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GAME-BASED ENGLISH LANGUAGE LEARNING: RESEARCH TRENDS AND KNOWLEDGE MAPPING THROUGH BIBLIOMETRIC ANALYSIS

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Abstract:

The integration of game-based learning (GBL) into English language education has gained significant scholarly attention over the past two decades, reflecting both the rapid growth of digital technologies and the urgent need to enhance learner motivation, engagement, and proficiency. Despite the increasing body of literature, few studies have systematically mapped the global research landscape to identify trends, influential works, and emerging themes in this field. Addressing this gap, the present study conducts a bibliometric analysis of research on game-based approaches in English language learning, aiming to provide a comprehensive overview of its development and intellectual structure. Data were collected using the Scopus advanced search function with the keywords "Game-Based Learning" and "English Language Learning," yielding a final dataset of 445 documents. To ensure accuracy, the dataset was cleaned and standardized using OpenRefine before further analysis. Descriptive statistics and publication trends were generated through Scopus Analyzer, while network visualizations of co-authorship, co-citation, and keyword co-occurrence were produced using VOSviewer software. The results reveal steady growth in publications since 2005, with a sharp increase after 2020, peaking in 2024. This reflects the heightened interest in digital pedagogy during and after the COVID-19 pandemic. Taiwan, China, and Malaysia emerged as leading contributors, while highly cited works emphasized the impact of mobile, virtual, and gamified learning environments on motivation, vocabulary acquisition, and communicative competence. Co-occurrence keyword analysis highlighted six thematic clusters, including pedagogy, learner motivation, technology integration, and

vocabulary learning, underscoring the field's multidisciplinary nature. Overall, this study contributes to the body of knowledge by mapping global patterns, identifying research hotspots, and highlighting opportunities for future inquiry into the evolving role of GBL in English language learning.

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Keywords:

Game-Based Learning, English Language Learning, ESL, EFL



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Introduction

Game-based learning (GBL) has gained prominence as an innovative approach in education, utilizing the engaging and interactive elements of games to improve learning outcomes. This approach has gained considerable momentum in language education, especially in the teaching of English as a foreign language (EFL) and English as a second language (ESL). The integration of game mechanics into educational content aims to foster motivation, engagement, and a positive attitude towards learning, which are crucial for language acquisition. This introduction and literature review will study the influence of GBL on English language learning, examining its benefits, challenges, and the various contexts in which it has been implemented.

The effectiveness of GBL in language education has been widely documented. Studies have shown that GBL can significantly improve academic performance, particularly in vocabulary and grammar acquisition. For instance, a study involving undergraduate engineering students in Chennai, India, revealed that a Baamboozle game-based intervention led to substantial improvements in vocabulary and grammar skills, as well as enhanced student motivation and engagement (Rajendran et al., 2025). Similarly, research on Ukrainian children learning Italian through games demonstrated that the experimental group, which used GBL, demonstrated a greater improvement in vocabulary acquisition compared to the control group that employed traditional methods (Frolli et al., 2023). These findings underscore the potential of GBL to improve language learning outcomes by making the learning process more enjoyable and interactive.

Despite its benefits, game-based learning also presents certain challenges. One significant issue is the potential for negative stigmas and a lack of participation from non-gamers, which can hinder the effectiveness of GBL (Andersson, 2022). Additionally, the need for scaffolding support and the perceived quality and practicality of the learned language are critical factors

that influence the success of GBL initiatives. For example, a study on the use of digital games in an ESL classroom emphasized the need for thoughtful selection and integration of games to address the cognitive, affective, and social dimensions of learning (Ray & Ilangovan, 2024). This suggests that while GBL can be a powerful tool, its implementation must be thoughtfully planned to maximize its advantages and minimize potential limitations.

The role of digital platforms in game-based language learning has also been explored extensively. Digital game-based learning (DGBL) combines the entertainment value of games with educational content, creating a versatile and engaging learning experience. Research demonstrated that DGBL can improve learners' motivation, engagement, and overall language proficiency. For instance, a study on the use of a contextual GBL approach for teaching English grammar to EFL students in Taiwan found that the experimental group, which used the game-based approach, had a substantially lower error rate compared to the control group (C.-J. Lin et al., 2020). This highlights the potential of DGBL to provide meaningful and personalized learning experiences that can enhance language acquisition.

Moreover, the integration of game-based learning into language education has been shown to positively impact learner identity and investment. Various gamification as well as game-based pedagogical interventions, such as online quizzes and mobile games, have been used to support English lessons at the high school and university levels. These interventions have been found to significantly impact learner identity and raise investment in lesson content (Thanyawatpokin & Vollmer, 2022). Nevertheless, the success of these interventions depends on several factors, including teacher support, curriculum design, and the content of the games or gamified activities. This indicates that while GBL can enhance language learning, its effectiveness is influenced by the broader educational context and the specific implementation strategies used.

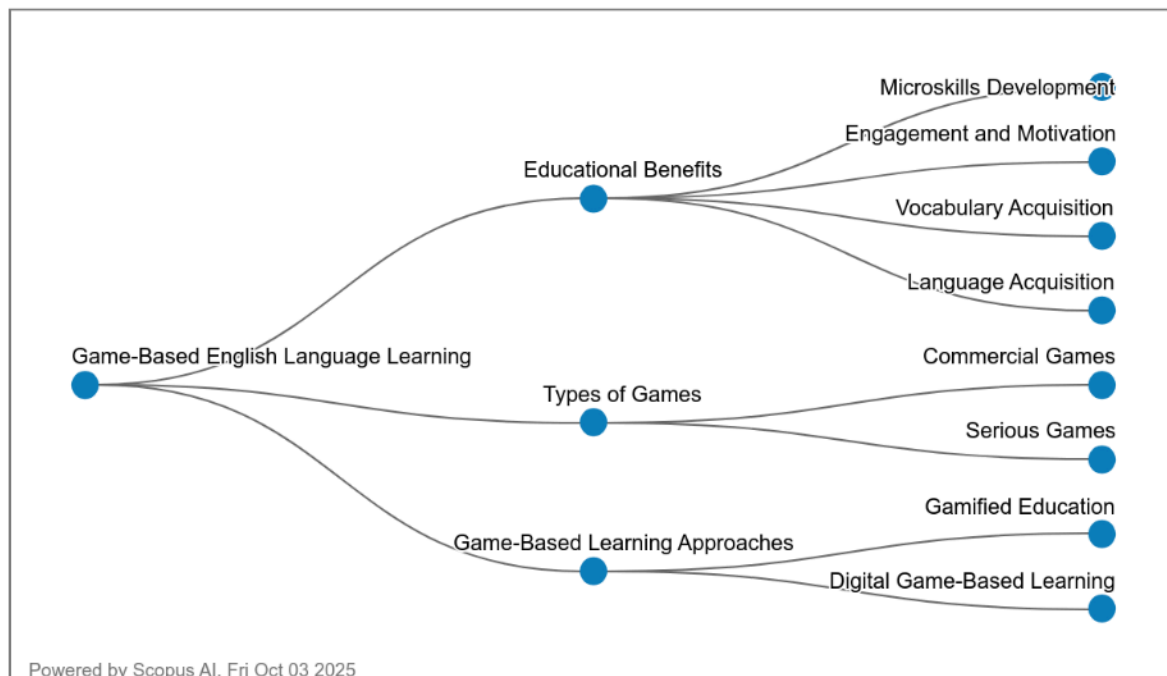


Figure 1: Concept Paper on Game-Based Learning in English Language Learning

Figure 1 shows that GBL is an effective approach in English language education, combining engaging game elements with language instruction to improve learners' motivation, participation, and proficiency. Studies demonstrate that GBL enhances vocabulary and

grammar acquisition, as seen in interventions like Baamboozle in India and contextual grammar games in Taiwan, where students showed lower error rates and higher engagement than peers in traditional settings. Digital game-based learning (DGBL) further strengthens this by blending interactive platforms with educational content, fostering learner identity and investment in lessons. However, the effectiveness of GBL depends on several factors, including teacher support, curriculum alignment, and the careful selection of games that address cognitive, social, and emotional aspects with regard to learning. Challenges such as negative perceptions from non-gamers, the need for scaffolding, and ensuring the practicality of learned language highlight the importance of thoughtful planning and implementation. Overall, the concept map emphasizes that while GBL offers great promise in making English learning more dynamic and enjoyable, its success relies on context-sensitive integration and continuous research to maximize its potential in diverse classrooms.

In conclusion, game-based learning offers a promising approach to English language education, with numerous studies highlighting its potential to improve learning outcomes, motivation, and engagement. However, the successful implementation of GBL requires careful consideration of various factors, including the selection and integration of games, the provision of scaffolding support, and the broader educational context. As the field continues to evolve, further research is required to tackle the challenges and enhance the effectiveness of game-based learning in language education.

Research Questions

- RQ1 - What are the research trends in online learning studies according to the year of publication?
- RQ2 - What are the most cited articles?
- RQ3 - Where are the top 10 countries based on the number of publications?
- RQ4 - What are the author keywords related to the study?
- RQ5 - What is co-authorship by countries' collaboration?

Methodology

Bibliometric analysis is more than just counting publications; it systematically collects, organizes, and examines bibliographic records from scientific outputs to reveal deeper patterns in knowledge production (Alves et al., 2021; Assyakur & Rosa, 2022; Verbeek et al., 2002). While it includes basic descriptive indicators, for instance, publication outlets, time trends, and prolific authors (Wu & Wu, 2017), its real strength lies in advanced techniques like co-citation and network mapping, which trace intellectual linkages across the field. A rigorous literature review, therefore, demands an iterative cycle of keyword refinement, comprehensive searching, and critical evaluation to construct a robust and credible evidence base (Fahimnia et al., 2015). Guided by this principle, the present study concentrated on highly cited works, since they often capture the theoretical and methodological anchors of a discipline. To safeguard accuracy, Scopus was chosen as the data source because of its extensive and reliable coverage (Al-Khoury et al., 2022; di Stefano et al., 2010; Khiste & Paithankar, 2017). Furthermore, only peer-reviewed journal articles were considered, while books and lecture notes were deliberately excluded to maintain consistency and quality (Gu et al., 2019).

Data Search Strategy

The data in this study were collected via the Scopus advanced search function, chosen for its wide and reputable coverage of peer-reviewed academic publications. The search was conducted in October 2025 with the string TITLE-ABS-KEY (“Game Based Learning” OR GBL) AND ENGLISH AND (LANGUAGE OR learning), which was carefully structured to capture works that explicitly connect *game-based learning* (GBL) with English language and learning contexts. To refine the results and ensure academic quality, additional filters were applied. The publication stage was limited to *final* versions, thereby excluding in-press articles that may not yet reflect complete peer-reviewed findings. For document type, only conference proceedings, journal articles, conference reviews, reviews, and book chapters were included, as these forms provide both empirical evidence and conceptual analysis. In contrast, books and lecture notes were not included due to their inconsistent peer-review processes. The language filter was set to English, reflecting the study’s focus on English language education and ensuring consistency in data analysis. Screening criteria further guided inclusion and exclusion decisions: publications had to be in English, peer-reviewed, and in final publication form; non-English works, in-press papers, and books were excluded. Following this structured process, the final data set consisted of 445 documents. This dataset represents a robust and credible body of literature, balancing breadth and focus, and providing a comprehensive foundation for bibliometric analysis. By applying a transparent and systematic search strategy, the study ensured that the resulting data were reliable, replicable, and representative of research trends in GBL for English language education.

TABLE 1 The Search String

Scopus	TITLE-ABS-KEY ((“Game Based Learning” OR GBL) AND ENGLISH AND (LANGUAGE OR learning)) AND (LIMIT-TO (PUBSTAGE , “final”)) AND (LIMIT-TO (DOCTYPE , “ar”) OR LIMIT-TO (DOCTYPE , “cp”) OR LIMIT-TO (DOCTYPE , “cr”) OR LIMIT-TO (DOCTYPE , “re”) OR LIMIT-TO (DOCTYPE , “ch”)) AND (LIMIT-TO (LANGUAGE , “English”))
	Access date, October 2025

TABLE 2 The Selection Criterion Is Searching

Criterion	Inclusion	Exclusion
Language	English	Non-English
Literature type	Journal (Article), Conference, Review	Book
Publication Stage	Final	In Press

Data Analysis

VOSviewer is a widely recognized bibliometric software created by Nees Jan van Eck and Ludo Waltman at Leiden University, the Netherlands (Van Eck & Waltman, 2010, 2017). Designed to support the visualization and analysis of scientific literature, it specializes in building intuitive network maps, clustering related items, and producing density visualizations. The software facilitates the exploration of co-authorship, co-citation, and keyword co-occurrence networks, providing scholars with a comprehensive understanding of the intellectual structures within a field. Its interactive interface, frequent updates, and flexible customization features make it user-friendly for both beginners and advanced researchers, while its compatibility with diverse bibliometric data sources enhances its applicability across disciplines.

One of VOSviewer's strengths lies in its ability to translate complex bibliometric datasets into clear, interpretable maps that reveal hidden relationships and trends. By applying clustering and visualization techniques, it helps uncover keyword patterns, author collaborations, and thematic groupings. This study employed VOSviewer version 1.6.20 to analyze Scopus datasets (2004–December 2024) containing publication years, titles, author names, journals, citations, and keywords. Unlike traditional Multidimensional Scaling (MDS), VOSviewer situates items in a low-dimensional space based on association strength (AS_{ij}), a normalization method that compares observed co-occurrences against expected values under statistical independence (Van Eck & Waltman, 2007); Appio et al., 2014), given by:

$$AS_{ij} = \frac{C_{ij}}{w_i w_j}$$

This approach ensures that the spatial proximity between items meaningfully reflects their relatedness, making VOSviewer an indispensable tool for mapping research landscapes and identifying emerging knowledge structures.

Findings

What Are the Research Trends in Online Learning Studies According to The Year of Publication?

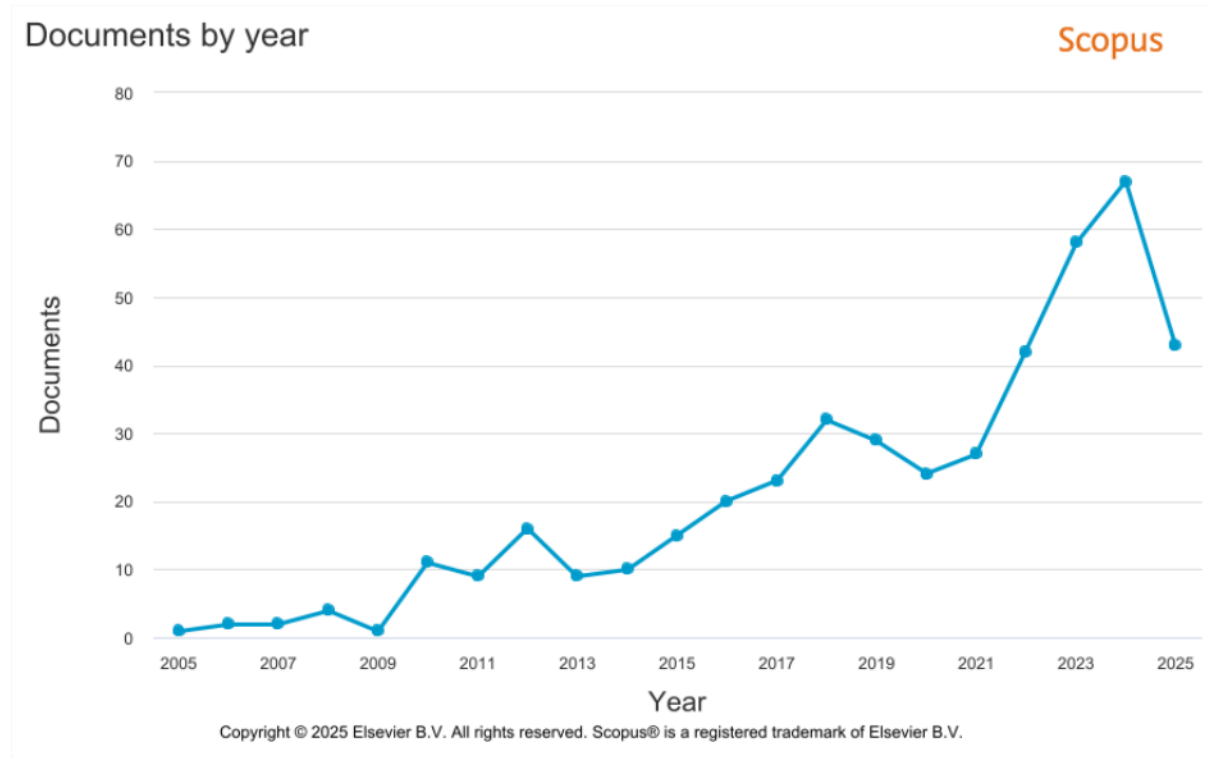


Figure 2: Number Of Documents Based on Year of Publication

The publication trend from 2005 to 2025 shows a steady yet uneven growth in studies on GBL in English language education, with notable acceleration over the past decade. In the early years (2005–2010), the number of publications was minimal, with only one or two papers annually, reflecting the novelty of the field and limited global attention towards game-based pedagogies in language learning at that time. From 2011 to 2018, the output increased moderately, peaking at 32 publications in 2018. This phase aligns with the growing interest in digital learning tools, mobile-assisted language learning, and gamification, which began to influence teaching practices across higher education and school contexts. The years between 2019 and 2021, though marked by some fluctuation, still demonstrated rising momentum, likely fueled by advancements in educational technologies and wider adoption of blended and online learning environments.

A sharp surge occurred from 2022 onward, with a remarkable peak in 2024 at 67 publications, before a slight decline to 43 in 2025. This steep growth can be attributed to several factors. First, the COVID-19 pandemic significantly accelerated the integration of digital and game-based platforms in education, prompting researchers to explore innovative approaches to sustain student engagement in virtual classrooms. Second, global recognition of 21st-century learning skills, alongside policy support for technology-enhanced pedagogy, has strengthened scholarly interest in GBL as a strategy for improving language acquisition. The spike in 2024 suggests a cumulative effect of post-pandemic research initiatives, funding support, and the availability of digital infrastructure, which enabled more empirical studies and evaluations. The

slight drop in 2025 may not signal a decline but rather the natural stabilization of publication cycles, as high-impact works undergo longer review and publication processes. Overall, the trend highlights the growing legitimacy and importance of game-based approaches within English language learning research.

What Are the Most Cited Articles?

TABLE 3 Most Cited Authors

Authors	Year	Source title	Cited by
Liu & Chu (2010)	2010	Computers and Education	460
Chen & Hsu (2020)	2020	Computers and Education	192
Hwang et al. (2017)	2017	Computers and Education	190
Yang et al. (2010)	2010	Computers and Education	184
Reinders & Wattana (2015)	2015	ReCALL	174
Hwang et al. (2016)	2016	Computer-Assisted Language Learning	150
Yang et al. (2020)	2020	Computers and Education	149
Lin et al. (2018)	2018	Pertanika Journal of Social Sciences and Humanities	140
Peterson (2010)	2010	Computer-Assisted Language Learning	132
Vandercruyssen et al. (2013)	2013	Educational Technology Research and Development	115

The citation data in Table 3 above shows that the most influential studies in game-based English language learning are concentrated in high-impact journals like *Computers and Education* and *Computer Assisted Language Learning*. Liu and Chu’s (2010) study leads with 460 citations, underscoring its pioneering role in demonstrating how ubiquitous games can enhance English listening and speaking skills while boosting learner motivation. Similarly, Yang et al. (2010) and Peterson (2010) made early contributions by integrating virtual reality and online role-playing games, attracting significant attention as these technologies opened new frontiers in immersive language learning. The high citation counts for these works reflect their status as foundational studies that shaped subsequent research directions in digital and game-based pedagogy.

Later works, such as those by Chen and Hsu (2020) with 192 citations and Hwang et al. (2017) with 190 citations, highlight the shift toward mobile and VR-based learning environments, focusing on self-regulation, anxiety reduction, and learner behaviours. Research by Reinders and Wattana (2015) and Lin et al. (2018) expanded the discussion to include affective factors and gamified tools like Kahoot! which resonate widely with educators due to their practicality in classroom settings. Collectively, these highly cited papers illustrate the evolution of the field: from early explorations of immersive gaming environments to contemporary concerns with motivation, affect, and scalable classroom gamification. Their impact suggests that studies

offering both theoretical insight and practical application continue to shape the scholarly and pedagogical relevance of GBL in English language learning.

Where Are the Top 10 Countries Based on The Number of Publications?

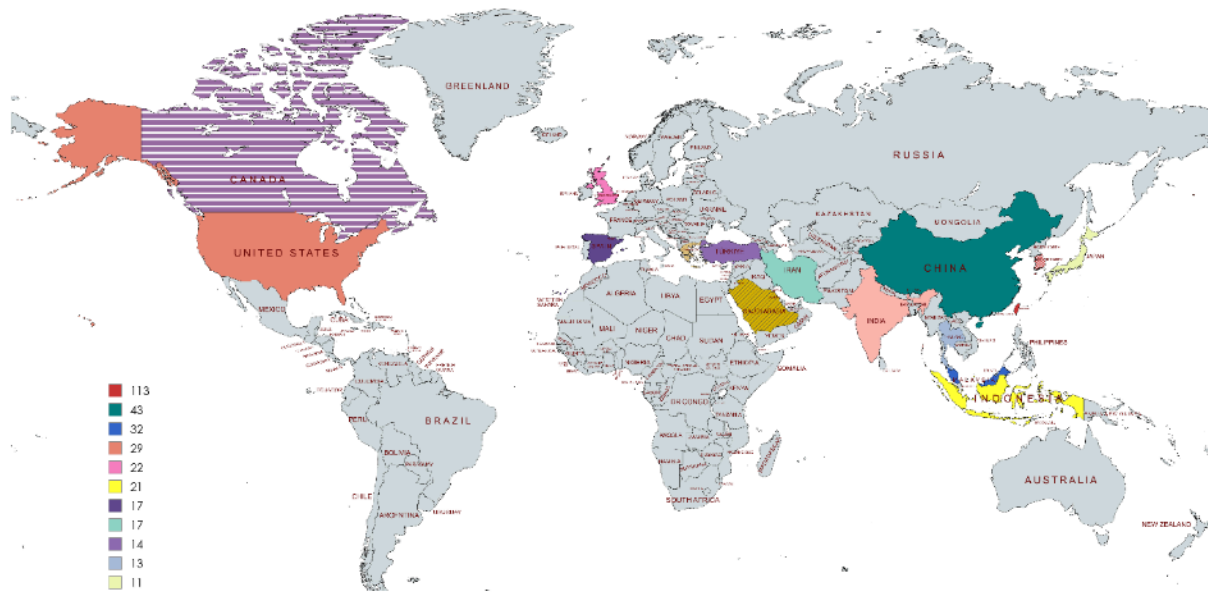


Figure 3: Top Country Based on The Number of Publications

The top ten contributing countries highlight clear regional patterns in the research on GBL in English language education. Taiwan leads with a remarkable 113 publications, reflecting its strong policy emphasis on English proficiency and its proactive embrace of technology-enhanced pedagogy. China (43) follows, supported by significant investments in digital education and a national drive to strengthen global academic presence. Malaysia (32) ranks third, where game-based methods are increasingly explored to address ongoing challenges in English proficiency under government-led educational reforms. The United States (29) and the United Kingdom (22) remain influential, though their lower counts compared to Asian counterparts suggest that research is more dispersed across broader educational technology themes rather than focused exclusively on English language learning. The remaining positions are occupied by Indonesia (21), Iran (17), Spain (17), Turkey (14), and Japan (13), each reflecting regional motivations and contexts. In Indonesia and Iran, rising publication numbers can be linked to growing academic interest in innovative tools to overcome English language barriers. Spain’s engagement points to Europe’s recognition of gamification as an emerging pedagogical trend. Turkey and Japan contribute steadily, supported by policy reforms and cultural emphasis on global communication skills. Collectively, the top ten countries reveal that Asia dominates the field, driven by pressing needs for English proficiency and strong support for digital learning initiatives, while Europe and North America provide complementary but less concentrated contributions.

What Are the Author Keywords Related to The Study?

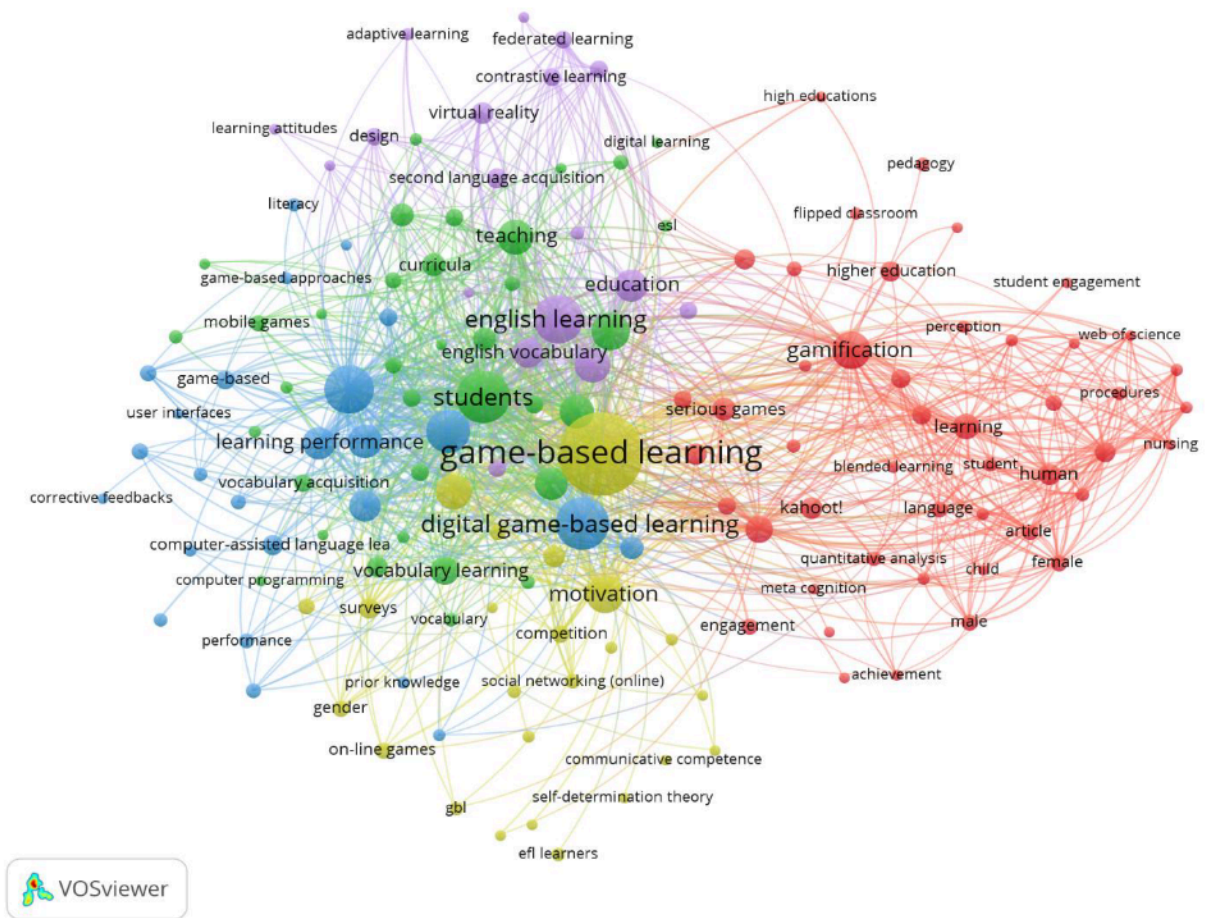


Figure 4: Network Visualization of Keywords Co-Occurrence

Figure 4 shows the co-occurrence analysis of author keywords using VOSviewer, which identifies how frequently keywords appear together across publications, revealing the conceptual structure with respect to a research field. In this study, the full counting method was applied, with a minimum threshold of five occurrences. Out of 1,275 keywords, 149 met this threshold, and a minimum cluster size of five generated five distinct clusters. This means that only the most prominent and frequently interconnected keywords were included in the map, allowing for clearer visualization of major themes. The analysis highlights that “game-based learning” (242 occurrences, total link strength 1269) is the most dominant keyword, acting as the central node in the network. Other high-frequency terms such as “students” (95), “digital game-based learning” (98), “English learning” (81), “e-learning” (66), and “gamification” (50) indicate the breadth of research interests, ranging from the pedagogical design of games to learner engagement, performance, and motivational outcomes.

The generated clusters reflect the diverse subfields within game-based English language learning. For example, one cluster emphasizes pedagogical approaches and learner outcomes, with keywords like “motivation,” “learning performance,” and “student engagement.” Another cluster relates to technology-enhanced environments, highlighted by terms such as “virtual reality,” “augmented reality,” and “mobile learning.” The presence of “English-as-a-foreign-language,” “vocabulary learning,” and “grammar” shows the strong application of GBL in language acquisition contexts. Importantly, the integration of psychological constructs such as

“learning motivation,” “anxiety,” and “self-regulated learning” reflects a growing interest in how affective and cognitive factors shape success in GBL environments. Overall, the findings demonstrate that research on game-based English language learning has matured into a multidisciplinary field, bridging educational technology, pedagogy, and applied linguistics. By mapping these interconnected themes, the study adds to the body of knowledge by clarifying the dominant research directions and highlighting emerging areas such as mobile-assisted learning and immersive technologies.

What Is Co-Authorship by Countries' Collaboration?

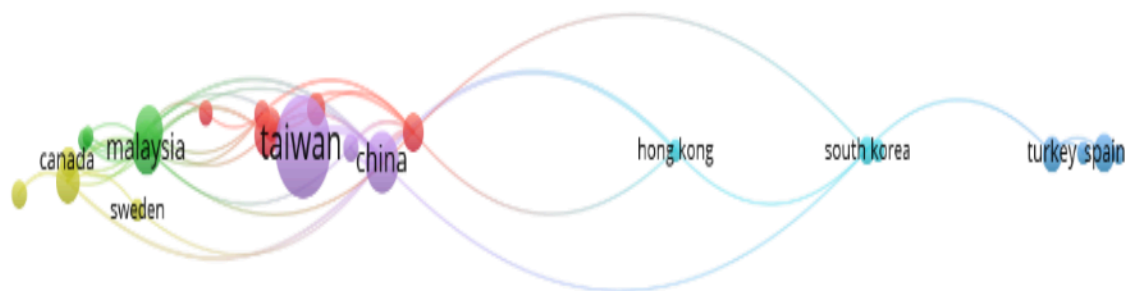


Figure 5: Co-Occurrence Analysis of Author Keywords

Figure 5 illustrates the co-occurrence analysis of author keywords in VOSviewer, which is a bibliometric technique that identifies how often specific keywords appear together across research publications, thereby uncovering thematic connections and intellectual structures within a field. By mapping these relationships, researchers can visualize clusters of related concepts, showing dominant themes, emerging topics, and interdisciplinary linkages. In this study, the analysis was conducted using the full counting method, with a minimum threshold of five occurrences. Out of 70 keywords, 26 met the threshold. With the minimum cluster size set at six, six clusters were generated. This approach ensures that only the most relevant and interconnected keywords are represented, making the visualization clearer and more meaningful for interpreting research trends. The resulting clusters illustrate how different countries contribute to shaping the global landscape of GBL in English language education, reflecting both collaborative networks and national research priorities.

The findings reveal that Taiwan dominates the field with 114 documents and 3,473 citations, demonstrating its long-standing leadership and high impact in technology-enhanced English language education. China (42 documents, 745 citations) and Malaysia (32 documents, 383 citations) also show significant contributions, reflecting strong regional emphasis on improving English proficiency through digital and game-based tools. Western countries like the United Kingdom and the United States contribute consistently, though with fewer documents, while emerging players like Iran and Indonesia indicate growing interest and expanding research capacity. Countries such as Thailand, Turkey, Japan, and South Korea further highlight Asia's prominence in this area, whereas European contributions, though smaller, add to the diversity of perspectives. Collectively, this co-occurrence mapping demonstrates that research on game-based English language learning is globally distributed, but heavily led by Asian countries, especially Taiwan, with collaborations and knowledge sharing across regions strengthening the body of knowledge. The patterns underline not only regional priorities but also the global recognition of game-based learning as a transformative approach in language education.

Conclusion

The aim of this study was to map and analyze the global research landscape of game-based learning in English language education through bibliometric techniques. Using data retrieved from Scopus and processed with Scopus Analyzer, OpenRefine, and VOSviewer, the analysis addressed research trends, influential works, contributing countries, recurring keywords, and collaboration patterns. The results show that publications on this topic have grown steadily since 2005, with a marked acceleration after 2020, reflecting increased reliance on digital tools and pedagogical innovation during and after the COVID-19 pandemic. Taiwan, China, and Malaysia emerged as leading contributors, while highly cited studies emphasized the role of mobile, virtual, and gamified platforms in enhancing vocabulary, grammar, motivation, and learner engagement. Keyword co-occurrence analysis revealed clusters centered on pedagogy, technology integration, and affective factors, confirming that this domain has developed into a multidisciplinary field spanning applied linguistics, educational technology, and psychology.

This study adds to the field by providing a consolidated overview of global trends, highlighting thematic concentrations, and identifying regional strengths. These insights extend previous literature by clarifying how game-based approaches are evolving and where future research is most active. From a practical perspective, the findings suggest that educators and policymakers can draw on established research hotspots to design more engaging, technology-enhanced learning environments for English acquisition.

Certain limitations should be noted, including reliance on a single database and the exclusion of non-English documents, which may have narrowed coverage. Future studies could expand the dataset by including multiple databases, integrating qualitative content analysis, or examining the long-term impact of specific gamification strategies in classroom practice. Overall, this bibliometric study underscores the growing importance of game-based learning as a transformative approach to English language education. By mapping the field's intellectual structure and highlighting global patterns, the research reinforces the significance of bibliometric analysis as a tool for understanding developments, guiding practice, and shaping future inquiry in educational innovation.

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