi, 2023). In this regard, a biometric analysis, which aims to systematically map the research landscape of this field, is necessary, including identifying publication trends, leading contributors, and the evolving thematic structure of this field. This approach enables a more comprehensive and deepen understanding of this research landscape.

Accordingly, the present study conducts a bibliometric analysis to examine the research landscape of gamification in foreign language learning. Specifically, this study seeks to address the following research questions:

RQ1. What are the publication trends and growth patterns of research on gamification in foreign language learning?
RQ2. What are the leading journals, authors, institutions, and countries(districts) contributing to this field?
RQ3. What are the major research themes identified through keyword co-occurrence analysis?
RQ4. What emerging topics and future research directions can be identified in this field?

Methodology
Research Design
This review adopts bibliometric analysis to map the research landscape of gamification in foreign language education. It aims to identify publication trends, prolific journals and contributors, major research themes, as well as emerging topics and future directions in this research field. The review process followed the PRISMA framework proposed by Moher et al. (2009) to ensure the transparency and comprehensiveness in data collection and screening.

Identification

Database Selection

This review was conducted on January 5th, 2026. The Scopus database was selected as the main database for this review due to its wide coverage of peer-reviewed journals and its ease of use for bibliometric analysis and visualization tools. The data extracted from the Scopus database facilitates the subsequent bibliometric and visual analyses.

Search Strings

To ensure the comprehensive and rigorous selection of relevant papers, the researchers applied a set of predefined keywords in the Scopus database. For instance, the keywords gamif and foreign language education, including "second language education", "foreign language learning", "second language learning", "L2 learning", "EFL", and "ESL".

Moreover, the publication's timespan was limited to the last ten years were selected from 2000 to 2025, "PUBYEAR > 2015 AND PUBYEAR < 2026". In addition, the subject area was narrowed down to social science, arts, and computer science. Furthermore, publications written in English were selected in this bibliometric analysis. Lastly, publications were limited to peer-reviewed articles to ensure the quality and consistency of the dataset.

Screening and Selection

As mentioned earlier, this review was conducted following the PRISMA framework. After the initial identification of records from the Scopus database, 367 papers were identified. The remaining records were further assessed through the predefined inclusion criteria and exclusion criteria, resulting in 214 papers included in this bibliometric analysis. The detailed screening and selection process is shown in the following Figure 1, while the inclusion and exclusion criteria were summarized in Table 1.

Table 1

Inclusion criteria and exclusion criteria

Inclusion criteria	Exclusion criteria
I1. Filtered by relevant keywords	
I2. Publication from 2016 to 2025	E1. Publications before 2016 were not accepted.
I3. Articles written in the English language	E2. Articles written in any other languages
I4. The article type was "articles" only.	E3. Thesis, conference, book chapters, books, blogs

Data Analysis and Reporting

After the data selection, the final step involved conducting the analysis and reporting the findings. To achieve this, visualization tools, including VOSviewer, were used to map the research landscape of this field. The findings of the bibliometric analysis are reported and discussed in the subsequent sections.

PRISMA Framework

Identification

Records identified from Scopus database*:

Initial search (n=367)

Screening

Records excluded after applying inclusion/exclusion criteria (n = 153)

Exclusion reasons:

➢ Did not match relevant keywords
➢ Non written in English
➢ Not limited to subject areas (Computer Science, Arts & Humanities, Social Sciences)
➢ Not journal articles
➢ Not published from 2016 to 2025
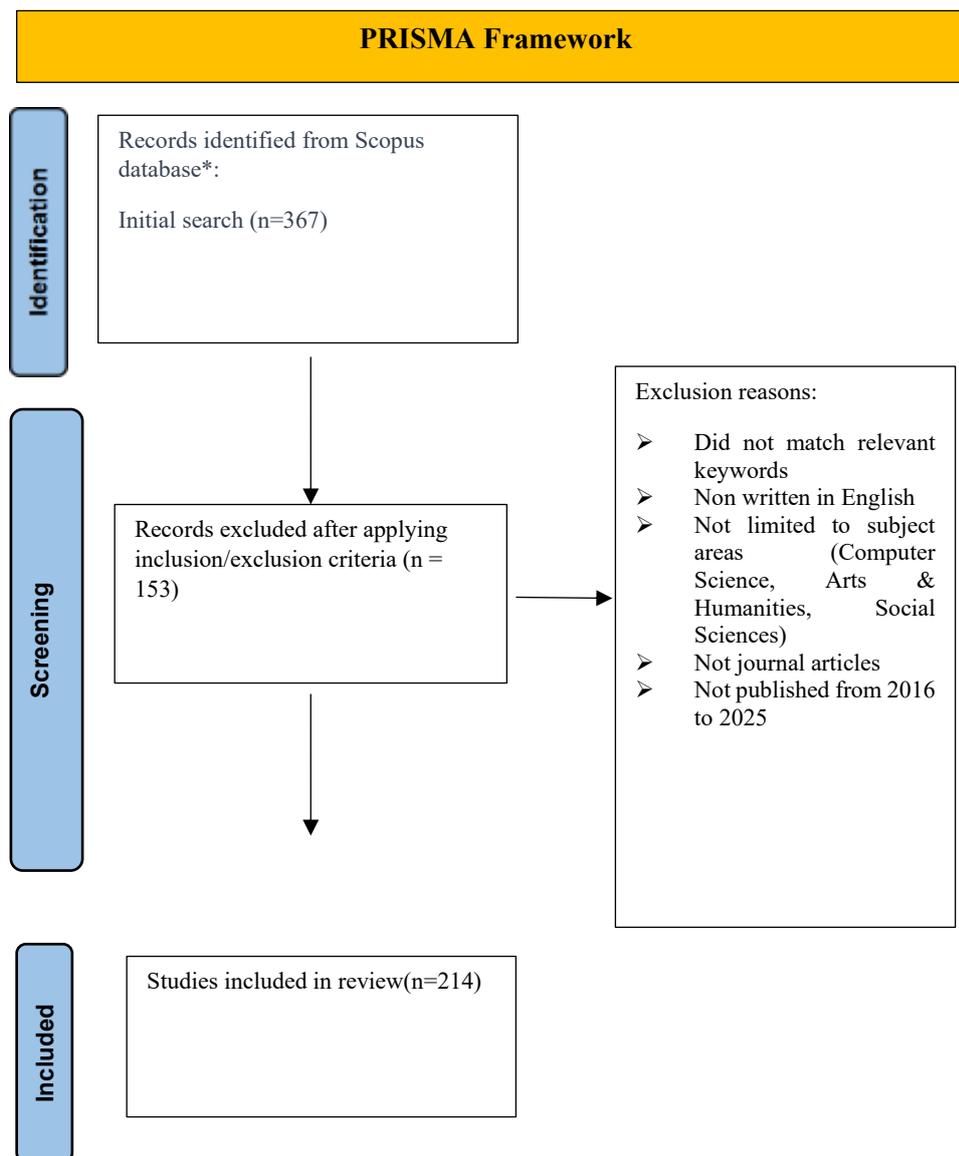
Included

Studies included in review(n=214)

Figure 1. Prisma Framework for this Review

Findings

The following findings are organized according to research questions 1-4, focusing on publication trends, prolific contributors, major research themes, as well as emerging topics and future directions.

Publication trends and growth patterns of research on gamification in foreign language education

To address research question 1, the researchers extracted publications from 2016 to 2025 to capture the evolution of research on gamification in foreign language education. Based on Figure 2, the publication trends in this field can be divided into three main phases.

The first phase(2016 -2018) experienced a low number of publications, indicating that gamification has not yet become a central focus within foreign language education. Then, the second phase(2019-2021) demonstrated a steady increase in the publication output,

emphasizing a growing scholarly interest in this field. Despite a slight decline in 2023, with 19 publications, the third phase (2022–2025) shows a sharp increase, with 45 publications in 2024 and 62 in 2025. The trend line (R^2 = 0.90) further confirms this growth pattern, highlighting an expansion and development of gamification research within foreign language education.
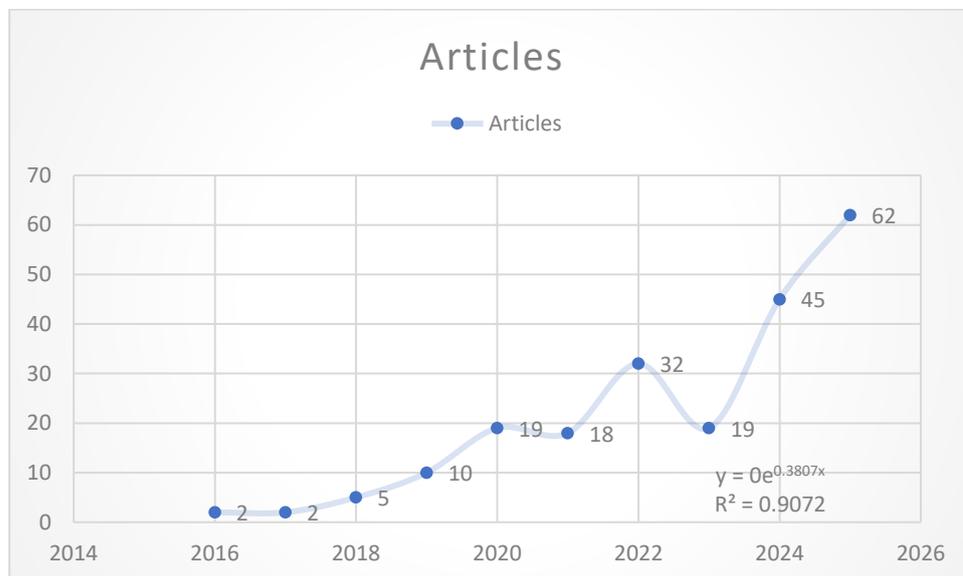

Figure 2. Publication Trends

Leading journals, authors, institutions, and countries(districts) contributing to this field

This section examines leading journals, authors, institutions, and countries contributing to research on gamification in foreign language education.

Leading Journals

Figure 3 presents the leading journals that published research in this field. Among them, Education and Information Technologies emerged as the most productive journals, with 9 publications, followed by Call EJ and World Journal of English Language, with 7 publications each. In addition, several other journals, such as Computer Assisted Language Learning, Education Sciences, Innovation in Language Learning and Teaching, and International Journal of Emerging Technologies in Learning, also demonstrated significant involvement in this area. Notably, although publications are distributed across multiple journals, these journals are mainly oriented toward education- and technology-related perspectives.

Figure 3. Leading journals that focus on gamification in foreign language education

Leading Authors and Institutions

Table 2 illustrates the leading authors of this field and their current affiliations. As shown in Table 2, indicators such as total publications(TP), H-Index, and total citations (TC) are used to measure authors' contributions to this field. In particular, Waluyo, Budi from Walailak University, Yunus, M. M. from Universiti Kebangsaan Malaysia, Namaziandost, Ehsan, and Chu, Samuel Kai Wah from Hong Kong Metropolitan University stand out among other authors, demonstrating their significant scholarly impact in this area.

In addition, the results indicate that most of these leading authors were from Asia and the Middle East. Moreover, Figure 4 further presents the prolific institutions in this field. The results also demonstrated that Universities in Asia contribute substantially to research on gamification in foreign language education. In conclusion, Table 2 and Figure 4 collectively suggest that although publications were distributed across several authors and institutions, scholarly influence mainly concentrated in universities and institutions located in Asia and the Middle East.

Table 2

Leading Authors who focus on gamification in foreign language education

Author	[1]TP	H-Index	[2]TC	Current affiliation	Country
Waluyo, Budi	75	18	772	Walailak University	Thailand
Yunus, M. M.	271	27	4036	Universiti Kebangsaan Malaysia	Malaysia
Namaziandost, Ehsan	118	26	2002	Islamic Azad University	Iran
Chu, Samuel Kai Wah	197	44	8454	Hong Kong Metropolitan University	China
Hashim, Harwati	124	16	735	Universiti Kebangsaan Malaysia	Malaysia
Hew, Khe Foon Timothy	194	54	13519	The University of Hong Kong	China
Luo, Zhanni	31	10	343	Chongqing Normal University	China

Pham, Anh Tuan	25	5	83	FPT University	Viet Nam
Alsalhi, Najeh Rajeh	133	13	687	University of Sharjah	United Arab Emirates
Annamalai, Nagaletchimee	77	17	1082	Ajman University	United Arab Emirates

[1]TP= Total Publications, [2]TC= Total citations.

Figure 4. Leading institutions that focus on gamification in foreign language education

Leading countries(districts)

Figure 5 presents the leading countries contributing to this research field. The results indicate that the distribution of these publications is unbalanced, being mainly concentrated in a limited number of countries and districts. Several Asian and Middle Eastern countries or districts like China, Saudi Arabia, Indonesia, Hong Kong, and Malaysia dominate the research output of this field, while contributions from other countries are relatively limited.

This national-level distribution is in line with the previous findings related to learning authors and institutions, which indicate that a concentration of research activity occurs in a limited number of regions and areas.
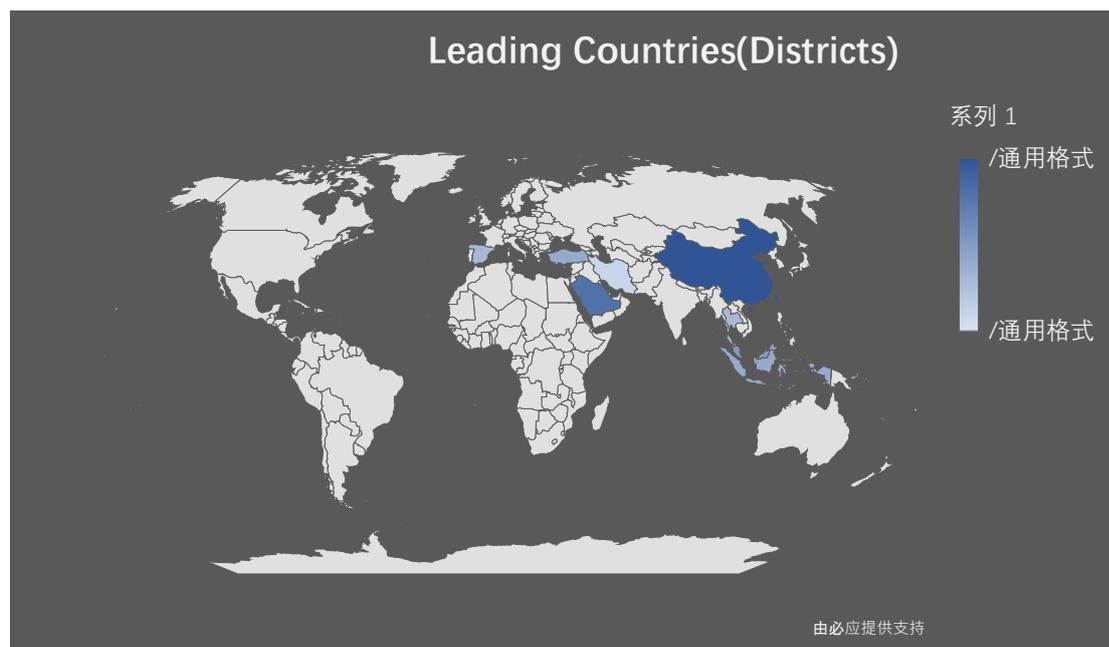
Figure 5. Leading countries that focus on gamification in foreign language education

Major research themes identified through keyword co-occurrence analysis

This section primarily aims to address research question 3 through co-occurrence analysis. To this end, the researchers applied VosViewer software to conduct this analysis. According to Figure 6, gamification is situated at the center of this figure, while linked to four major themes of this research field.

Theme 1(Green cluster): Game-based foreign language learning to enhance students' affective outcomes

Research within this theme mainly focuses on game-based foreign language learning to enhance students' affective outcomes, particularly students' engagement and motivation etc. For instance, a study conducted by Špruk et al. (2025) demonstrated that virtual reality (VR)-based games can positively improve students' motivation and language performance. The findings proposed that VR tends to be a supplementary tool in formal and individual foreign language learning. Moreover, Dorgham and Obiad (2025) provided evidence that gamification positively influences students' engagement and grammar performance through a quasi-experimental approach. Overall, these studies collectively suggest that gamification can serve as a positive affective means, which in turn supports students' learning outcomes in foreign language learning.

Theme 2(Red cluster): AI-driven game-based approach in foreign language learning

According to Figure 6, research within this theme primarily concentrated on AI-driven integration of game-based approaches into foreign language learning. In this context, Duolingo serves as a representative AI-powered platform in the English learning context. For instance, Asmar et al. (2025) explored Duolingo's integration into collaborative second language learning. Findings revealed that Duolingo can support both individual and group-based language acquisition, thereby enhancing students' overall learning experiences. Similarly, a study of Phanwiriyarat et al. (2025) further confirmed the effectiveness of Duolingo integration into a flipped classroom to improve EFL learners' speaking skills, confidence. Taken together, these studies provide evidence of the instructional potential of

an AI-driven game-based approach in facilitating interactive and learner-centered foreign language learning.

Theme 3(Blue cluster): Gamification as an Educational Technology in EFL Higher Education
As shown in Figure 6, this cluster includes keywords such as technology, English as a foreign language, vocabulary learning, and higher education. These keywords collectively indicate that a significant body of research focuses on the application of gamification as educational technology among university-level language learners.

For instance, John (2024) proved the effectiveness of gamification as an educational technology in English language teaching on enhancing students' vocabulary learning, motivation, teacher–student relationships, and communicative willingness. Similarly, Waluyo and Tran (2023) explored the effect of gamified vocabulary learning on asynchronous learning contexts. The results revealed that asynchronous gamified practice positively affects students' vocabulary acquisition and serves as a predictor of in-class vocabulary performance. This study highlighted the valuable potential of gamified quizzes beyond real-time instruction.

Theme 4(Purple cluster): Gamified Platforms and Mobile-Assisted Language Learning
This purple cluster is characterized by keywords such as Kahoot, Duolingo, and mobile-assisted language learning (MALL), which indicate that the integration of gamified platforms into language learning activities mainly occurs within mobile or application-based learning contexts. From an instructional perspective, Pingmuang and Koraneekij (2022) provided instructional design and empirical evidence to confirm the effectiveness of gamified mobile-assisted language learning applications on foreign language learners' writing performance. Besides that, Jeon (2022) examined students' self-directed use of mobile applications in informal contexts and found that students' continuous engagement with interactive and conversational mobile tools was closely associated with students' basic psychological needs, such as motivation and satisfaction. Taken together, these findings indicated that gamified platforms and mobile-assisted language learning not only support instructional design, students' learning performance but also promote learners' motivation and engagement.
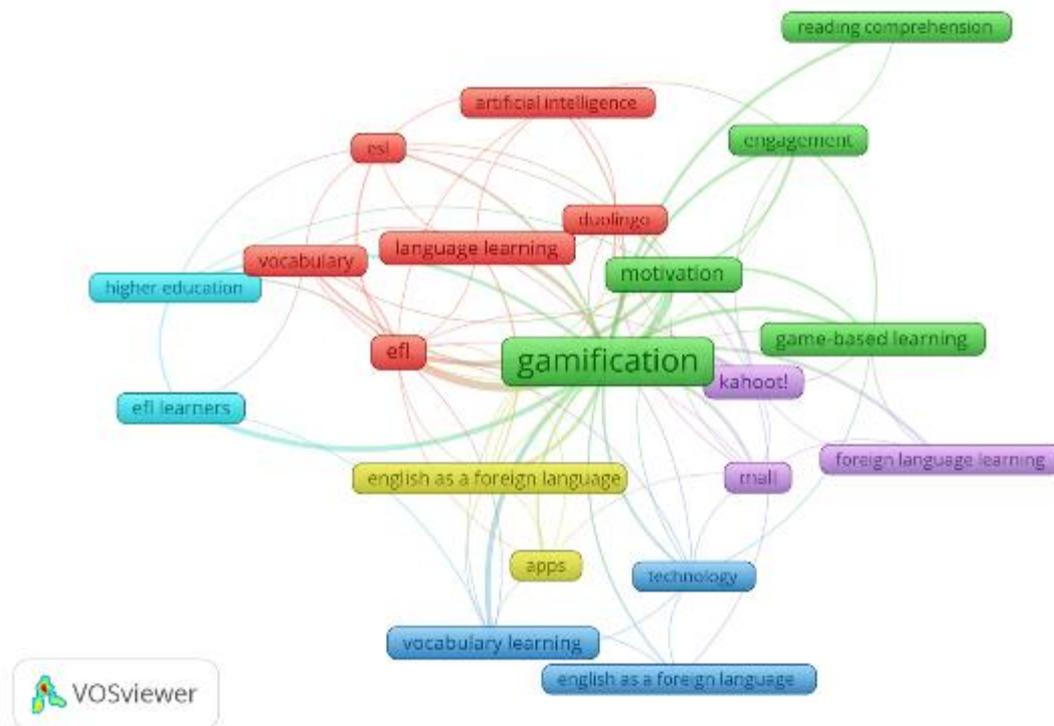
Figure 6. Keyword Co-occurrence Analysis

Emerging topics and future research directions in this research field

Building upon four major themes identified in the previous section, several emerging topics and future research directions have also been identified in the field of gamified foreign language learning.

First, existing research was mainly outcome-oriented, which extensively examined the effect of gamified foreign language learning on students' learning outcomes. However, research on a cognitive-oriented perspective remains limited. In this regard, future work should go deeper and pay greater attention to how gamification affects foreign language learners' cognitive aspects, such as regulation, autonomy, and psychological factors, thereby enhancing their engagement, motivation, and academic performance in foreign language learning.

Second, despite AI-driven platforms such as Duolingo having demonstrated a positive impacts on foreign language learning outcomes, AI platforms in this context were merely tools. Moreover, Duolingo serves as the dominant approach in AI integration. Future direction should strengthen the depth of research through theoretical explanations of how the AI-driven functions shape learning process, in terms of feedback, adaptivity, and interaction, while also exploring a wider range of AI platforms to expand the research context.

Third, existing research was primarily related to gamification as educational technology in EFL higher education. However, the application of gamification in other languages and different educational levels remains underexplored. Therefore, future studies should broaden the research scope to include other languages, as well as diverse learners, particularly beginners and lower-level learners.

Finally, existing studies adopted gamified mobile-assisted language learning; however, these studies remain platform-centered. Future research should continue to move toward theory-based instructional design that guides the integration of gamified MALL into formal and informal learning contexts.

Discussion

Based on the results presented in the previous section, research on gamified foreign language learning entered a clear expansion phase, indicating that gamification has become a scholarly interest within technology-oriented language education. However, current research has mainly focused on students' learning outcomes, in other words, outcome-oriented research, as most researchers have emphasized students' motivation, engagement, and academic performance. Although these empirical studies contributed to the effectiveness of gamified approach, the lack of cognitive-level limits the explanatory depth of the field, as gamification research without analyzing students' cognitive processes is still superficial and descriptive rather than explanatory and in-depth(Li et al., 2025; Mitchell & Co, 2024). Research seeks to identify how gamified foreign language learning impacts students' psychological factors, regulation during the learning process, which in turn affects their motivation, engagement. They are more explanatory, deepen our understanding of gamification, and facilitate reasonable utilization in future teaching practice.

In addition, the results also revealed that research output was mainly distributed across limited regions and districts. Meanwhile, the research scope of this field is primarily focused on EFL in higher education. Although this concentration facilitates the rapid accumulation of evidence, it constrains generalization of findings to other regions, cultures, and educational settings(Ali & Abdalgane, 2022; Cheng et al., 2025; Irfan & Arifin, 2025; Luo, 2023). To address these challenges, future work should strengthen the collaboration between scholars, institutions, and countries to encompass more diverse and inclusive studies across various regions and educational settings.

Furthermore, according to the results, AI platform integration into gamified foreign language learning has become an emerging trend. AI-supported gamified platforms provide real-time feedback, personalized learning content, and immersive learning experiences(Mohammed & Jesudas, 2025; Samur & Cömert, 2024). However, current research usually treats AI as an instructional tool. How to effectively integrate AI into gamified language learning is a major concern for the future. To overcome this, integrating a theoretical framework to guide the design of AI-supported gamified foreign language learning is not only beneficial but also necessary(Chen et al., 2025; Pitychoutis & Rawahi, 2024; Shan et al., 2024).

Conclusion

This review applied a bibliometric analysis to systematically examine the research landscape of gamified foreign language learning over the past 10 years. This review provides a comprehensive overview of the development of this research field and future direction by identifying publication trends, leading contributors, and emerging topics.

The results indicate that research on gamified foreign language learning has gained increasing scholarly attention and developed rapidly in recent years. However, this

publication pattern includes the following characteristics: research primarily focuses on learning outcomes, concentrates on EFL higher education settings, and adapts platform-oriented approach to AI integration. The current findings revealed that while empirical evidence contributed to the validation of the gamification effect, the research grounded in a theoretical foundation with diverse contexts remains limited.

To address the challenges above, future work should make some improvements from a theoretical and methodological perspective. From the theoretical perspective, theory-informed frameworks should be integrated into instructional design, particularly in AI-supported context, to ensure that AI serves as a meaningful pedagogical component. In addition, future work calls for explanatory research that examines learners' cognitive, psychological, and regulatory indicators during the learning process. From a methodological perspective, the findings also highlighted the importance of diverse contexts, learner populations, and technological platforms to realize the transferability of research findings in the future.

Despite its contributions, this study is not without limitations. This study was based solely on the Scopus database and English-written articles, which may exclude relevant studies indexed in other databases or published in other languages. However, this study contributes to the literature by identifying the developmental roadmap, emerging themes, and future direction of gamified foreign language learning research. By doing so, it provides educators and designers with a clearer future development blueprint for integrating theoretical frameworks, promoting contextual diversity, and advancing pedagogically grounded research in this developing field, in line with a urgent need for inclusive and equitable technology-enhanced education(Abuhassna et al., 2025)

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