



GAME-BASED LEARNING IN ARABIC LANGUAGE EDUCATION: A BIBLIOMETRIC ANALYSIS

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ABSTRACT

This study aims to systematically map the research landscape of Game-Based Learning (GBL) in Arabic language education from 2015 to 2024. Despite the increasing number of studies on GBL in Arabic language learning, there is a lack of bibliometric research that comprehensively examines publication trends, keyword networks, and emerging research directions. This study utilizes bibliometric analysis on 995 articles retrieved from Google Scholar, using Publish or Perish (PoP) version 8 for data extraction, Microsoft Excel for data processing, and VOSviewer for visualization. The findings reveal a significant upward trend in GBL-related publications, with a notable peak in recent years. The analysis generated 14 thematic clusters, highlighting frequently occurring keywords such as "game," "Arabic," and "educational game." Potential areas for future research include GBL applications using platforms like Educandy and other innovative learning strategies.

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1. INTRODUCTION

With the advancement of technology in the 21st century, learning theories have undergone a fundamental transformation (Rifai et al., 2018). Modern education is no longer teacher-centered but has shifted towards a more student-centered approach (T, 2022). One emerging approach within this context in Indonesia is the deep learning approach, which emphasizes deep understanding, the interconnection between subject matter concepts and real-life contexts, and active student engagement throughout the learning process (R. Putri et al., 2022). In its implementation, the deep learning approach encourages students to develop a comprehensive understanding of concepts, correlate them with various disciplines, and apply them in everyday life. Furthermore, this approach also highlights the active role of teachers as facilitators who guide students in exploring knowledge, based on three core principles of learning: being mindful, meaningful, and joyful (Suwandi et al., 2024).

Mindful learning is an approach that emphasizes the holistic enhancement of students' self-awareness throughout the learning process. Its primary goal is to deepen concentration and improve the quality of learning, thereby enabling students to manage and overcome various internal and external distractions (Santi et al., 2024; Saputra et al., 2024). Meanwhile, meaningful learning refers to an instructional approach aimed at creating contextual learning experiences that are closely related to students' daily lives, making the learning process more relevant and impactful (Hafidzhoh et al., 2023; Widiانا & Rachmadtullah, 2025). In contrast, joyful learning seeks to foster an engaging, interactive, and inspiring learning atmosphere, ultimately creating a sense of comfort for learners. Such a positive environment is expected to enhance students' motivation and active participation during the learning process (Ramadhani et al., 2024; Sufiani & Marzuki, 2021).

Joyful learning is particularly well-suited to language education especially in the context of foreign languages, because it cultivates a conducive environment for the holistic development of language skills. A joyful atmosphere helps reduce students' anxiety in using a foreign language, encourages active participation in speaking, listening, reading, and writing activities, and enhances learners' confidence in using the language communicatively (Amelia, 2023; Dewi & Hanafitri, 2024).

One strategy that supports joyful learning is the implementation of Game-Based Learning (GBL). GBL refers to the design of learning experiences in the form of complete games, rather than merely adding game elements as in gamification. The goal is to create engaging, meaningful, and challenging learning experiences that increase student motivation and involvement. GBL integrates essential components such as clear rules, feedback systems, competitive elements, and decision-making opportunities all of which are intentionally designed to support the achievement of learning objectives. This approach requires a careful balance between instructional delivery and engaging gameplay. When overly focused on cognitive outcomes, the enjoyment aspect may diminish; conversely, overemphasis on gameplay may hinder the accomplishment of learning goals (Plass et al., 2020).

In the context of language learning, particularly Arabic, GBL presents significant potential to address longstanding instructional challenges. These include students' difficulties in understanding Arabic grammar (*Nahw* and *Sharaf*), which significantly differs from Indonesian linguistic structures (Emiyati et al., 2024). Other problems include misinterpretation of basic concepts such as the categorization of nouns and verbs, as well as limited vocabulary mastery, all of which hinder the development of students' Arabic language skills (Haitsumakunti et al., 2025). Furthermore, the lack of contextualized materials, the dominance of lecture-based and teacher-centered instruction, and insufficient emphasis on experiential learning have all contributed to declining student motivation and learning outcomes (Nasrulloh et al., 2020). Transforming learning experiences into game-based formats offers a natural and communicative bridge to close these gaps. Through GBL, Arabic language

learners can engage in real-life simulations such as visiting tourist sites, holding social dialogues, or responding competitively to grammar challenges all packaged within game narratives (Abdul Ghani et al., 2022; Masrop et al., 2019; Muthmainnah et al., 2024).

The growing research interest in GBL indicates its promising potential in the educational field. From 2015 to 2024, the number of scholarly publications addressing this theme has consistently increased. This upward trend suggests that the GBL approach is not only gaining traction in practical educational settings but is also attracting significant attention from scholars and researchers. One such study was conducted by Rizal in 2024, focusing on the development of an Android-based application incorporating GBL, tailored to the Merdeka Curriculum and implemented at MI Salafiyah Syafi'iyah Jombang. The results showed that 82.93% of respondents strongly agreed on the ease of use of the application's interface, and 81.71% highly approved of the relevance of its content (Rizal, Rahmawati, Kristianto, Lazulfa et al., 2024). Another study by Nisa investigated the application of GBL among fifth-grade students at SDN 2 Sedayulawas, revealing a significant positive impact on students' Arabic learning outcomes (Nisa' et al., 2024).

Rizal also conducted another study in 2024 using a classroom action research approach to apply a GBL-based application named AaBaTa as an innovation in Arabic language teaching. The study found that using the AaBaTa app improved students' average scores and positively contributed to achieving instructional goals (Rizal et al., 2024). In the realm of vocabulary acquisition, Hanik's 2022 research developed a mobile game-based learning tool for teaching Arabic vocabulary to third-grade primary school students. The findings revealed that content expert validation reached 81.25%, while media expert validation stood at 98.75%. Small group trials yielded a score of 92.75%, and large group trials showed an 84.65% approval rate. These results indicate that the developed game is valid and feasible for instructional use (Farida et al., 2022).

Previous studies have demonstrated that the use of Game-Based Learning (GBL) in Arabic language education yields positive outcomes, such as increased learner motivation, engagement, and retention. As a result, research interest in this area has grown steadily in recent years. However, despite the expanding body of literature, there is still a lack of systematic efforts to map the research landscape of GBL in Arabic language education. Without such mapping, it becomes challenging for researchers and educators to identify dominant themes, underexplored areas, and evolving trends. Therefore, a comprehensive bibliometric analysis is necessary to address this gap and provide a structured overview of the field.

Bibliometric analysis enables researchers to understand the intellectual structure of a research domain by mapping scholarly publications. Tools such as Publish or Perish and VOSviewer facilitate this process by allowing the extraction of publication data, keyword analysis, and the visualization of citation and co-occurrence networks. Through these tools, it is possible to identify thematic clusters, research trends, influential authors, and geographical research patterns (Hasan & Djaenudin, 2023). This approach is particularly relevant in the context of GBL in Arabic education, where the volume of publications is growing but remains insufficiently organized or synthesized. This study, therefore, aims to examine scholarly publications on GBL in Arabic language learning published between 2015 and 2024. Specifically, it seeks to map the research landscape, analyze keyword trends, and identify emerging research themes with potential for further exploration. The results of this bibliometric mapping are expected to serve as a valuable reference for researchers, educators, and policymakers in developing more effective, evidence-based, and contextually appropriate strategies for Arabic language instruction in the digital era.

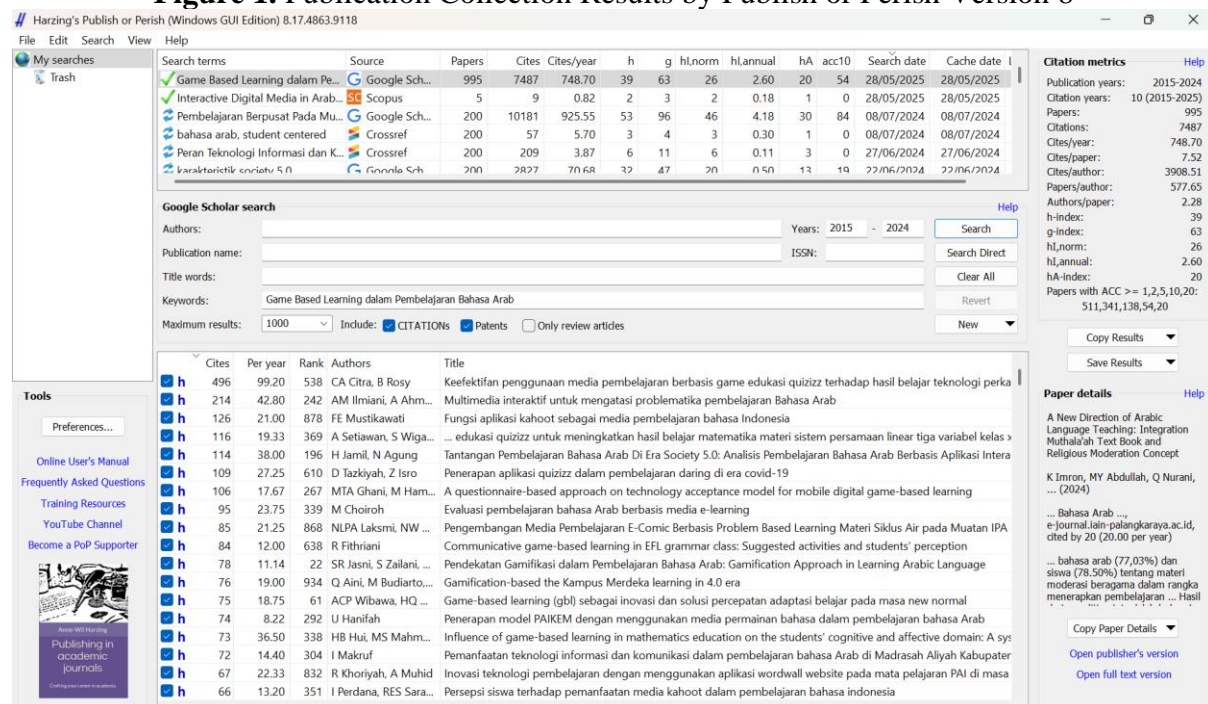
2. METHODS

The method used in this study is bibliometric analysis by utilizing Harzing's Publish or Perish (PoP) software version 8 to obtain relevant publication data on Game-Based Learning (GBL) in Arabic language learning from the Google Scholar database. Google Scholar was chosen in this study because it is the most comprehensive open-access database and maintains consistency in determining the standards of documents included in its index (Lestary et al., 2023; Maydawati, 2023). The publication data search using the software was conducted on May 29, 2025, using the keyword "*Game Based Learning dalam Pembelajaran Bahasa Arab*" with a search limit of 1,000 articles. To observe the development of the topic, the researchers set the search range to the last ten years, from 2015 to 2024. From the search, a total of 995 articles were obtained and saved in files with the .csv (Comma Separated Values) and .ris (Research Information System) extensions. The .csv file was used to analyze the distribution of publications by year, to categorize them, and to rank the top 15 publications based on the highest number of citations. Meanwhile, the .ris file was used for the data analysis process through VOSviewer software to reveal the bibliometric mapping, keyword trends, and research clusters through three types of visualizations: density visualization, overlay visualization, and network visualization. From the connections among keywords shown in these visualizations, the trends and novelty in research related to GBL in Arabic language learning can be identified. To ensure the trustworthiness of this study, standardized bibliometric procedures were followed, including consistent keyword selection, time-bound search criteria, and the use of established software tools PoP software version 8 and VOSviewer which have been widely recognized in bibliometric research. Additionally, the data collection process was documented in detail to ensure transparency and reproducibility.

3. RESULTS AND DISCUSSION

Based on the metadata collection process using Publish or Perish version 8 software regarding GBL in Arabic language learning from the period of 2015 to 2024, a total of 995 publications indexed in Google Scholar were obtained. The citation metrics resulting from this data collection process using the software are presented in Figure 1 below:

Figure 1. Publication Collection Results by Publish or Perish Version 8



The citation metrics presented in Figure 1 indicate that the topic of Game-Based Learning (GBL) in Arabic language learning has experienced significant growth during the period from 2015 to 2024. Within this timeframe, a total of 995 relevant articles were identified, with a cumulative citation count of 7,487. The average number of citations per year is 748.70, while the average number of citations per publication stands at 7.52. Additionally, the average number of authors per article is 2.38. Furthermore, the data reveal that the overall h-index for these publications is 39, and the g-index is 63.

The annual percentage of publications can be seen in Table 1 below:

Table 1. Percentage of Scientific Publications by Year

Year	Number of Publications	Percentage
2015	11	1%
2016	14	1%
2017	13	1%
2018	23	2%
2019	50	5%
2020	68	7%
2021	102	10%
2022	145	15%
2023	222	22%
2024	347	35%
Total	995	100%

Based on Table 1 above, it can be observed that the number of publications related to Game-Based Learning (GBL) has shown a consistent increase over the years. Between 2015 and 2017, publications on GBL accounted for only 1%, or approximately 11 to 14 publications per year. In 2018, there was a rise to 2%, corresponding to 23 publications addressing similar topics. This upward trend continued in 2019, with 50 publications or 5%. Another increase occurred in 2020, reaching 7% or 68 publications, marking a 2% rise from the previous year. A significant surge began in 2021 and continued thereafter. In 2021, there were 102 publications (10%), followed by 145 in 2022, 222 in 2023, and peaking in 2024 with 347 publications, representing 35%. The steady growth in the number of annual publications clearly indicates that research on GBL in the context of learning is gaining increased interest and is becoming a prominent focus for further academic investigation.

Furthermore, the trend in publication growth from 2015 to 2024 is visually represented in the following graph:

Figure 2. Number of Scholarly Publications from 2015 to 2024.

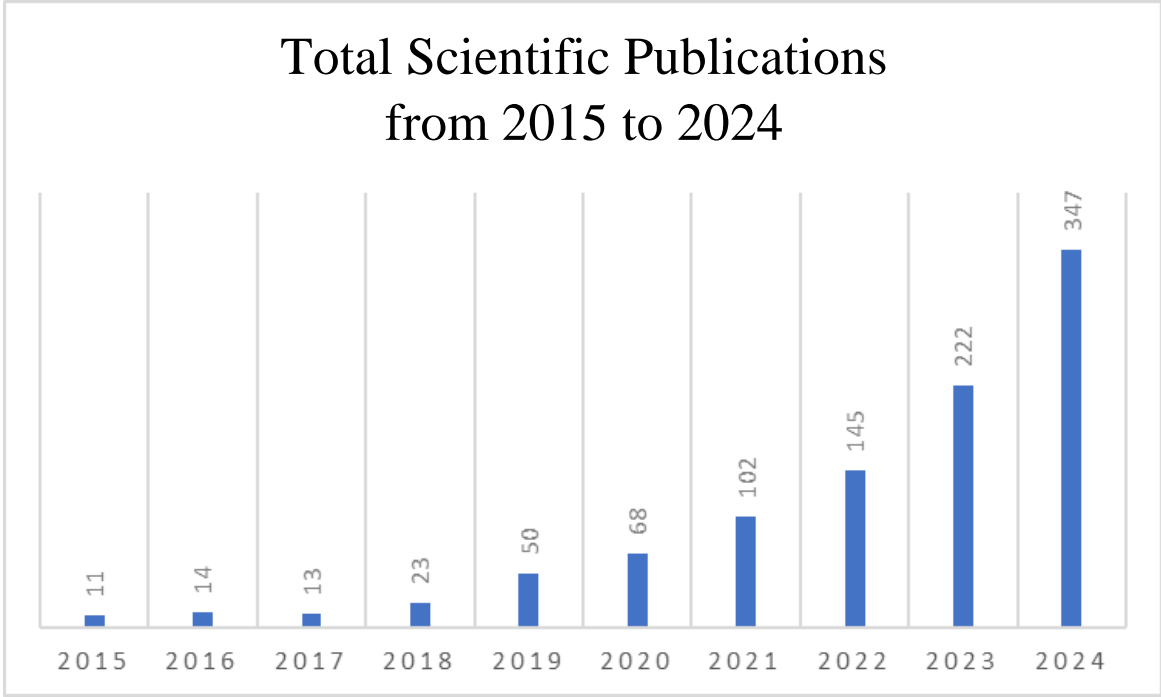


Figure 2 above illustrates that the curve representing the development of publications on Game-Based Learning (GBL) from 2015 to 2024 has consistently shown an upward trend, with only a slight decline observed in 2017, which was not significant. Following that year, the graph demonstrates a notable increase. Based on Figure 1, it can also be identified that the lowest number of publications occurred in 2015, with a total of 11, while the highest number was recorded in 2024, reaching 347 publications.

Subsequently, the publication data were processed using Microsoft Excel to categorize and sort them based on the number of citations. The following presents the top 15 publications generated by the Publish or Perish software version 8, based on the highest citation counts using the keyword "Game-Based Learning."

Table 2. Top 15 Publications with the Keyword “Game-Based Learning”

No	Author(s)	Title of Publication	Year	Number of Citations
1	CA Citra, B Rosy	“Keefektifan Penggunaan Media Pembelajaran Berbasis Game Edukasi Quizizz Terhadap Hasil Belajar Teknologi Perkantoran Siswa Kelas X SMK Ketintang Surabaya”	2020	496
2	AM Ilmiani, A Ahmadi,	“Multimedia Interaktif Untuk Mengatasi Problematika Pembelajaran Bahasa Arab”	2020	214
3	FE Mustikawati	“Fungsi Aplikasi Kahoot Sebagai Media Pembelajaran Bahasa Indonesia”	2019	126

4	A Setiawan, S	<i>“Edukasi Quizizz Untuk Meningkatkan Hasil Belajar Matematika Materi Sistem</i>	2019	116
	Wigati, D	<i>Persamaan Linear Tiga Variabel Kelas X</i>		
	Sulistyaningsih	<i>Ipa 7 SMA Negeri 15 Semarang Tahun Pelajaran”</i>		
5	H Jamil, N Agung	<i>“Tantangan Pembelajaran Bahasa Arab di Era Society 5.0: Analisis Pembelajaran Bahasa Arab Berbasis Aplikasi Interaktif”</i>	2022	114
6	D Tazkiyah, Z Isro	<i>“Penerapan Aplikasi Quizizz Dalam Pembelajaran Daring Di Era Covid-19”</i>	2021	109
7	MTA Ghani, M Hamzah, S Ramli, W Ab	<i>“A Questionnaire-Based Approach On Technology Acceptance Model For Mobile Digital Game-Based Learning ”</i>	2019	106
8	M Choiroh	<i>“Evaluasi Pembelajaran Bahasa Arab Berbasis Media E-Learning”</i>	2021	95
9	NLPA Laksmi, NW Suniasih	<i>“Pengembangan Media Pembelajaran E-Comic Berbasis Problem Based Learning Materi Siklus Air Pada Muatan IPA”</i>	2021	85
10	R Fithriani	<i>“Communicative Game-Based Learning In EFL Grammar Class: Suggested Activities And Students' Perception ”</i>	2018	84
11	SR Jasni, S Zailani, H Zainal	<i>“Pendekatan Gamifikasi Dalam Pembelajaran Bahasa Arab: Gamification Approach In Learning Arabic Language ”</i>	2018	78
12	Q Aini, M Budiarto, POH Putra	<i>“Gamification-Based The Kampus Merdeka Learning In 4.0 Era ”</i>	2021	76
13	ACP Wibawa, HQ Mumtaziah	<i>“Game-Based Learning (GBL) Sebagai Inovasi Dan Solusi Percepatan Adaptasi Belajar Pada Masa New Normal”</i>	2021	75

14	U Hanifah	<i>“Penerapan Model PAIKEM Dengan Menggunakan Media Permainan Bahasa Dalam Pembelajaran Bahasa Arab”</i>	2016	74
15	HB Hui, MS Mahmud	<i>“Influence Of Game-Based Learning In Mathematics Education On The Students' Cognitive And Affective Domain: A Systematic Review”</i>	2023	73

The top 15 publications based on the highest citation counts using the keyword “Game-Based Learning in Arabic Language Learning” are presented in Table 3 below:

Table 3. Top 15 Publications with the Keyword “Game-Based Learning in Arabic Language Learning”

No	Author(s)	Title of Publication	Year	Number of Citations
1	SR Jasni, S Zailani, H Zainal	<i>“Pendekatan Gamifikasi Dalam Pembelajaran Bahasa Arab: Gamification Approach In Learning Arabic Language”</i>	2018	78
2	J Shiddiq	<i>“Inovasi Pemanfaatan Word-Wall Sebagai Media Game-Based Learning Untuk Bahasa Arab”</i>	2021	64
3	MT Abdul Ghani, M Hamzah, WAA Wan Daud	<i>“The Impact Of Mobile Digital Game In Learning Arabic Language At Tertiary Level.”</i>	2022	54
4	FY Al Irsyadi, AP Priambadha	<i>“Game Edukasi Bahasa Arab Untuk Siswa Sekolah Dasar Kelas IV”</i>	2020	50
5	M Hamizul, NM Rahimi	<i>“Design And Development Of Arabic Online Games–A Conceptual Paper”</i>	2015	45
6	NAM Masrop, H Ishak, G Zainuddin, SR Ramlan	<i>“Digital Games Based Language Learning For Arabic Literacy Remedial”</i>	2019	28
7	H Kamal	<i>“The Influence Of Online Game On The Learners' Arabic Vocabulary Achievement”</i>	2021	26

8	AH Putri, FE Permatasari, AL Hijriyah	“Arabic Quizzes Game To Improve Arabic Vocabulary”	2021	22
9	MS Khairy, D Herumurti	“Analisis Pengaruh Penggunaan Game Edukasi Pada Penguasaan Kosakata Bahasa Asing Dengan Studi Kasus Game Edukasi Bahasa Arab”	2016	20
10	FYA Haq, M Abdurahman	“Wordwall: A Digital Game Application To Increase The Interest Of Rabbani Junior High School's Students In Learning Arabic Vocabulary”	2021	18
11	MTA Ghani, WAAW Daud	“The Impact Of Digital Game-Based Learning Towards Arabic Language Communication”	2023	18
12	A Riwanda, M Ridha, MI Islamy	“Increasing Arabic Vocabulary Mastery Through Gamification”	2021	17
13	P Parhan, M Safii, A Rozaq	“Peningkatan Kosakata Bahasa Arab Melalui Media Teka Teki Silang Bergambar Di Kelas V SD Al Ashriyyah Nurul Iman Parung-Bogor”	2023	17
14	H Yahaya, HN Shaharuddin, FS Abdul Raup	“Persepsi Pelajar Terhadap Pemanfaatan Gamifikasi Dalam Pembelajaran Bahasa Arab”	2022	15
15	FA Rahmawati, IR Nur	“Creative Language Games For Enjoyable Arabic Teaching : Al-Al'ab Al-Lughawiyyah Al-Ibda'iyyah Li Ta'lim Al-Lughah Al-'Arabiyyah Al-Mumti'ah”	2021	14

The next stage of this bibliometric study involves the visualization of keyword distribution using the VOSviewer software. To facilitate the visualization process, this study set a minimum occurrence threshold of three for each keyword. As a result, 313 keywords were initially identified. Subsequently, keywords that were not relevant to Game-Based Learning (GBL) in Arabic language learning were excluded, yielding a total of 186 relevant keywords, which were then grouped into 14 clusters. The visualization output generated by VOSviewer for these 186 keywords is presented as follows:

Figure 3. Desnity Visualization

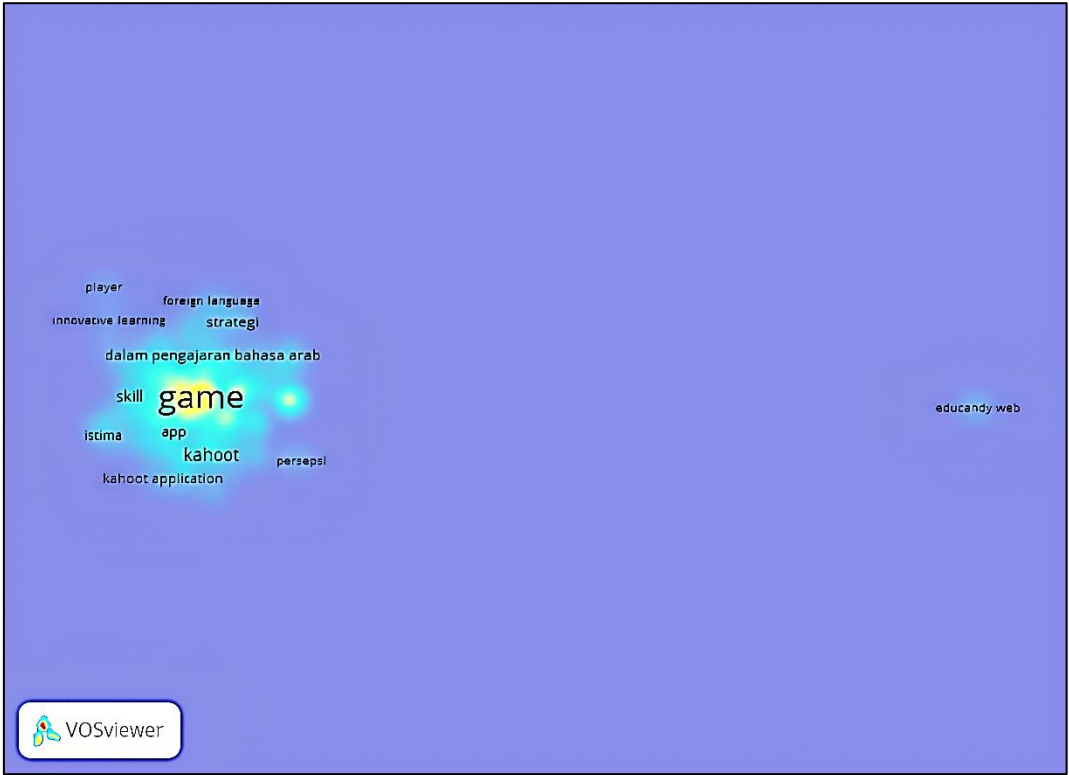


Figure 4. Overlay Visualization

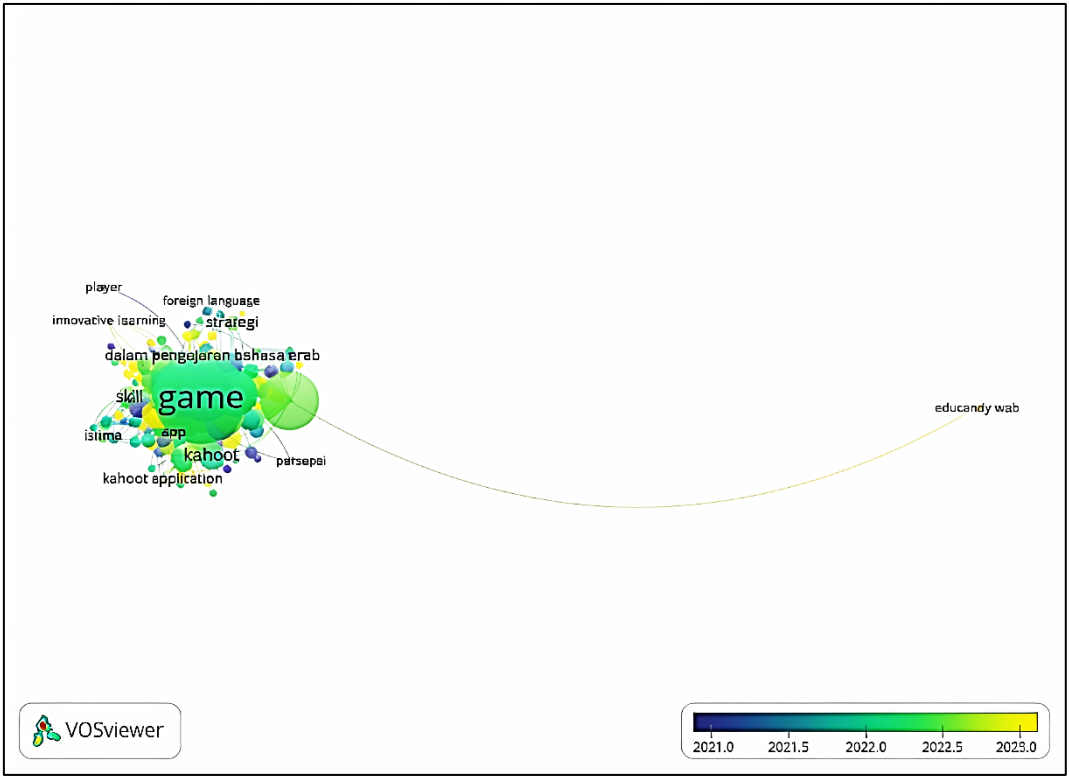
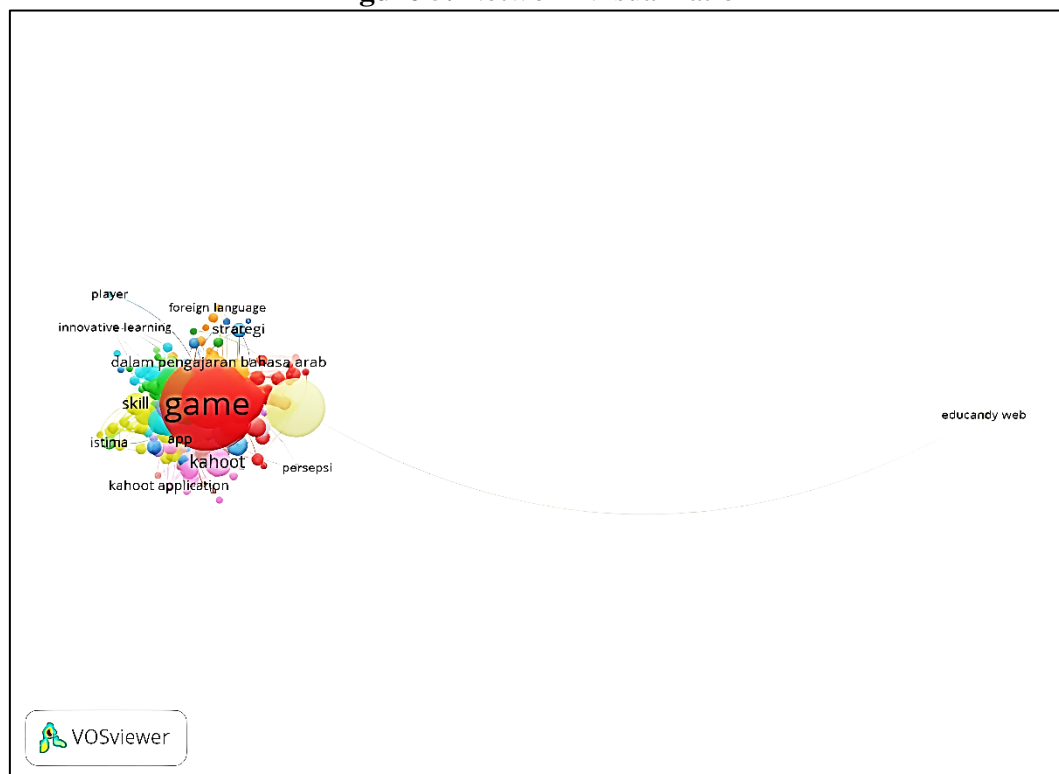


Figure 5. Network Visualization

Citation Metrics

Based on the analysis conducted using the Publish or Perish software version 8, with data sourced from Google Search and using the keyword “Game-Based Learning in Education” as illustrated in Figure 1, it is evident that this topic has experienced significant growth over the past decade (2015–2024). A total of 995 articles were collected, accumulating 7,487 citations. The average number of citations per year was recorded at 748.70, while the average number of citations per article was 7.52. These figures reflect not only a high level of publication productivity in this field but also a strong degree of academic referencing to these works.

An h-index of 39 indicates that 39 articles have each been cited at least 39 times. Meanwhile, a g-index of 63 suggests that the top 63 articles have collectively received more than 3,969 citations, signifying a substantial contribution to the body of knowledge on GBL.

Furthermore, the citation distribution shows that 511 articles have received at least one citation, 341 articles have received more than 2.5 citations, 138 articles have garnered over 10 citations, and 54 articles have been cited more than 20 times. These findings indicate that the majority of publications on this topic have gained recognition and attention within the academic community. Additionally, the average number of authors per article is 2.38, reflecting a tendency toward collaboration in scholarly publications related to this theme.

Publication Trends in the Period 2015–2024

The trend in the number of scholarly publications related to Game-Based Learning (GBL) in Arabic language learning over the past ten years (2015–2024) has shown a significant upward trajectory, particularly since 2019. This trend is clearly illustrated by the rising curve presented in Figure 2 above. Between 2015 and 2018, the number of publications remained relatively low, ranging from 11 to 23 articles per year. However, starting in 2019, the publication rate began to rise sharply from 50 publications in 2019 to 68 in 2020, and further to 102 in 2021. This increase coincides with the growing trend of online learning and the integration of digital technologies into educational practices during the COVID-19 pandemic.

Research has shown that the implementation of e-learning and GBL had a significant impact during the pandemic, including making learning more engaging, enhancing student interest and motivation, improving academic performance, fostering cognitive development, and nurturing students' independence, self-confidence, and digital literacy (Binti Jasni & Ardiansyah, 2020; Y. N. Putri et al., 2023).

Based on Tables 2 and 3, it can be observed that the most cited publication using the keyword "Game-Based Learning" was authored by Citra and Rosy in 2020, with a total of 496 citations. Their study demonstrated that the educational game Quizizz was effective in improving student learning outcomes (Citra & Rosy, 2020). Meanwhile, for the keyword "Game-Based Learning in Arabic language learning," the most cited publication was conducted by Jasni et al. in 2018, with 78 citations. Their research confirmed that the GBL approach is a strategic step in enhancing the quality of Arabic language instruction, as it delivers significant positive impacts throughout the learning process (Jasni et al., 2018). Given the high number of citations received by both studies, it is evident that research on GBL holds considerable appeal and potential for further development, particularly in the domain of Arabic language education.

Density Visualization

The density visualization of the keyword "Game-Based Learning in Arabic Language Learning" generated by the VOSviewer software is presented in Figure 3 above. This visualization map is the result of an analysis of all articles discussing GBL in the context of Arabic language education. In this map, the denser a keyword appears in the literature, the brighter its color is represented. Conversely, the more faded the color and the more it blends into the background, the less frequently the keyword occurs (Al Husaeni & Nandiyanto, 2021).

As shown in Figure 3, the keyword "game" emerges as the most densely populated central node, indicating that it is the most frequently mentioned term in literature related to GBL in Arabic language learning. Other high-density keywords appearing in the green-to-yellow areas surrounding "game" include "kahoot", "skill", "strategy", and "in Arabic language teaching." This density pattern reflects a research emphasis on the use of digital game-based media such as Kahoot to enhance students' Arabic language skills, particularly listening skills (*istima*) and active student engagement (Hasbullah et al., 2024; Zubaidi, 2020).

In contrast, the appearance of the keyword "Educandy web" in a separate position with a dim blue color suggests that this topic is still relatively new and not yet strongly connected to the core discourse. This indicates that Educandy holds potential for further development as an innovative learning tool suited to the needs of the digital generation within the framework of GBL in Arabic language learning.

The development of Arabic language learning media based on the Educandy web platform was carried out by Lubis and Harahap in 2023. Their study demonstrated positive outcomes, as students showed increased interest and motivation in learning Arabic after engaging in instructional activities utilizing the Educandy web platform (Lubis & Harahap, 2023).

Overlay Visualization

The overlay visualization based on the keyword "Game-Based Learning in Arabic Language Learning" is illustrated in Figure 4. This visualization presents a color-coded map of keywords, indicating the range of publication years. Networks displayed in yellow signify that the associated articles were published more recently, whereas purple networks indicate that the research was published in earlier years (T. A. Putri & Santiani, 2024). As seen in Figure 4, the keyword "game" is represented by a large node in green, suggesting that publications related to this term were extensively conducted around the year 2022. Consistent with the density visualization map, the overlay visualization also shows that the keyword "Educandy Web" is depicted in yellow, indicating that research on this topic has emerged in more recent years.

The most recent publication on this topic was conducted in 2024 by Destia et al., who developed the Educandy website as an evaluation tool for teaching *nahwu* (Arabic grammar). Their findings demonstrated that the Educandy platform can serve as an effective evaluation tool for *nahwu* instruction in Grade V of elementary school. The evaluation process utilized vocabulary games, matching-match activities, and quizzes (Harsita et al., 2024).

A study in the same year was also conducted by Lailatul Qamariyah et al., in the form of a community service project involving training on the use of the Educandy Arabiy game at Madrasah Ibtidaiyah Al Adnani Kayangan. The results revealed that the training activities had a positive impact on students' learning outcomes, self-confidence, and competence in Arabic language learning (Qamariyah et al., 2024).

Network Visualization

Figure 5 presents the results of the bibliometric analysis conducted using VOSviewer software, which grouped research data related to Game-Based Learning (GBL) in Arabic language education into 14 thematic clusters. These clusters represent the primary focus areas of scholarly research and the relationships among keywords that appeared in the literature from 2015 to 2024.

Cluster 1, represented in dark red, contains 33 keywords emphasizing the direct implementation of GBL in Arabic language instruction. These keywords include: *arab, bahasa arab, belajar, belajar bahasa arab, berbentuk game edukatif, dalam bahasa arab, dalam pembelajaran bahasa arab, game, guru, implementasi, learning method, mata pelajaran bahasa arab, media pembelajaran, media pembelajaran bahasa arab, menggunakan game, minat, mobile learning, model, model pembelajaran game, mufrodat, multimediam, pembelajaran, pembelajaran bahasa, pembelajaran bahasa arab, pembelajaran berbasis permainan, pengembangan mobile game, teams game, teams games tournament, tgt, tiktok, untuk pembelajaran bahasa arab, video, writing skill*. Among these, the keywords with the largest nodes are *game, dalam pembelajaran bahasa Arab, and bahasa Arab*.

Cluster 2, marked in dark green, comprises 24 keywords focusing on learning outcomes and processes. These include: *achievement, Arabic, Arabic language, Arabic reading skill, Arabic subject, based learning, challenging, dalam pembelajaran bahasa Arab di sekolah, education, effect, elementary school, game medium, game yang, istima, learning outcome, learning process, lesson, multiple intelligence, PBL, snake, strategy, teaching, vocabulary learning*. The most prominent keywords in this cluster are *Arabic, Arabic language, and strategy*.

Cluster 3, indicated by dark blue, centers on evaluating effectiveness and mastery of language skills. It consists of 21 keywords, including: *Arabic language skills, Arabic learning, Arabic textbook, Arabic vocabulary mastery, educational game, effectiveness, experience, fun game, high school student, learning, learning medium, learning model, metode project, pada pembelajaran bahasa Arab, pengaruh, penguasaan, PjBL, solution, strategi, web, Wordwall application*. The most frequently appearing keywords are *learning, educational game, and pada pembelajaran bahasa Arab*.

Cluster 4, highlighted in deep yellow, concentrates on advanced technology use and contextual learning. This cluster contains 17 keywords: *ability, app, Arabic teacher, augmented reality, benefit, contextual learning, e-learning, environment, higher education, integration, language game, language learning, motivation, pengembangan media, perspective, reality, skill*. The most recurrent keywords are *language game, motivation, and skill*.

Cluster 5, shown in purple, emphasizes interactivity and student responses. It includes 16 keywords: *Arabic vocabulary, Arabic writing skills, child, class VIII student, happy route game media, implementation, influence, interactive, interactive quiz, learner, lecturer, media, online game, response, students interest, utilization*. The frequently cited keywords are *Arabic vocabulary, media, and child*.

Cluster 6, displayed in light blue, focuses on the use of digital technology in Arabic language education. It encompasses 15 keywords such as: Arabic language education, Arabic language learning, digital era, grade, information technology, mastery, outcome, player, proficiency, technology, tool, *untuk bahasa Arab*, Wordwall, Wordwall game, world. The prominent keywords in this cluster are Arabic language learning, technology, and Wordwall.

Cluster 7, in orange, illustrates the application of technology in Arabic language teaching across various educational settings, including informal institutions such as Islamic boarding schools (*pesantren*). This cluster comprises 12 keywords: android, computer, curriculum, *dalam pengajaran bahasa Arab*, *dalam pengajaran bahasa asing*, e-learning, foreign language, fun, interest, *penerapan*, *pondok pesantren*, smartphone. Notable keywords include *android*, interest, and fun.

Cluster 8, represented in brown, includes concepts of game-based learning and research methodologies. It consists of 12 keywords: 21st century, approach, Arabic vocabulary learning, *berbasis game*, *DGBL*, digital game, game-based learning, impact, *permainan*, *studi kasus*, systematic review. The most significant keywords are digital game, approach, and *berbasis game*.

Cluster 9, denoted by pink, highlights educational media such as Kahoot and interactive games. It includes 12 keywords: activity, assessment, educational technology, evaluation, interactive game, Kahoot, Kahoot application, platform, quiz, students perception. The keywords that appear most frequently are Kahoot, activity, and platform.

Cluster 10, marked in peach, focuses on the initial stages of media development. It comprises 8 keywords, with student, development, and problem being the most prominent.

Cluster 11, displayed in light green, includes 7 keywords: application, Arabic language skill, Arabic teaching, Arabic text, game method, native speaker, vocabulary. This cluster emphasizes instructional strategies and direct methods, including the use of games to contextualize learning with native speaker environments. The most frequently appearing keywords are application and vocabulary.

Cluster 12, in grey, focuses on innovation and user perception. It consists of 5 keywords: Arabic language teaching, innovation, *pemanfaatan medium*, *persepsi*, Quizizz. The most frequent keywords are Quizizz and innovation.

Cluster 13, colored light yellow, is highly specific, addressing a particular medium for implementing GBL in Arabic instruction. It consists of 3 keywords: medium, Educandy web, *pengembangan media pembelajaran*.

Cluster 14, marked in light purple, contains only one keyword: innovative learning. Although small, this cluster is significant as it signals growing awareness of the importance of innovative learning approaches. It serves as a foundational point for further development of more creative and adaptive game-based learning strategies.

4. CONCLUSION

This study concludes that research on Game-Based Learning (GBL) in Arabic language education has shown a significant upward trend from 2015 to 2024, peaking in 2024 with 347 published articles. This indicates a growing scholarly interest in integrating GBL approaches within Arabic language instruction. Citation data further reinforces this trend, with 496 citations for the keyword "Game-Based Learning" and 78 citations for "Game-Based Learning in Arabic language learning," highlighting the increasing academic recognition of this field. Through bibliometric mapping using VOSviewer, 14 thematic clusters were identified, encompassing key areas such as the implementation of GBL, its effects on learning outcomes, language skill development, digital technology integration, student engagement, and the use of interactive learning media. Frequent keywords like "game," "Arabic language," "educational game," "Kahoot," and "Quizizz" underscore the close connection between GBL and digital-

based learning. Notably, the emergence of isolated keywords such as “Educandy web” and “innovative learning” suggests untapped potential for further research into novel and contextually responsive GBL strategies. These findings can serve as a foundation for future scholarly efforts to develop more effective, engaging, and culturally relevant Arabic language learning models.

5. AUTHORS’ NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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