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Trends and Patterns in Digital Game-Based Learning for English Vocabulary Acquisition: A Bibliometric Analysis (2021–2025)

Fatkhur Rohman Sujarwo[1*], Nuni Widiarti[2], Ellianawati Ellianawati[3], and Fahrur Rozi[4]

[1*]Post Graduate School, Primary Education Study Program, Universitas Negeri Semarang, Semarang, Indonesia
[2]Chemistry Education, Faculty of Science, Universitas Negeri Semarang, Semarang, Indonesia
[3]Physics Education, Faculty of Mathematics and Natural Sciences, Universitas Negeri Semarang, Semarang, Indonesia
[4] Department of Economic Education, Faculty of Economics and Business, Universitas Negeri Semarang, Semarang, Indonesia
[*]fathurrohmac300@students.unnes.ac.id

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Abstract

This study aims to map the trends and dynamics of research on Digital Game-Based Learning (DGBL) for vocabulary acquisition in English language learning within the EFL (English as a Foreign Language) context during the 2021–2025 period using bibliometric analysis. Rapid advancements in digital technology have driven the use of digital games to enhance engagement and effectiveness in English language learning. Previous studies indicate that DGBL improves vocabulary acquisition, motivation, and retention. In addition, most have focused on limited applications; bibliometric research on DGBL in the EFL context remains scarce. This study provides a current bibliometric analysis using various databases and visualization techniques to uncover research patterns and thematic structures. Data were collected using Publish or Perish version 8 from Crossref, Google Scholar, and Scopus, and analyzed with VOSviewer. Of 2,027 articles, 132 were selected for analysis. The results show steady growth in publications, with Crossref as the primary source. Indonesia, China, and Saudi Arabia are the main contributors. Three main clusters were identified: digital technology in education, game-based learning strategies, and vocabulary acquisition in learning English. These findings provide useful references for teachers and researchers in developing and implementing learning.

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INTRODUCTION

The development of information and communication technologies has transformed learning paradigms across various disciplines, including language teaching. In the context of developing English language proficiency, one of the most challenging aspects is vocabulary acquisition. Vocabulary is considered a fundamental foundation for developing the four language skills (listening, speaking, reading, and writing), making innovation in vocabulary learning methods highly essential. One innovative approach that has received considerable attention is Digital Game-Based Learning (DGBL), which involves the use of digitally designed games pedagogically aimed at supporting language learning.

Several studies have shown that the integration of DGBL in English language learning can significantly enhance students' motivation, engagement, and vocabulary retention (Vnucko & Klimova, 2023; Jia et al., 2024; Morales et al., 2024). The effectiveness of DGBL is also influenced by game design, platform characteristics, and the linguistic context of learners (Lu et al., 2023; Kazu & Kuvvetli, 2023; Chowdhury et al., 2024;). Furthermore, the application of mobile-based gamification and augmented reality has been shown to expand immersive and interactive learning experiences in vocabulary acquisition (Ibrahim et al., 2022; Hung & Yeh,2023; Wu et al., 2025).

In addition, several studies highlight the role of affective factors, such as emotional engagement and flow experience, as determinants of successful vocabulary learning through digital games (Al-Aosail et al., 2024; Calafato & Clausen, 2024; Mauidloh et al., 2024). Other research also emphasizes that the integration of adaptive technologies, such as AI-based feedback and mobile-assisted learning, can strengthen cognitive processes in the English vocabulary acquisition (Badroeni et al., 2022; Pratiwi et al., 2022; Javaid et al., 2024). However, most of these studies still focus on experimental and case study approaches without mapping publication trends, author collaborations, or thematic networks bibliometrically (Hwang et al., 2023; Xiong et al., 2024; Li & Kushairi, 2025)

Although the potential of DGBL has been widely discussed in experimental studies and systematic reviews, research focusing on bibliometric trend mapping, namely the integration of publication counts, citations, keywords, thematic clusters, and geographical distribution, remains relatively limited. For instance, the study conducted by Zou et al., (2021) by titled "Digital Game-Based Vocabulary Learning: Where Are We and Where Are We Going?" examines the theoretical and methodological aspects of DGBL but does not provide a quantitative analysis of global publication trends. Similarly, the findings by Li et al (2025) highlight general developments in DGBL without specifically focusing on vocabulary or presenting a ranking of influential articles based on the number of citations over a specific time period. Another limitation is that most studies rely on a single database (such as Scopus or Web of Science), which may overlook articles not indexed in those repositories.

The research gap arises from the lack of comprehensive studies that integrate multiple international data sources to map trends, dynamics, and scientific collaborations in this field. Previous studies have tended to rely on a single database, such as Scopus or Google Scholar, resulting in findings that do not fully represent publication activities across regions and institutions. Moreover, few studies have systematically identified the most influential authors, the highest-cited articles, and the geographical distribution of countries contributing to the development of DGBL in English vocabulary teaching.

The novelty of this research lies in its bibliometric approach that integrates multiple international databases, Crossref, Google Scholar, and Scopus, analyzed using Publish or Perish version 8 and VOSviewer. Covering the period from 2021 to 2025, this study provides new insights into the post-pandemic evolution of DGBL topics, particularly in the integration of technologies such as mobile learning, gamification, augmented reality, and artificial intelligence in language education. Specifically, this research identifies the ten most-cited articles and the countries with the highest publication contributions—an aspect that has rarely been explored in previous bibliometric studies. This approach enables a more holistic mapping of scientific collaboration networks, keyword trends, and the future directions of DGBL development. Therefore, the objectives of this study are:

RQ1: Who are the authors of Digital Game-Based Learning (DGBL) articles for English vocabulary acquisition with the top 10 highest citations?

RQ2: How many DGBL-related publications for English vocabulary acquisition are published each year?

RQ3: How are DGBL research publications distributed by authors' or institutions' countries of origin?

RQ4: How are the research trends and thematic relationships in DGBL visualized using VOSviewer based on keyword analysis and author collaboration?

This study aims to map the development of DGBL research for English vocabulary acquisition by identifying key contributors, publication trends, geographical distribution, and emerging themes. The findings provide an overview of current progress and future research directions in technology-enhanced language learning.

METHODS

This research method was developed based on bibliometric study guidelines using the Crossref, Google Scholar, and Scopus databases, as these sources are considered the most representative in providing relevant, reputable journals with extensive and regular publication coverage. The data collection process began with an online search using the Publish or Perish (PoP) application on 2 October 2025. The search was conducted by entering the keywords ‘Digital Games,' 'Learning English,' and 'Vocabulary' for the period 2021 to 2025. From a total of 2,027 initial records obtained, a stepwise screening process was conducted. In the first stage, 315 duplicate records were removed, leaving 1,712 documents. Subsequently, during the title and abstract screening, 1,544 articles were excluded due to irrelevance to the research topic, resulting in 168 documents that met the initial eligibility criteria. In the next stage, full-text accessibility and data completeness were assessed, and 36 articles were excluded because they were not fully accessible or had incomplete bibliographic information. As a result, a total of 132 documents met the inclusion criteria and were selected for final analysis. The data that passed the screening were then saved in .ris format and further processed using several systematic review analysis tools, namely Microsoft Excel for initial data processing and VOSviewer for mapping publication networks. The VOSviewer software was used to find trends in research on DGBL and English vocabulary. The steps used in PRISMA Page et al., (2021) included identification, screening, eligibility, and inclusion as shown in Figure 1.

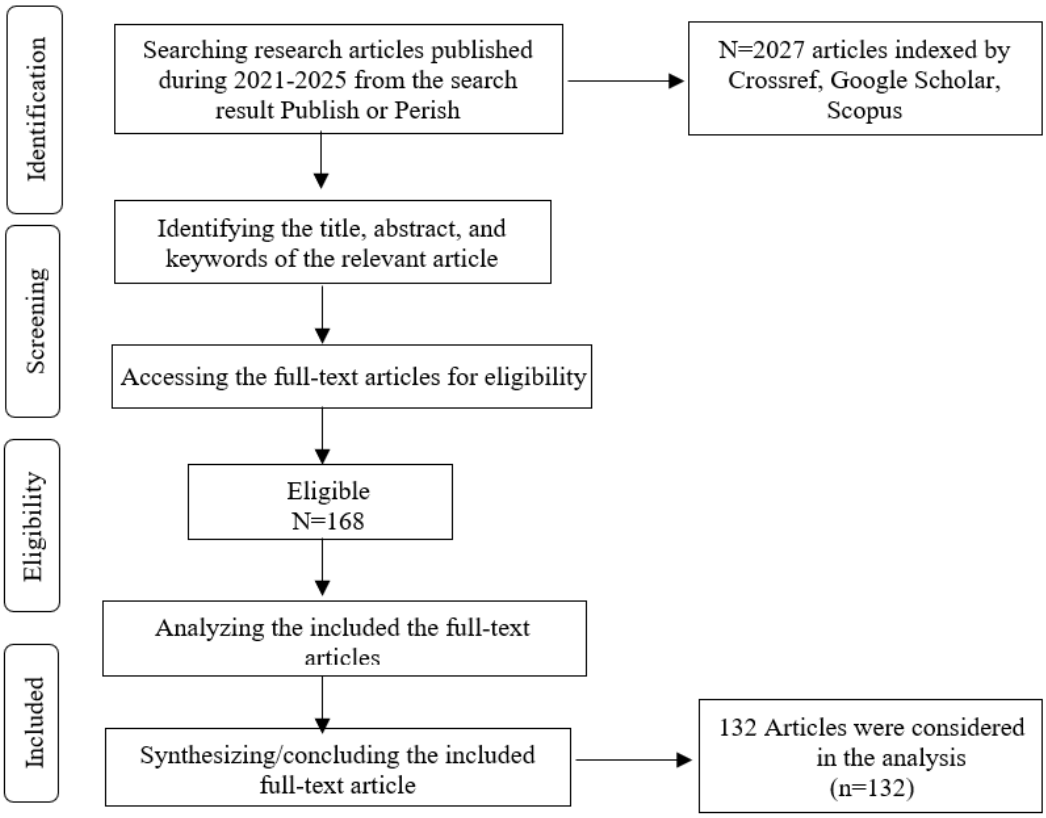

Figure 1 Research procedure

RESULTS AND DISCUSSION

This chapter presents the results and discussion of a bibliometric analysis conducted on research related to DGBL for English vocabulary acquisition published between 2021 and 2025. This search also displays a list of the most frequently cited articles, publications per year, countries of origin, and trend analysis using VOSviewer.

Ranking of DGBL for English Vocabulary Articles Writers Based on Number of Citations

The first criterion is the ranking of DGBL article authors based on the highest number of citations; the results are presented in Table 1. Based on the table, it can be observed that the publication with the highest number of citations, reaching 158 citations, belongs to Fithriani (2021) with the article titled "The utilization of mobile-assisted gamification for vocabulary learning: Its efficacy and perceived benefits." In addition, several other highly cited studies focus on the use of gamified platforms and digital tools such as Quizlet, Wordwall, Duolingo, and Kahoot in vocabulary learning. These findings indicate that the integration of digital game-based learning into English vocabulary instruction has been widely explored through various learning strategies and technological media. Such approaches have been shown to enhance learners' motivation, engagement, and vocabulary retention by providing interactive and enjoyable learning experiences. Through the application of DGBL, students are encouraged to participate actively, collaborate, and develop essential language skills in an engaging digital environment that supports both cognitive and affective learning outcomes.

Table 1 Ranking of article writers by number citations

Author	Title	Number of Citations
Fithriani (2021)	The utilization of mobile-assisted gamification for vocabulary learning: Its efficacy and perceived benefits	158
Waluyo & Bucol (2021)	The impact of gamified vocabulary learning using Quizlet on low-proficiency students	140
Hasram et al. (2021)	The effects of wordwall online games (Wow) on English language vocabulary learning among year 5 pupils	133
Karacan & Akoğlu, (2021)	Educational Augmented Reality Technology for Language Learning and Teaching: A Comprehensive Review	130
Li (2021)	Does game-based vocabulary learning APP influence Chinese EFL learners' vocabulary achievement, motivation, and self-confidence?	127
Lei et al. (2022)	The Impact of Mobile-Assisted Language Learning on English as a Foreign Language Learners' Vocabulary Learning Attitudes and Self-Regulatory Capacity	112
Panmei & Waluyo (2023)	The pedagogical use of gamification in English vocabulary training and learning in higher education	106
Tiara et al. (2021)	The students perception about use of Duolingo application for improving English vocabulary	90
Al-Ahdal & Alharbi (2021)	MALL in collaborative learning as a vocabulary-enhancing tool for EFL learners: A study across two Universities in Saudi Arabia	87

Ahmed et al. (2022)	An empirical study on the effects of using Kahoot as a game-based learning tool on EFL learners' vocabulary recall and retention	85

Number of Manuscripts Published per Year

The analysis of the number of manuscripts published per year provides valuable insights into the development and research dynamics of DGBL in enhancing English vocabulary learning. By examining the annual publication trends, it becomes possible to identify periods of growth, stability, or decline in scholarly interest within this research domain. This trend analysis also reflects how global attention toward DGBL as a pedagogical innovation in language education has evolved over time. Furthermore, comparing publication data from multiple databases such as Crossref, Google Scholar, and Scopus helps to reveal differences in visibility, accessibility, and indexing coverage of studies related to DGBL for English vocabulary acquisition, as displayed in Figure 2.

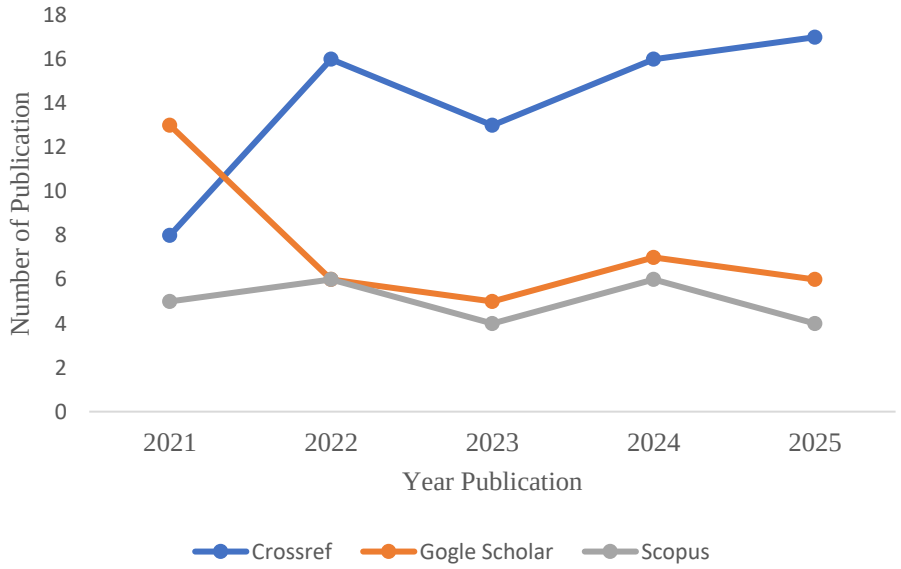

Figure 2 Yearly distribution of manuscripts published

The data in Figure 2 present the annual number of publications on DGBL for English vocabulary acquisition recorded in three databases, namely Crossref, Google Scholar, and Scopus, during the 2021–2025 period. In 2021, the highest number of publications was recorded in Google Scholar with 13, followed by Crossref with 8 and Scopus with 5. In 2022, Crossref showed a significant increase with 16 publications, while Google Scholar and Scopus each recorded 6. In 2023, all three databases experienced a decline, with Crossref at 13, Google Scholar at 5, and Scopus at 4. In 2024, the number of publications in Crossref increased again to 16, followed by Google Scholar with 7 and Scopus with 6. In the final year, 2025, Crossref maintained a positive trend with 17 publications, while Google Scholar and Scopus decreased to 6 and 4, respectively. Overall, Crossref demonstrated the most consistent and significant growth over the five-year period, indicating that most studies on DGBL for English vocabulary acquisition are published in journals indexed by this database. In contrast, Google Scholar and Scopus showed more fluctuating and relatively stable patterns at lower levels. These findings illustrate the growing global interest in DGBL within the context of language education, with a steady increase in publication trends over time.

Distribution of Publications by Country

The analysis of publication distribution by country illustrates how research on DGBL for English vocabulary acquisition is geographically spread across the world. It identifies the countries that contribute most actively to this research field and highlights global patterns of collaboration, productivity, and scholarly impact. Moreover, this geographical overview reflects disparities between developed and developing nations in terms of technology adoption, research funding, and academic priorities. Understanding these differences provides valuable insights into how educational innovation and digital learning tools are being integrated worldwide. Such findings are essential for fostering future international collaboration and promoting equitable growth in DGBL and language education, as shown in Figure 3.

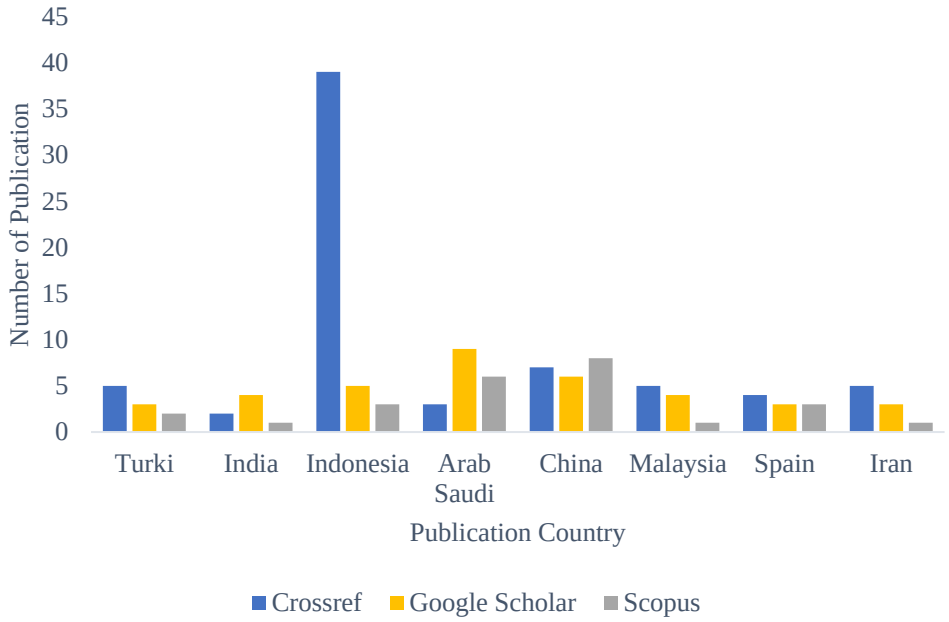

Figure 3 Country distribution of DGBL research

Based on the distribution of digital game-based learning publications for English vocabulary acquisition in three databases, Crossref, Google Scholar, and Scopus, it can be seen that the research comes from various countries with different levels of contribution. As shown in Figure 3, Indonesia ranks highest with 39 publications, most of which are indexed in Crossref. This number is much higher than other countries, indicating that research on DGBL in Indonesia is growing rapidly during the period 2021–2025. The next countries with a significant number of publications are Saudi Arabia, China, and India, with relatively equal contributions to the three databases. Turkey, Malaysia, Spain, and Iran also contributed to research in this field, although the number of publications was lower than that of the major countries.

Indonesia's dominance shows the high level of attention researchers are paying to the integration of digital games in English vocabulary learning, which is in line with the country's technology-based education transformation policy. For example, Suta (2025) found that platforms such as Kahoot and Quizizz are particularly effective for young learners in Indonesia in supporting vocabulary learning due to their engaging features and alignment with learners' needs. In Saudi Arabia, Alhebshi & Gamlo (2022) reported that mobile game-based learning significantly improved vocabulary acquisition among foundation-year EFL students, highlighting the role of digital engagement in enhancing retention and motivation. In Malaysia, Ibrahim et al. (2022) demonstrated the potential of puzzle-based digital games to enhance English vocabulary mastery among adolescents,

emphasizing interaction, repetition, and visual memory as key learning mechanisms. Similarly, research in China by Zeng et al. (2022) analyzed the sustainable development of vocabulary learning through DGBL environments, showing that digital tools help learners understand complex linguistic features such as polysemy and word length more effectively. Overall, this pattern shows that DGBL research has developed in various countries, especially in Asia, with a growing trend of cross-country collaboration to create interactive, innovative language learning approaches that are relevant to the needs of the 21st century.

VOSviewer Software-Based Inquiry Research Trends Visualization

In conducting bibliometric analysis, it is not only important to map the overall development of research but also to understand how certain themes or clusters of studies have emerged over time. The analysis of trend clusters provides an in-depth overview of how scholars have grouped their focus areas, methodologies, and outcomes in the field of digital game-based learning for English vocabulary acquisition. By examining these clusters, it becomes possible to identify the dominant research directions, the interconnections among topics, and the gaps that remain unexplored. Such an exploration is crucial for understanding how DGBL has been conceptualized and applied between 2021 and 2025, as well as for offering valuable insights into where future research might be directed, as displayed in Figure 4.

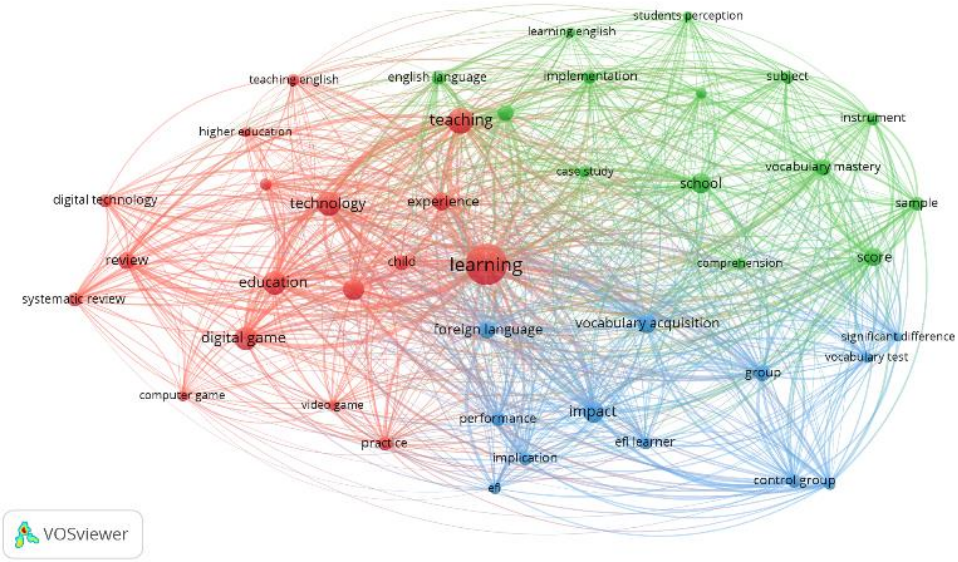

Figure 4 Network visualization

Based on bibliometric visualization using VOSviewer, the research keyword network map shows three main clusters depicted in different colors, each reflecting interconnected study themes. The red cluster focuses on the theme of utilizing technology and digital games in education. The most dominant items in this cluster are technology, digital games, education, video games, and systematic reviews. The keyword “teaching English” also appears as an important sub-theme. This cluster illustrates that much of the research is directed at the use of digital games, computer technology, and interactive media as learning innovations, both through direct practice and in the form of literature reviews. Its relationship with other clusters can be seen from the interconnection of the term "learning," which is the main connecting node, indicating that digital technology does not stand alone but is used to support the learning process in a specific context.

The green cluster represents the implementation of learning in the context of schools or classrooms. The dominant keywords in this cluster include school, students' perception,

subject, implementation, score, and vocabulary mastery. The presence of the terms “case study,” “instrument,” and “sample” indicates that the research in this cluster is applied and empirical in nature, involving the collection of data directly from students in a school environment. Its correlation with the red cluster is evident in the use of technology and digital games in the classroom, while its relationship with the blue cluster is reflected in the research focus on vocabulary mastery and student learning outcomes in foreign language lessons. The blue cluster focuses on foreign language learning, particularly vocabulary acquisition in the context of English as a Foreign Language (EFL). The most dominant items include vocabulary acquisition, foreign language, EFL learner, performance, impact, control group, and significant difference. This cluster illustrates that many studies use experimental designs to evaluate the effectiveness of certain methods, including digital games, in improving students' English vocabulary skills. The blue cluster is closely related to the red cluster through the use of technology as a learning medium, while its connection to the green cluster is reflected in the context of its application in schools and the measurement of student learning outcomes. Overall, the three clusters form an integrative picture of research: educational technology innovation (red), its application in schools (green), and its impact on language proficiency, particularly vocabulary in English language learning (blue). The main meeting point of the three clusters lies in the keyword “learning,” which is the center of interconnection, emphasizing that the main objective of all elements of the research is to strengthen aspects of student learning through innovative approaches and scientific evaluation. The findings of this study are consistent with previous bibliometric research emphasizing the importance of technology integration, gamification, and learning outcomes in DGBL (Pratama et al., 2026). Vocabulary acquisition is a fundamental aspect of language learning and English proficiency in ESL and EFL contexts, and publication trends have increased significantly since 2016, driven by technological advancements such as mobile-assisted and computer-assisted language learning (Radzuan & Arif, 2025). However, this study provides a more specific focus on English language learning, particularly vocabulary acquisition. This indicates that DGBL research is not only centered on technological innovation but also on the context of implementation and learning outcomes. Through VOSviewer, we can also find out the general description of digital game-based learning for 2021-2025. Based on the overlay visualization, which can be seen in Figure 5.

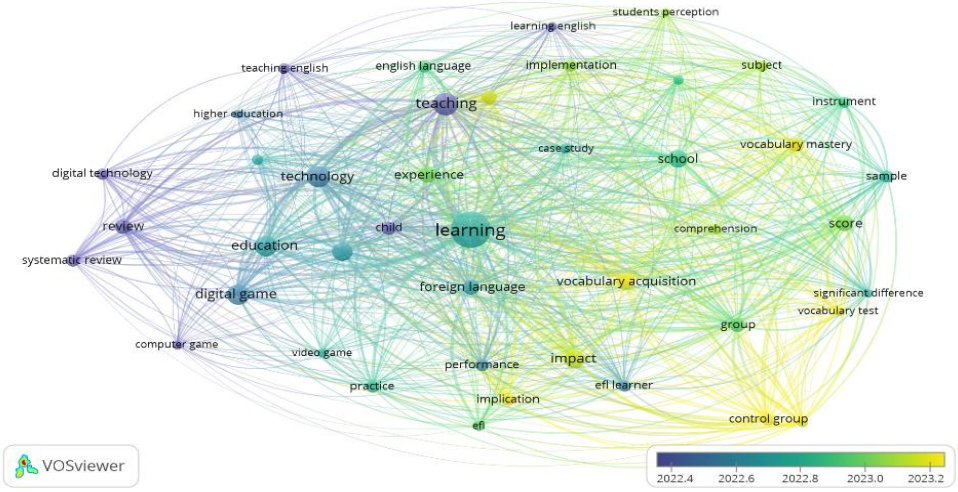

Figure 5 Overlay visualization

The overlay visualization image above shows the development of research on digital game-based learning in the context of English vocabulary mastery in the most recent period (2021–2025). The colors on each node represent the average year of publication of related keywords, where blue to purple colors indicate concepts that were researched earlier (around 2022), while green to yellow colors indicate newer and developing topics (2023 onwards). This color spectrum allows researchers to identify the dynamics of research topic evolution and observe shifts in scientific focus over time. On the left side of the map, keywords such as systematic review, review, digital technology, computer game, and higher education tend to be blue-purple.

This indicates that themes related to literature reviews and the basics of using digital technology in education were early studies that were widely explored in the initial phase of the research period. Research in this phase generally focused on concept mapping, identifying the potential of digital game technology, and developing a conceptual foundation for the implementation of game-based learning. Meanwhile, core keywords such as learning, technology, education, and digital games are light blue, indicating that research related to these concepts has continued to develop consistently in recent years. These nodes are also seen to be in a central position in the network, illustrating their key role and high connectivity in the knowledge structure related to DGBL and vocabulary mastery.

On the right side of the map, keywords with brighter colors are visible, such as "vocabulary acquisition," "vocabulary mastery," "sample," "score," "group," "control group," and "significant difference." This indicates that these topics are the latest research trends and have been increasingly studied in recent years. In other words, the focus of research is shifting towards empirical studies of an experimental nature to evaluate the effectiveness of digital games in improving vocabulary mastery and the learning outcomes of EFL (English as a Foreign Language) students.

CONCLUSION

This bibliometric analysis provides a comprehensive overview of research on DGBL for English vocabulary acquisition during the 2021–2025 period. The results indicate a steady increase in the number of publications, with the highest contributions coming from Indonesia, China, and Saudi Arabia. The most cited articles highlight the use of gamification platforms such as Quizlet, Wordwall, Duolingo, and Kahoot. Network visualizations reveal three main themes: the integration of digital technology, the implementation of game-based learning, and vocabulary acquisition. The continued interest in DGBL following the era of emergency remote learning indicates that this approach remains relevant in regular learning due to its interactive and student-centered nature. Further research is recommended to expand the scope of the database, publication sources, or other curriculum content to capture global trends more representatively, while also investigating international collaboration networks within DGBL. Cross-context research across educational and cultural settings is also needed to assess the adaptability of DGBL; a greater focus on new technologies such as AR/VR or AI-based games could help map innovative trends and long-term developments.

CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest.

AUTHOR CONTRIBUTIONS STATEMENT

All authors contributed substantially to the completion of this study. The first author conceptualized the research design, formulated the objectives, and managed the overall direction of the study. The second author conducted the data collection, organized the dataset, and performed the bibliometric analysis. The third author was responsible for

interpreting the data, creating visualizations, and drafting the initial version of the manuscript. The fourth author provided supervision, theoretical guidance, and critical revisions to enhance the academic quality and coherence of the paper. All authors have read and approved the final version of the manuscript and agree to be accountable for all aspects of this work.

REFERENCES

Ahmed, A. A. A., Sayed, B. T., Wekke, I. S., Widodo, M., Rostikawati, D., Ali, M. H., Abdul Hussein, H. A., & Azizian, M. (2022). An empirical study on the effects of using kahoot as a game-based learning tool on efl learners' vocabulary recall and retention. *Education Research International*, *1*(1), 1–10. https://doi.org/10.1155/2022/9739147

Al-Ahdal, A. A. M. H., & Alharbi, M. A. (2021). MALL in collaborative learning as a vocabulary-enhancing tool for efl learners: A study across two universities in saudi arabia. *SAGE Open*, *11*(1), 1-9. https://doi.org/10.1177/2158244021999062

Al-Aosail, A. B. F., Lamouchi, A., Ibrahim, S. A., Gafar, M. G., & Hafez, W. E. (2024). Digital games for learning vocabulary: the effects on foreign language anxiety, buoyancy, online engagement, and vocabulary learning. *Call-Ej*, *25*(4), 27–50.

Alhebshi, A. A., & Gamlo, N. (2022). The effects of mobile game-based learning on saudi efl foundation year students' vocabulary acquisition. *Arab World English Journal*, *13*(1), 408–425. https://doi.org/10.24093/awej/vol13no1.27

Badroeni, B., Nasrulloh, S. F., & Suryaman, O. (2022). Mobile learning vocapp: (vocabulary application) for english vocabulary learning. *English Review: Journal of English Education*, *10*(2), 533–542. https://doi.org/10.25134/erjee.v10i2.6253

Calafato, R., & Clausen, T. (2024). Vocabulary learning strategies in extramural english gaming and their relationship with vocabulary knowledge. *Computer Assisted Language Learning*, *38*(8), 1–19. https://doi.org/10.1080/09588221.2024.2328023

Chowdhury, M., Dixon, L. Q., Kuo, L. J., Donaldson, J. P., Eslami, Z., Viruru, R., & Luo, W. (2024). Digital game-based language learning for vocabulary development. *Computers and Education Open*, *6*, 100160. https://doi.org/10.1016/j.caeo.2024.100160

Fithriani, R. (2021). The utilization of mobile-assisted gamification for vocabulary learning: Its efficacy and perceived benefits. *Call-Ej*, *22*(3), 146–163.

Hasram, S., Nasir, M. K. M., Mohamad, M., Daud, M. Y., Rahman, M. J. A., & Mohammad, W. M. R. W. (2021). The effects of wordwall online games (Wow) on english language vocabulary learning among year 5 pupils. *Theory and Practice in Language Studies*, *11*(9), 1059–1066. https://doi.org/10.17507/tpls.1109.11

Hung, H. T., & Yeh, H. C. (2023). Augmented-reality-enhanced game-based learning in flipped english classrooms: Effects on students' creative thinking and vocabulary acquisition. *Journal of Computer Assisted Learning*, *39*(6), 1786–1800. https://doi.org/10.1111/jcal.12839

Hwang, G. J., Chen, P. Y., Chu, S. T., Chuang, W. H., Juan, C. Y., & Chen, H. Y. (2023). Game-based language learning in technological contexts: An integrated systematic review and bibliometric analysis. *International Journal of Online Pedagogy and Course Design*, *13*(1), 1–25. https://doi.org/10.4018/IJOPCD.316184

Ibrahim, N., Chan, C. S., & Low, K. Y. (2022). The potential of digital game-based learning for english vocabulary acquisition among malaysian adolescents. *Journal of Information System and Technology Management*, *7*(29), 144–154. https://doi.org/10.35631/jistm.729013

Javaid, Z. K., Ramzan, M., & Ijaz, S. (2024). A systematic review on cognitive and motivational impact on english language learning through artificial intelligence. *International Journal of Literature, Linguistics and Translation Studies*, *4*(1), 44-71. https://doi.org/10.37605/ijllts.v4i1.4

Jia, W., Zhang, L., Pack, A., Guan, Y., & Zou, B. (2024). Digital game-based learning's effectiveness on EFL learners' receptive and productive vocabulary knowledge. *Language Learning and Technology*, *28*(1), 1–21. https://doi.org/10.64152/10125/73554

Karacan, C. G., & Akoğlu, K. (2021). Educational augmented reality technology for language learning and teaching: A comprehensive review. *Shanlax International Journal of Education*, *9*(2), 68–79. https://doi.org/10.34293/education.v9i2.3715

Kazu, İ. Y., & Kuvvetli, M. (2023). A triangulation method on the effectiveness of digital game-based language learning for vocabulary acquisition. *Education and Information Technologies*, *28*(10), 13541–13567. https://doi.org/10.1007/s10639-023-11756-y

Lei, X., Fathi, J., Noorbakhsh, S., & Rahimi, M. (2022). The impact of mobile-assisted language learning on english as a foreign language learners' vocabulary learning attitudes and self-regulatory capacity. *Frontiers in Psychology*, *13*, 872922. https://doi.org/10.3389/fpsyg.2022.

Li, K., Peterson, M., Wang, Q., & Wang, H. (2025). Mapping the research trends of digital game-based language learning (dgbll): A scientometrics review. *Computer Assisted Language Learning*, *38*(7), 1393–1422.

Li, R. (2021). Does game-based vocabulary learning app influence chinese efl learners' vocabulary achievement, motivation, and self-confidence? *SAGE Open*, *11*(1), 1-12. https://doi.org/10.1177/21582440211003092

Li, X., & Kushairi, N. (2025). Bibliometric analysis of digital game- based learning in language education: A systematic literature review. *Philip Roth Studies*, *20*, 145–166. https://doi.org/10.5281/zenodo.14858185

Lu, X., Wang, W., Motz, B. A., Ye, W., & Heffernan, N. T. (2023). Immediate text-based feedback timing on foreign language online assignments: how immediate should immediate feedback be? *Computers and Education Open*, *5*, 100148. https://doi.org/10.1016/j.caeo.2023.100148

Mauidloh, N. H., Anam, S., & Widyastuti, W. (2024). The correlation between student's engagement and reading comprehension while using quizlet gamification for vocabulary learning. *IJORER : International Journal of Recent Educational Research*, *5*(4), 1013–1025. https://doi.org/10.46245/ijorer.v5i4.650

Morales, L., Castillo, J., & Cuarte, R. (2024). A systematic review on the effectiveness of digital game-based learning in the development of vocabulary skills. *International Journal of Multidisciplinary Studies in Higher Education*, *1*(1), 55–62. https://doi.org/10.70847/586368

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *Bmj*, *372*. https://doi.org/10.1136/bmj.n71

Panmei, B., & Waluyo, B. (2023). The pedagogical use of gamification in english vocabulary training and learning in higher education. *Education Sciences*, *13*(1), 1-22. https://doi.org/10.3390/educsci13010024

Pratama, H., Kenzhaliyev, O., Azman, M. N. A., Othman, M. S., Marmoah, S., & Fajrie, N. (2026). Bibliometric analysis of digital game-based learning. *Bibliometric Analysis of Digital Game-Based Learning Research. Multidisciplinary Reviews, 9*(2), 1–11. https://doi.org/https://doi.org/10.31893/multirev.2026086

Pratiwi, A., Maret, U. S., Drajati, N. A., Maret, U. S., Indriyani, E., Handayani, P., & Maret, U. S. (2022). Exploring student's learning enjoyment and vocabulary mastery in digital game-based learning experience: A narrative inquiry. *Journal of English Language Education*. *5*(1), 37–65.

Radzuan, F. A. A., & Arif, M. M. (2025). Vocabulary learning research in ESL / EFL : A

bibliometric review of trends , innovations , and gaps. *AJELP: The Asian Journal of English Language & Pedagogy*, *13*(2), 46–67. https://doi.org/https://doi.org/10.37134/ajelp.vol13.2.4.2025

Suta, I. P. M. B. (2025). Exploring the effect of digital game based learning on young learners ' vocabulary. *Journal of Digital Learning on Languages and Arts (IJODLLA)*, *2*(1), 8–12.

Tiara, A., Handrianto, C., & Rahman, M. A. (2021). The students perception about use of duolingo application for improving english vocabulary. *International Journal of Education, Information Technology and Others (IJEIT)*, *4*(4), 690–701. https://doi.org/10.5281/zenodo.5775915

Vnucko, G., & Klimova, B. (2023). Exploring the potential of digital game-based vocabulary learning: A systematic review. *Systems*, *11*(2), 1–18. https://doi.org/10.3390/systems11020057

Waluyo, B., & Bucol, J. L. (2021). The impact of gamified vocabulary learning using quizlet on low-proficiency students. *Call-Ej*, *22*(1), 158–179.

Wu, J. G., Zhang, D., Lee, S. M., & Xian, J. (2025). Game on! digital gaming and augmented reality/virtual reality in language learning. *International Journal of Computer-Assisted Language Learning and Teaching*, *15*(1), 1–15. https://doi.org/10.4018/IJCALLT.367601

Xiong, Z., Wu, J. G., & Lee, K. W. (2024). Research trends and hotspots of digital game-based vocabulary learning (2008-2023): A scientometrics review. *International Journal of Computer-Assisted Language Learning and Teaching*, *14*(1), 1–21. https://doi.org/10.4018/IJCALLT.366656

Zeng, Y., Lu, Q., Wallace, M. P., Guo, Y., Fan, C. W., & Chen, X. (2022). Understanding sustainable development of english vocabulary acquisition: Evidence from chinese efl learners. *Sustainability (Switzerland)*, *14*(11), 1–17. https://doi.org/10.3390/su14116532

Zou, D., Huang, Y., & Xie, H. (2021). Digital game-based vocabulary learning: Where are we and where are we going? *Computer Assisted Language Learning*, *34*(5–6), 751–777. https://doi.org/10.1080/09588221.2019.1640745

AUTHOR PROFILES

Fatkhur Rohman Sujarwo
Email: fathurrohmac300@students.unnes.ac.id
Expertise: Post Graduate School, Primary Education Study Program
Affiliation: Universitas Negeri Semarang, Indonesia

Nuni Widiarti
Email: nuni_kimia@mail.unnes.ac.id
Expertise: Chemistry Education
Affiliation: Universitas Negeri Semarang. Indonesia
Google Scholar, Sinta, Orcid, Scopus

Ellianawati
Email: ellianawati@mail.unnes.ac.id
Expertise: Physics Education
Affiliation: Universitas Negeri Semarang, Indonesia
Google Scholar, Sinta, Orcid, Scopus

Fahrur Rozi
Email: frozi@mail.unnes.ac.id
Expertise: Economic Education
Affiliation : Universitas Negeri Semarang, Indonesia
Google Scholar,Sinta, Orcid, Scopus