EXPLORING STUDIES ON MULTIMODAL LITERACY IN ENGLISH LEARNING: A BIBLIOMETRIC ANALYSIS

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Abstract: This study focuses on analyzing the productivity of research in multimodal literacy in English learning by using bibliometric analysis. A total of 345 articles from the Scopus database were retrieved using keyword searches. The bibliometric data were analyzed using Biblioshiny in R and VOSviewer to analyze the most prolific authors, the total number of publications and citations, the publication productivity of each country and the total number of citations per country, the number of publications from affiliations, the number of publications from sources, and the keywords that often appear as material for trend analysis. The results of this study show that Jiang L is the researcher with the biggest number of publications in this field among the most prolific authors. The countries with the most publications

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and citations are the USA and China. Nanyang Technological University, Michigan State University, and Griffith University are the three highest affiliations that produce publications in this field. In the keyword analysis, it was found that multimodality, literacy, multiliteracies, and digital/media literacies are popular keywords that determine trends and are connected to new keywords such as writing, instructional strategies, digital multimodal composing, ELL, critical thinking, challenges, curriculum design, drawing, apps, popular cultures and instructional strategies that are emerging in this field.

Keywords: *bibliometric, Biblioshiny, English learning, multimodality, multimodal literacy*

INTRODUCTION

In today's increasingly digital world, literacy is no longer limited to the ability to read and write within a singular, traditional framework. Cope and Kalantzis (2009) claimed that in this modern era, literacy is not regarded as the ability to use language competently in one cultural environment. Literacy nowadays has evolved its role by actively engaging students to master an increasingly complex communication landscape and understand multiple contexts and cross-cultural meaning-making and comprehend multimodal texts (Cope & Kalantzis, 2021).

Multimodality is all communication interactions either verbally or nonverbally to understand the combined meaning. The rise of digital technologies and the complexity of modern communication have reshaped how learners engage with texts, leading to the emergence of multimodal literacy. Although multimodality and multiliteracy theories are different, even conflicting concepts (Alvermann & Harrison, 2017), much of the research that has developed around them characterizes multimodality in terms of shifting conceptions of identity, authorship, and meaning-making (Kress, 2010). Ekşi and Yakışık (2015) claimed that multimodal literacy is an approach to convey meaning and knowledge using types of

modalities such as aural, visual, gestural, auditory, spatial, and linguistic that allowing students to navigate and produce meaning across diverse media platforms. In addition, they also highlighted that in multimodal literacy, text is not only considered as reading, but can also be combined with those modalities to form meaning and knowledge information that is useful to scaffold the language learning process.

Multimodal literacy is now recognized as crucial in preparing students for the complexities of modern communication, especially in English language learning, where learners navigate diverse media and contexts. English language learners are now mostly young digital natives where they have been exposed to digital technology and have encountered many multimodal texts (Unsworth, 2001). The modern communication landscape is characterized by multimodal meaning-making with a variety of media and modes and a proliferation of local cultures and global connectedness (The New London Group, 1996, p. 62) that require teachers to install new strategies in designing pedagogical approaches (Morita-Mullaney, 2021). This shift is significant, where the learning process relies heavily on technology and digital tools (Kustini et al., 2020; Trisanti et al., 2022). This approach is also beneficial in encouraging students' interest in examining the relationship between different modes and improving students' academic performance and ability to read, write, and communicate effectively in a variety of contexts (Cárcamo et al., 2016). This proves that the use of multimodal literacy in the English language education environment extends beyond language skills. Furthermore, students can experience a better and customized learning experience according to their learning styles and preferences and will experience improved academic performance (Sutrisno et al., 2023). The multimodal approach focuses on the tailoring of the learning experience to accommodate and maximize individual differences (Ganapathy, 2016). Understanding how multimodal approaches impact learning is vital to improving pedagogical strategies in education.

Research on the topic of multimodal literacies has grown immensely since the publication of the groundbreaking work, "A

Pedagogy of Multiliteracies: Designing Social Futures" (The New London Group, 1996), which posited a reconceptualization of literacy based on the notion of design and based on learners' lived experiences. In relation to English teaching, these studies on multimodal literacy in English learning influence practical teaching and learning in terms of the application of multimodal literacy in English classes. For example, in multimodal application, Lim (2022) examined a study on the use of digital news in Singapore secondary English classrooms. His research resulted in the finding that it is very important to meet the needs of diverse students in fulfilling the application of multimodal literacy. Tour and Barnes (2021) examined multimodal literacy from the perspective of teachers, or more specifically pre-service teachers about their perspective in making English language learners more motivated in learning in a digital multimodal composing environment. Their research contributes to the research trend in this field by using widely used keywords such as digital multimodal composing and literacies. The results of their research also have a direct impact on English teaching and learning practices as it provides knowledge to people in the field of English education especially English teachers in organizing strategies in applying multimodal literacy in the English classroom. Yi (2014) also examined the potential and challenges in implementing multimodal literacy for English language teachers. Her findings showed that multimodal literacy has high potential but at the time of the research, there were not many English teachers who applied multimodal literacy, and there were not many researchers who studied this field.

In its development, Ekşi and Yakışık (2015) examined the application of multimodal literacy, but it was in the context of pre-service teachers' readiness level in applying digital literacy. They found that pre-service teachers on average have a good level of understanding of multimodal literacy. Besides, they found that the more hours spent on the internet and the more multimodal structures used as course requirements, the more multimodally literate pre-service teachers will be. Haryyadi and Rohmah (2023) examined a similar matter, namely the perception of pre-service teachers in the

application of multimodal literacy. Their study found that pre-service teachers were positive about the application of multimodal literacy although there were also challenges in terms of technical application of technology in using multimodal literacy. A study conducted by Sutrisno et al. (2023) also found that the use of multimodal literacy affects students' engagement and academic performance. The study found that the use of multimodal literacy showed positive results on motivation and self-confidence in English language learners. Their academic performance also improved from understanding the material, vocabulary development, listening, speaking, analytical skills, and critical thinking.

Another important piece of research to review in order to conduct this research is Lim et al.'s (2022) systematic review of multimodality in the English language classroom. This study contributed initial knowledge to the researchers to compare our findings with the existing literature review research in this area. Lim et al. (2022) found that the trend of using multimodal literacy in English learning has been heavily influenced by the development of digital technology, such as the use of technologies such as smartphones, tablets, and virtual and augmented reality. In terms of applied multimodal pedagogies, they found that the trend has developed in terms of pedagogies by starting to use digital games and digital videos as multimodal pedagogies that are used to bring together different modes of the latest media. Lim et al.'s (2022) research is a systematic literature review that continues a previous study conducted by Kulju et al. (2018) focusing on multiliteracies pedagogy in primary classrooms using the same approach and also research by Yi (2014) who examined the potential and obstacles of multimodal literacy implementation practices in English as an additional language in learning.

Several bibliometric studies on multimodality have been conducted. One of them is by Zhong et al. (2023) who used bibliometric analysis to examine research trends related to multimodal metaphor. Their research was focused on the field of literature. The data used were research publications from 1977-2022 using 397 publications

taken from the Web of Science Core Collection (WoSCC). The software used was VOSviewer. This research explored and analyzed data on publication year, country/region participation, citation and co-citation analysis, co-authorship of authors, co-citation of authors, most cited reference, biographic coupling, co-occurrence keywords analysis. This research also investigated research trends in this field, namely cognitive linguistic theory, the theory of pragmatics and visual/multimodal rhetoric theory.

In Indonesia, bibliometric research related to multimodality has been carried out by Firmansyah et al. (2023) who analyzed multimodality based on multimodal learning. Their research used the Google Scholar database to search data. To collect data, Publish and Perish software was used to search for articles using keywords such as multimodality, multimodal learning, and multimodality in the context of university learning. The search results were based on 417 publications from 1994 to 2022. This study examined data on article productivity per year, distribution of journals or sources, source impact, average citations, most frequent keywords, connections between terms in studies on multimodal learning, and productivity of the researcher network.

While multimodal literacy has garnered increasing attention in English language education, there has been a noticeable gap in the bibliometric analysis of research trends in this area. Although some bibliometric research in the realm of English language learning and teaching has been conducted, bibliometric research related to multimodal literacy in English language learning has not been conducted either in Indonesia, where the researchers are located, or worldwide. Additionally, while the previous studies mentioned examine multimodality, our study examines the more specific topic of multimodal literacy used in the English language learning process.

Addressing this gap is essential to understand how research in this area has evolved and what future directions might be beneficial. Bibliometric analysis provides valuable insights into the productivity, impact, and trends within a given research domain, yet no study has systematically examined multimodal literacy in English learning from

this method. This method is excellent for measuring the comparative influence of a particular field of study, using various criteria to scrutinize published data (Julia et al., 2020). This study aims to fill that gap by providing an in-depth bibliometric analysis of publications on multimodal literacy in English learning.

As bibliometric analysis offers a systematic approach to mapping research trends and identifying key contributors to a specific field, this study aims to provide a detailed bibliometric analysis of research on multimodal literacy in English learning. By employing bibliometric tools such as Biblioshiny in R and VOSviewer, this study seeks to provide a comprehensive overview of the current research landscape and identify avenues for future inquiry. By analyzing publication data, this study provides insights into productivity of researchers in this field which also includes information on the most prolific authors, the influence of countries and institutions, emerging topics in multimodal literacy, and the keyword trends in this research fields, thus offering a comprehensive overview of the field's current research landscape with the main objective to help identify gaps and potentials in carrying out future research in the field of multimodal literacy in English learning. Specifically, the objectives are to:

1. Identify the most prolific authors, countries, institutions, and publication sources.
2. Investigate keyword trends to uncover emerging research areas in the field.

METHOD

This bibliometric study was conducted to analyze the productivity of research in multimodal literacy in English learning. Bibliometric analysis is a method that investigates the change or evolution of a research domain, by exploring the topics, authors, and conceptual structure of a discipline based on a quantitative review of journal papers and other sources of scholarly sources (Supinah & Soebagyo, 2022). In the context of multimodal literacy in English learning, bibliometric analysis involves comprehensive mapping of articles using software such as Biblioshiny in R and VOSviewer to

search for innovative keyword maps (Aria & Cuccurullo, 2017; Cuccurullo et al., 2016; Sidiq, 2019).

The primary database used in this research is Scopus because it can present complete data related to titles, authors, institutions, countries, abstracts, citations, and other publication data that are useful for bibliometric research. This is evident from the review research conducted by Pranckutė (2021) which found that Scopus is proven to provide broader content coverage overall when compared to Web of Science (WoS) which has excellent bibliometric data completeness. Moreover, Scopus is recommended to work with Arts and Humanities studies and proved to be a database that provides more extensive coverage than Web of Science (WoS) in this research field (Liu, 2022). Besides, Scopus can present reference data in various formats and is a compatible database to be analyzed using R Biblioshiny. With these considerations, the Scopus database was chosen.

In the process of collecting data, Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009) were used to direct each step of the research to enhance the reliability of the systematic review and these have been successfully used by several researchers such as Peng et al. (2022) and Rohmah et al. (2024). Figure 1 shows the flow of data collection. The process starts from identifying, screening, and including the final articles to be studied. The research started by searching for articles on the Scopus database with the keywords "multimodal AND literacy AND English AND learning". This was followed by subsequent screening stages, assessing eligibility, and determining inclusion criteria (Gao et al., 2022; Mishra et al., 2022; Viana-Lora & Nel-lo-Andreu, 2022). The researchers determined the limit of the type of research used which is only published articles and excluded other types of research such as proceedings papers or reviews papers on the grounds that articles have originality with a rigorous peer-review process, which well demonstrates the status quo in the field under study (Wang & Lv, 2021). No year filter was applied because the researchers intended to find out the first year of research on this topic. The existing data were then downloaded in .BibTex format for analysis in Biblioshiny in R, and

in .RIS format for analysis in VOSviewer. From the data obtained, it was found that the lower limit of the publication year of articles in this field was in the early 2000s, namely the article written by Love (2003) when researching the case study of "BUILT" on mediating generational shifts in secondary English teaching in Australia. Thus, the time span obtained from the existing data is from 2003 to 2024, which was determined based on the lower limit of research years found in the database up to the year of this study, with a total of 345 records.
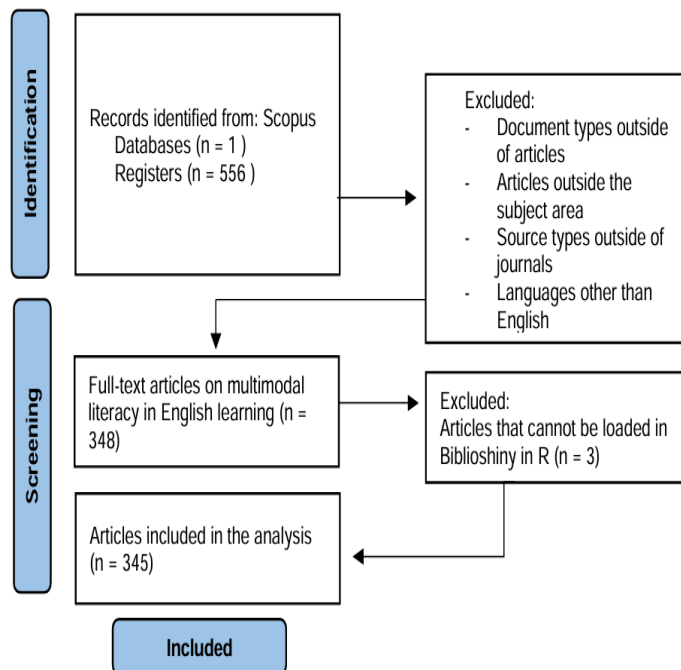

Figure 1. PRISMA flowchart of the articles collection

The data obtained was then analyzed using Biblioshiny in R and VOSviewer. Data in .BibTex format was loaded into Biblioshiny in R, while data in .RIS format was loaded into VOSviewer for analysis. The data was then computed by both software and visualized through the software. Biblioshiny in R is the software to analyze data on the most prolific authors, distribution of number of scientific publications and number of citations per country, distribution of most relevant affiliations, distribution of most productive sources, the most frequent

keywords, and the most relevant author's keywords. Meanwhile, VOSviewer was chosen because it has many features in visualizing bibliometric data. VOSviewer in this research is used to analyze and visualize data related to co-occurrence of keywords, density of keywords, and year of appearance of the analyzed keywords to examine research trends in this field.

FINDINGS AND DISCUSSION
The most prolific authors, countries, institutions, and publication sources.

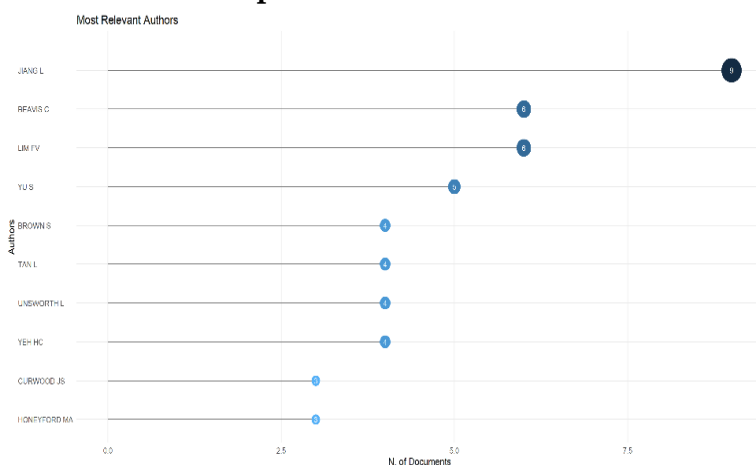**Distribution of the most prolific authors**

Figure 2. The 10 most prolific authors

The total number of scientific publications examined in this study is 345 scientific publications. Figure 2 visualizes the top 10 prolific authors from the productivity level of scientific article publications on multimodal literacy in English learning. From the data visualization result, all top 10 prolific authors have produced research articles with the lowest number of 3 publications in this field. Jiang L is the author with the highest total number of 9 publications in this field, followed by Beavis C, Lim FV, Yu S, Brown S, Tan L, Unsworth L, Yen HC, Curwood JS, and Honeyford MA. Jiang L is an education researcher and language teacher educator from The University of Hong

Kong in Hong Kong with research interests in multimodality. He is an expert in multimodality and multiliteracies in second-language education with a focus on digital multimodal composing. This is reflected in his 9 Scopus-indexed publications on multimodal literacy in English learning that contribute to this research area. Lim FV from Nanyang Technological University of Singapore also made it to the top 10 most prolific authors list. This is in line with the literature review that the researchers have conducted where the researchers have used the findings of Lim FV who is an expert in the field of multimodal literacy in English learning as a reference and comparison to the development of research in this field. One of his studies is Multimodality in the English Language Classroom: A systematic review of literature by Lim et al, (2022). Lim FV's affiliation, Nanyang Technological University, is even the most productive affiliation in this research area with Lim FV's large contribution to this affiliation. The data of the most prolific affiliations in research in this field will be explained in the next few sections.

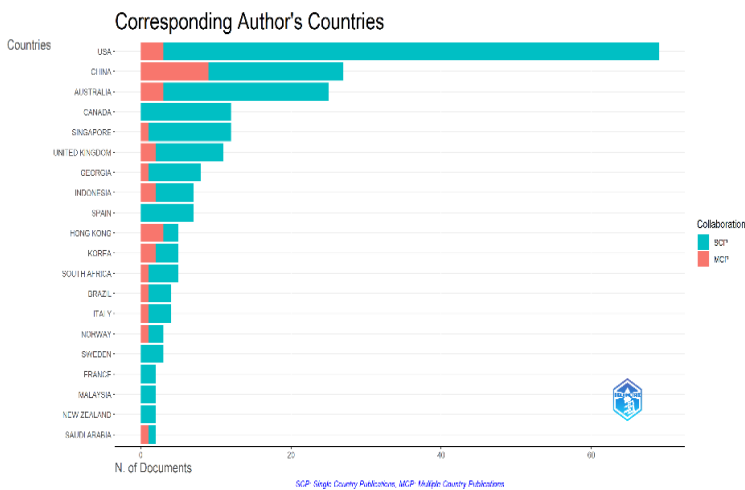**Distribution of the number of scientific publications and number of citations per country**

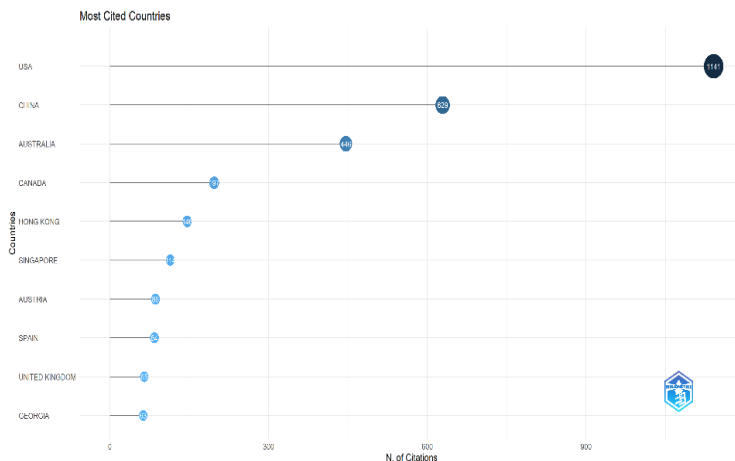**Figure 3.** Countries scientific production

Figure 4. 10 most cited countries

345 published articles became the data in this study. Figure 3 visualizes the data from 20 countries that produced the most research articles on multimodal literacy in English learning. The data visualization is presented in a graph with two different colors. The blue color describes SCP or "Single Country Publications", while the red color describes MCP or "Multiple Country Publications" data. From the data obtained, it can be seen that in SCP the USA is the country with the highest productivity in researching this field with a total of more than 60 publications. This is followed by China and Australia with a total of more than 20 articles, followed by Canada, Singapore, United Kingdom, Georgia, Indonesia, Spain, Hong Kong, Korea, South Africa, Brazil, Italy, Norway, Sweden, France, Malaysia, New Zealand, and Saudi Arabia. But interestingly, when viewed from MCP data, China is the most productive country beating the USA which leads in the SCP category. From Figure 3, it can be concluded that the country with the most publications in this field is the USA and the country with the lowest publications in this field is Saudi Arabia. Citations in documents show the clarity and significance of a scientific publication for academic reference, which means that publications that receive more citations are considered more influential in a particular field (Zupic & Čater, 2015).

Indonesia, the home country of the researchers, has become a leading contributor to scientific production in this field, surpassing countries such as Spain, Hong Kong, Korea, France, and Malaysia in terms of publication output. This trend reflects the significant growth and development of research in Indonesia, positioning it as an increasingly prominent area of study. A literature review conducted by the researchers corroborates this progress, citing recent works by Indonesian scholars, including Haryyadi and Rohmah (2023), Firmansyah et al. (2023), and Sutrisno et al. (2024).

Indonesia's prominence in multimodal literacy research might be driven by its linguistic and cultural diversity, educational reforms, and rapid technological advancements. The country's rich cultural tapestry, with over 700 languages, offers unique research opportunities in how different communities engage with multiple communication modes including linguistic, visual, and digital forms, interact in everyday life and education (Lauder, 2008). Educational reforms like the *Merdeka Belajar Kampus Merdeka* curriculum emphasize critical thinking and digital literacy, further stimulating research in multimodal approaches (Firmansyah et al., 2023; Jayanti & Damayanti, 2023). Additionally, government support and increased access to digital technology have fostered innovative studies on how Indonesians interact with multimedia content in education and everyday life (Haryyadi & Rohmah, 2023). Institutional initiatives, like the development of outcome-based education and blended learning strategies, have enhanced research on multimodal literacy. Indonesian EFL teachers are ready to adapt multimodal literacy, transitioning consciously from traditional to digital methods (Trisanti et al., 2022). Furthermore, cross-disciplinary approaches involving media studies and linguistics have allowed scholars to contribute global insights from an Indonesian perspective (Zein et al., 2020).

Furthermore, it can be seen from Figure 4 in the list of the 10 most cited countries that the USA is the country with the most citations with a total of 1141 citations. This is related to the country with the most publications in Figure 3 which shows the USA as the country with the most publications in this field. China follows as the second most cited

country with 629 citations. Next in order are Australia (446 citations), Canada (197 citations), Hong Kong (146 citations), Singapore (114 citations), Austria (86 citations), Spain (84 citations), United Kingdom (65 citations), and Georgia (63 citations). The country that stands out in the total number of citations is the USA, and the lowest in the data is Georgia.

The USA is the country with the most publications and citations in this field because there are many affiliations or universities that have study programs related to this field that encourage research on multimodal literacy in English learning to be carried out. There are a total of 121 affiliations from the USA that contribute to the 345 publications on Scopus that are the data in this study. This suggests that the most prolific countries in this domain are related to the most prolific affiliations that generate research in this area, the data of which will be presented in the next section.

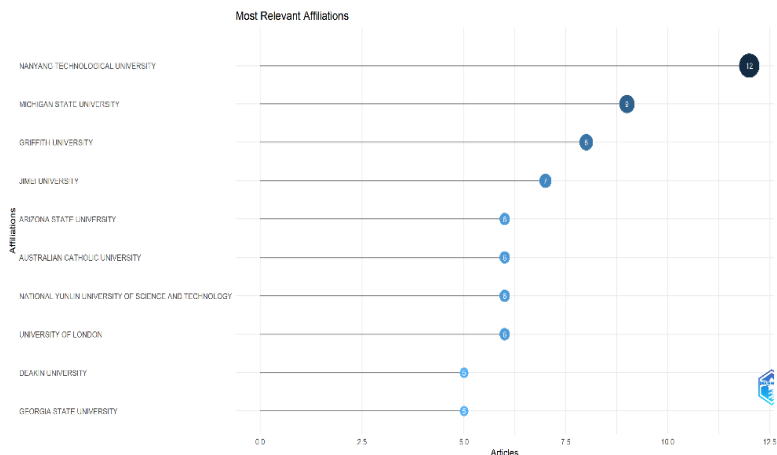**Distribution of most relevant affiliations**

Figure 5. The most relevant affiliations

Figure 5 shows the top 10 affiliations or institutions examined based on a minimum total of 40 publications in the field of multimodal literacy in English learning. Some of the institutions that are productive in producing scientific publications include Nanyang Technological

University which leads with a total of 12 publications that are the top institutions in research in the field of multimodal literacy in English learning and teaching, followed by Michigan State University (9 articles), Griffith University (8 articles), Jimei University (7 articles), Arizona State University (6 articles), Australian Catholic University (6 articles), National Yunlin University of Science and Technology (6 articles), University of London (6 articles), Deakin University (5 articles), and Georgina State University (5 articles). This relates to and confirms the discussion on the most prolific authors where data on this has been shown in Figure 2. Nanyang Technological University of Singapore is the most prolific university in this area of research in Scopus-indexed publications because it has authors who specialize and are very prolific in this area such as Lim FV whose name appears as one of the most prolific authors in the previous discussion. Towndrow PA becomes one of the most prolific authors from Nanyang Technological University with the same number of publications as Curwood JS and Honeyford MA shown in Figure 2 with a total of 3 publications, but his name does not appear in Figure 2 because the Biblioshiny in R software can only visualize 10 names in graph form even though he is equivalent to the name that appears with the same number of publications in Figure 2.

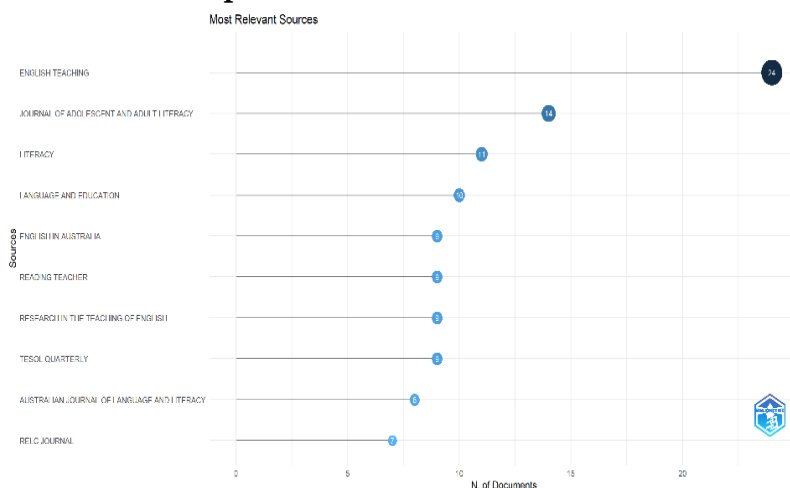**Distribution of most productive sources**

Figure 6. The most relevant publication source

From a total of 354 published scientific articles that became the data of this study, there are 148 total sources that have published scientific articles in this field. Figure 6 shows the most productive sources in producing publications in this field. English Teaching, which is a source from the United Kingdom, is the source with the highest number of publications, namely 24 publications. Interestingly, the source that occupies the first position as the most productive source in this field does not come from the USA which is the most prominent country in the total number of publications and the number of citations as shown in Figure 3 and Figure 4. Journal of Adolescent and Adult Literacy is the source from the USA that publishes the most research articles from this country with a total of 14 publications and ranks second from the most productive sources in the field of multimodal literacy in English learning.

The next most productive sources in this area are Literacy (11 publications), Language and Education (10 publications), English in Australia (9 publications), Reading Teacher (9 publications), Research in the Teaching of English (9 publications), TESOL Quarterly (9 publications), Australian Journal of Language and Literacy (8 articles), and RELC Journal (7 publications). English Teaching is superior by being the most productive source of research in this field. This source is a journal with a publisher, Emerald Group Publishing from the United Kingdom, which has a full journal name, English Teaching: Practice and Critique (ETPC). This source is the most productive source in producing research in this field because many expert researchers in this field and affiliations who are productive in research in this field choose to publish their research articles on this source. This is related to the previous discussion about the most prolific authors and affiliations whose data is presented in Figure 2 and Figure 5, where there are expert authors such as Lim FV and Curwood JS who are some of the most prolific authors in this field, and there are several university names from the most prolific affiliations such as Griffith University and Deakin University that have published their research articles on this source.
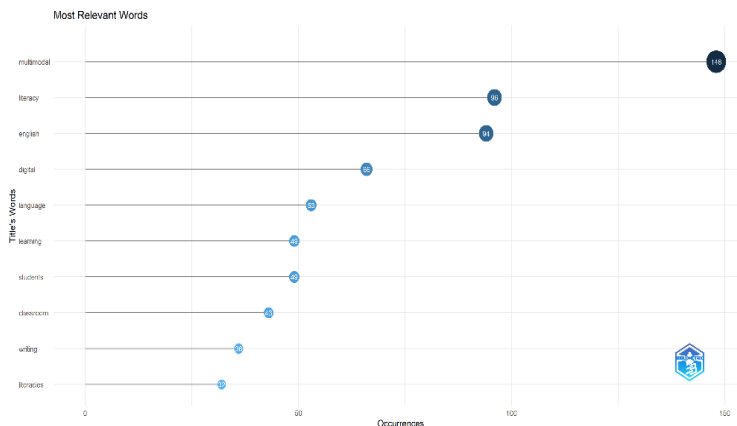
The most frequent words

Figure 7. The most frequent words
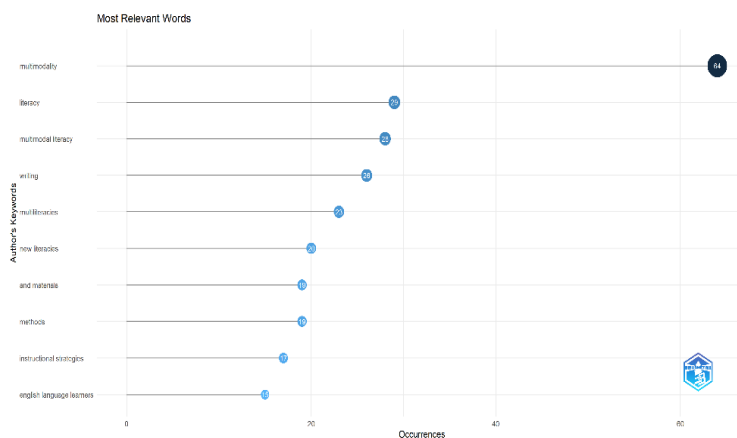
Figure 8. The most relevant author's keywords

The most frequently used words or keywords in existing studies were examined to look for trends in the field of multimodal literacy in English learning,. There are three categories of words whose frequency of occurrence data are visualized in this study, namely the most frequent word in the research title visualized in Figure 7, the most frequent author's keyword visualized in Figure 8, and the co-occurrence of keywords data visualization displayed in Figure 9.

The analysis of the most frequently occurring words in research titles in the field of multimodality in English learning reveals significant trends. The dominance of the word "multimodal" (148

occurrences) reinforces its role as the primary descriptor of the research area, highlighting the focus on integrating multiple modes of communication beyond traditional text. The frequent appearance of "literacy" (96 occurrences) and "English" (94 occurrences) reflects the growing emphasis on expanding literacy practices within the context of English language learning, particularly in a digital age. This is not surprising because "multimodal", "literacy", and "English" are keywords that identify the topic, research field, and content of the research conducted on multimodal literacy in English learning.

Interestingly, "digital" appears prominently (66 occurrences), suggesting the strong influence of digital technologies on multimodal approaches, as classrooms increasingly integrate multimedia tools. "Students" and "Classroom" are keywords that also frequently appear in research in this field. "Students" appears in 49 occurrences, while "Classroom" appears in 43 occurrences. This shows that the research conducted is practical in teaching and learning activities by involving students in the classroom as part of the research rather than just researching multimodal literacy as a theory or methodology that has not been put into practice.

What stands out in this analysis is the word "writing" (36 occurrences), which emerges as the most researched skill associated with multimodal literacy in English language teaching (ELT). This finding is intriguing because writing typically involves creating texts in multiple formats—integrating visuals, audio, and digital tools in addition to traditional written forms. The prominence of writing in multimodal research suggests a shift towards a broader definition of literacy, encompassing the production of multimodal texts. This contrasts with "reading," which only appears 21 times, indicating that while literacy often traditionally focuses on reading skills, multimodal literacy research leans towards productive skills like writing.

The focus on "writing" rather than "reading" would indicate a shift in pedagogical priorities within multimodal literacy, where educators are prioritizing students' abilities to compose and create multimodal texts over simply consuming them. This reflects a broader educational trend where students are not only expected to interpret

complex, multimodal content but also to produce it, making writing a central skill in multimodal literacy research. This shift emphasizes the active, participatory role of learners in the creation of meaning across multiple formats, aligning with 21st-century educational goals of fostering creativity, critical thinking, and digital literacy (Cope & Kalantzis, 2009; Jewitt, 2008). The integration of writing within multimodal literacy practices recognizes that modern literacy is not limited to traditional forms of reading and writing but includes the production of diverse communicative modes such as visual, audio, and digital texts (Kress, 2010). Furthermore, research highlights that engaging students in multimodal composition helps to develop their critical thinking skills, as they must navigate and integrate multiple semiotic resources to communicate effectively (Walsh, 2010).

Figure 8 displays the most frequent author's keywords in the research in the field of multimodal literacy in English learning. The top three author's keywords in Figure 8 represent the identity words of the field. In order, they are "multimodality" (64 occurrences), "literacy" (29 occurrences), and "multimodal literacy" (28 occurrences). Author's keywords that appear most frequently are "writing" (26 occurrences), "multiliteracies" (23 occurrences), "new literacies" (20 occurrences), and "materials" (19 occurrences), "methods" (19 occurrences), and "instructional strategies" (17 occurrences).
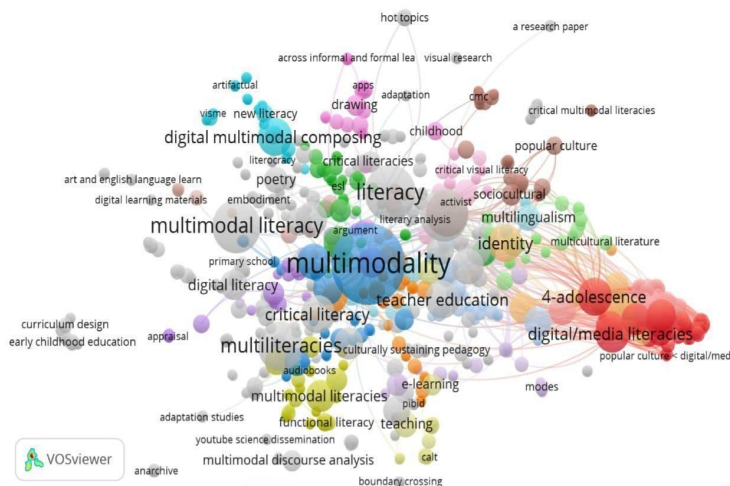
Figure 9. Visualization of co-occurrence of keywords

Figure 10. Visualization of the density of the keywords

Figure 11. Visualization of keyword occurrence year

Co-occurrence analysis provides information on research trends in this domain. Therefore, co-occurrence of keyword pairs analysis is important (Liu et al., 2015). Figure 9, Figure 10, and Figure 11 visualize the co-occurrence of keywords that appear in the 354 documents studied.

Figure 9 visualizes the co-occurrence of keywords in the data under study. While Figure 10 visualizes the density of the number of studies that have been conducted with certain keywords. The way to

read Figure 10 is very easy, namely yellow color means that the keywords have been widely used in existing research, green color means that there are still few or rare keywords used in existing research. The keyword "multimodality" is the most prevalent with the most prominent visual in Figure 9 and is presented in Figure 10 as the most dense or most used keyword. The keywords 'literacy', "multiliteracies", "digital/media literacies", "English language teaching", and "digital multimodal composing" are other keywords that frequently appear in the existing studies.

Figure 11 shows the first year of occurrence of the keywords. The color range used is from blue-green-yellow. The more blue the color, the longer the keyword has been around, and the more yellow the color, the newer the keyword. The earliest year of keyword appearance in this field is 2014 and the latest year is 2024, which is the year this research was conducted.

From the data visualization in Figure 9, Figure 10, and Figure 11, it can be seen that keywords such as "ELL", "critical thinking", "challenges", "curriculum design", and others are gap research topics that can be investigated more deeply by continuing existing research to deepen findings and enrich knowledge in this field. Additionally, keywords such as "curriculum design", "language learning", and "multimodal discourse analysis" can be used as keywords in future research as keywords that have not been widely used or researched in this field.

Multimodal, literacy, English, and digital are the keywords that appear most often because these keywords are words that become identity and are directly related both in definition and function to this field of research. This is the basis for the emergence of new keywords that emerge as a development of these keywords and set trends in research in this field. This is evident from Figure 7 and Figure 9, which shows that these four keywords are the most prominent in the graph, which means that they are the most frequently occurring keywords, and there are connections in the form of lines connected to each other with other keywords that have fewer occurrences such as the keywords digital/media literacies, critical literacy, digital literacy, digital

multimodal composing, and others, which ultimately lead to the emergence of new keywords such as drawing, apps, primary school, popular cultures, and others. The development of these keywords has shown the development of trends in research topics in this field.

Additionally, Figure 9 displayed that there are topics that have emerged after the development of topics and trends in this field of research and have not been widely researched such as poetry, audiobooks, digital learning materials, critical visual literacy, and e-learning. Similarly, Lim et al.'s (2022) research found the trend of topics or themes in the field of multimodal literacy research in the English learning environment. Secondly, the mostly used multimodal text types were digital learning materials, comics, novels, digital books, and poetry. Their research findings also found that the trends in the types of modes used in English learning were linguistic, verbal, (aural) music and sound, and visual. Therefore, the current research findings confirm Lim et al.' (2022) research and show a consistent progression from previous research findings. The growing trend of topics found based on the keyword analysis that also confirms research by Kustini et al. (2020), and Trisanti et al. (2022) that found that technological developments in the digital era require the learning process to rely heavily on technology and digital. This can be seen in Figures 9, 10, and 11 where research topics in this field are growing by raising topics related to digital technology such as topics on digital/media literacies, digital multimodal composing, electronic books, apps, audiobooks, and the use of digital tools such as Visme and YouTube as English learning tools.

CONCLUSION

The research successfully explored the impact of scientific publications on multimodal literacy within English learning by using bibliometric data analysis with Biblioshiny in R and VOSviewer. The study analyzed 345 articles, focusing on prolific authors, publication volume, citations, and trends in keywords. The most productive author is Jiang L, with 9 publications, while the USA leads in both publication output and citations. Nanyang Technological University is the most

productive institution, and English Teaching from the UK is the top publication source. Common keywords include multimodal, literacy, English, and digital.

While the article demonstrates a valuable contribution to understanding multimodal literacy in English learning through a bibliometric analysis, however, we have to admit that it has some limitations. Firstly, it relies solely on Scopus as the data source, which, while robust, excludes other significant databases like Web of Science and Google Scholar, potentially limiting the comprehensiveness of its findings. Secondly, the tools used—Biblioshiny in R and VOSviewer— offer limited functionalities compared to advanced options like CiteSpace, restricting analyses such as evolutionary timelines or deeper co-citation patterns. Additionally, the study predominantly provides quantitative insights, focusing on publication counts and keyword trends, but lacks qualitative depth regarding the practical applications of multimodal literacy. The regional bias in highlighting contributions from dominant regions, such as the USA and China, also overlooks the unique challenges and innovations in underrepresented areas like Indonesia.

Future research should address these gaps by incorporating multiple databases like Web of Science to enhance data comprehensiveness and employing advanced bibliometric tools such as CiteSpace for sophisticated analyses (Ding & Yang, 2022) and complex co-citation analysis (Peng et al., 2022). Mixed-method approaches, combining bibliometric data with qualitative insights from case studies or interviews, would enrich the understanding of multimodal literacy's practical applications and challenges. Additionally, investigating underrepresented regions can provide a more global perspective, highlighting disparities and innovative practices in diverse contexts. Researchers should also explore under-researched themes, such as critical visual literacy and curriculum design, to expand the theoretical and practical scope of the field. An interdisciplinary approach involving psychology, media studies, and cultural studies could further enhance the exploration of multimodal

literacy's impact, fostering its integration into educational practices worldwide.

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