



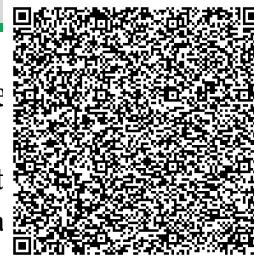
Literacy in Reading and Writing: Systematic Literature Review

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Farida Nugrahani*, Wahyu Dini Septiani

Universitas Veteran Bangun Nusa

Email: faridanugrahani01@gmail.com*, wahyudinaseptiani10@gmail.com,
muktiwidayati.65@gmail.com



Review

ABSTRACT

The interest in reading and writing is the main foundation for improving individual literacy skills, which play an important role in the intellectual development of the community. This study aims to map the development of literacy in Indonesia using the Systematic Literature Review (SLR) method. A total of 1,500 relevant scientific articles from Google Scholar and Crossref (2014–2024) were analyzed with the help of the Publish or Perish application for metadata download and VOSviewer for data visualization. This study covers three main aspects: (1) literacy mapping based on education level (elementary to tertiary); (2) the grouping of literacy models used; and (3) identification of novelty in the literacy study approach. The results show a major focus on primary education, with the application of innovative methods such as digital literacy and project-based learning. The literacy models found vary, ranging from conventional to digital technology-based approaches. The analysis also reveals strong relationships between authors and specific study themes, visualized through networks of citations, author collaborations, and shared references. This mapping provides an in-depth overview of trends, focuses, and research gaps in literacy in Indonesia, serving as a basis for future research development. It offers comprehensive insights into trends, research foci, and identified gaps in Indonesian literacy research, thereby contributing to the theoretical foundation for evidence-based literacy policy development and establishing a bibliometric baseline for future systematic investigations in the Indonesian educational context.

Keywords: literacy, Systematic Literature Review, literacy model, literacy study

INTRODUCTION

Education is one of the main pillars in improving the quality of human life. In this context, education is not merely a process of transferring knowledge but also involves character formation and the development of life-relevant skills (Marwan et al., 2024; Ratmaningsih et al., 2019). According to Law Number 20 of 2003, education is a conscious and planned effort to create a learning atmosphere and process in which students actively develop their potential in spiritual, emotional, intellectual, and skill-related aspects needed by themselves, society, nation, and the state. One of the key components of education is literacy, which



includes the basic ability to read and write but also the skills to comprehend, evaluate, and use information to improve the quality of life for both individuals and communities (Fatoni & Subando, 2024).

Nur Fitria (2023) emphasizes that literacy plays a strategic role in shaping intelligent, critical, and innovative individuals who can ultimately make significant contributions to national development. Meanwhile, Kusmaryono (2024) adds that a literate person is one who can read and understand linguistic symbols and use them for reading activities. The introduction of literacy skills often focuses on transforming illiterate individuals into literate ones. Similarly, Gabriel (2024) defines literacy as the ability to read, often referred to as literacy or basic reading ability. In this sense, literacy is not only about turning non-readers into readers but also involves developing comprehensive reading skills. Strong literacy skills enable individuals to access, evaluate, and integrate information from various textual sources (Trixa & Kaspar, 2024). Woldegiorgis (2025) argues that such abilities are essential for educational success and contribute to social and economic mobility. In other words, literacy plays a crucial role in improving living standards through educational, social, and economic advancement (Gabriella, 2024).

Reading and writing are essential skills that every student must possess (Yana, 2024). However, in reality, these skills still require serious attention, especially in developing countries like Indonesia. Low levels of literacy achievement are often associated with ineffective conventional learning methods (Chen et al., 2021). The ability to read fluently and effectively has the potential to open doors to academic and professional success (Mitchell, 2024). In many schools, the learning process remains focused on memorization rather than comprehension and application, resulting in students lacking motivation to enhance their literacy abilities (Sabuna et al., 2025). Therefore, innovative learning approaches are needed to address this issue. Teachers play an important role in creating interactive and engaging learning environments that encourage students to participate actively in the learning process.

The cultivation of literacy culture must go hand in hand with the development of character and personality in schools (Suratmi & Hartono, 2024). In this regard, it is essential to integrate literacy into various aspects of learning, using creative methods and media (Afrilyasanti et al., 2025). One of the main challenges faced by the education system is the limited understanding of effective learning models to enhance reading and writing literacy (Ya'u & Mohammed, 2025). Based on existing literature, there is still a lack of studies specifically identifying the best learning models to improve students' literacy skills across different educational levels. Therefore, further research is needed to map clusters based on educational levels, literacy models, and novelty in literacy studies. This study is expected to make a significant contribution to developing more effective and relevant learning strategies aimed at improving students' literacy competence.

Despite the growing body of literacy research in Indonesia, no comprehensive bibliometric synthesis has systematically mapped the landscape of reading-writing literacy studies from multiple databases over an extended timeframe. Previous reviews have either focused on specific literacy domains (e.g., digital literacy exclusively) without examining

reading-writing literacy holistically, or analyzed shorter time periods insufficient for identifying longitudinal trends (Sandau et al., 2024). Furthermore, existing systematic reviews have predominantly relied on single databases, limiting the comprehensiveness of their coverage and potentially introducing database-specific bias.

This study addresses these gaps through several distinct contributions. First, it integrates metadata from two complementary databases—Google Scholar (providing broad coverage of Indonesian-language publications) and Crossref (emphasizing peer-reviewed international journals)—thereby capturing both local and globally indexed research. Second, it employs advanced bibliometric visualization using VOSviewer to identify co-citation networks, author collaboration patterns, and thematic clusters that previous narrative reviews could not systematically reveal. Third, it covers a decade-long period (2014–2024) encompassing major Indonesian educational policy shifts including the School Literacy Movement (Gerakan Literasi Sekolah/GLS) launched in 2016 and the Independent Curriculum (Kurikulum Merdeka) implemented from 2022, enabling analysis of research responses to these policy interventions. Fourth, this study explicitly maps research distribution across educational levels (primary, secondary, tertiary), revealing concentration patterns and underresearched domains to guide future inquiry.

Therefore, the novelty of this study lies in its methodological integration (dual-database bibliometric approach), analytical sophistication (VOSviewer network analysis), temporal comprehensiveness (decade-long coverage), and policy-contextual framing (alignment with Indonesian educational reforms)—dimensions that collectively distinguish it from prior Indonesian literacy reviews and establish a replicable framework for future systematic research mapping in developing-country educational contexts.

RESEARCH METHOD

The study used the Systematic Literature Review (SLR) method. This method involved collecting and evaluating studies related to the research topic. The review aimed to identify, assess, and interpret relevant studies focused on the specific research questions (Triandini). It also provided an overview of research trends, methods, and fields covered within scientific literature databases over a defined time frame (Yemen).

To ensure rigor and transparency, this SLR followed a modified PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework adapted for bibliometric analysis (Page). The process consisted of four main phases: (1) Identification—defining search parameters and databases; (2) Screening—applying inclusion and exclusion criteria to the records; (3) Eligibility assessment—evaluating full texts for relevance and quality; and (4) Inclusion—finalizing the set of studies for analysis.

Table 1. Literature Review Work System

No	Process Stages	Purpose
1	Identify study questions	Transforming problems into study questions
2	Develop systematic review study protocols	Provide guidance in conducting a systematic review

No	Process Stages	Purpose
3	Determine the location of the data-base of the study results as a search area (Google Scholar)	Provide boundaries for search areas that are relevant to the results of the study
4	Selection of relevant study results	Collect the results of the study that are relevant to the study question
5	Choose quality study results	Exclude and include studies included in systematic review based on article quality
6	Data extras from individual studies	Perform data extraction from individual studies to obtain important findings
7	Synthesis of results by metaanalysis method	Synthesize results with metaanalysis techniques
8	Presentation of the results of the study in the document	Conducting a report on the results of a systematic review

The Systematic Literature Review process required application support to simplify its stages. The tools used were Publish or Perish and VOSviewer, which are commonly employed for bibliographic analysis. Publish or Perish was used to extract citation metrics from metadata provided by indexing services such as Google Scholar and Crossref. It allowed searches by authors, publication names, titles, and keywords, as well as mapping article year ranges and citation counts (Publish or Perish, 2024). VOSviewer was employed for bibliometric analysis to identify research gaps, frequently cited references, and thematic clusters (VOSviewer, 2024).

The literacy data analyzed in this study originated from metadata in the Google Scholar and Crossref databases. Data from Scopus and Web of Science were excluded because the focus was limited to Indonesia. The data collection stages included: 1) downloading metadata of journal articles containing the keywords "Literacy" and "Writing" related to Indonesia from Google Scholar and Crossref using Publish or Perish; 2) storing the data in RIS format; 3) analyzing the RIS data using VOSviewer for visualization; and 4) writing the analysis results in the article.

During the second stage, the author performed these steps: 1) downloaded journal articles from Google Scholar and Crossref using Publish or Perish; 2) stored the data in RIS format; 3) imported data into the author's Mendeley reference manager within designated folders; 4) exported combined RIS data from Mendeley and Publish or Perish; and 5) analyzed this combined data with VOSviewer to generate visual outputs, which were then included in the article.

In the third stage, the author conducted an additional analysis to map the author network contributing to literacy research from 2014 to 2024. The resulting data included visual maps and thematic categorizations from VOSviewer outputs, represented by various graphical elements such as the size of connecting lines and circles that illustrated relationship strength and frequency. The analyses included: (a) Citation analysis, visualizing connections between cited and citing documents to highlight citation relationships; (b) Bibliographic coupling, showing networks of articles sharing references to reveal similarities between studies; (c) Co-authorship analysis, visualizing collaborations among authors and their institutions.

VOSviewer provided three types of visualizations: network, overlay, and density views, which illustrated different aspects of the data relationships effectively.

RESULT AND DISCUSSION

Mapping of the Literacy Study Cluster

The process stages to see the trends in literacy study using Systematic Literature Review through: 1) Downloading journal article metadata with literacy keywords from Google Scholar and Crossref using Publish or Perish; 2) Data is stored in RIS format; 3) RIS data is analyzed using the VOSviewer application to obtain visuals; 4) The results of the analysis with VOSviewer are written in this article.

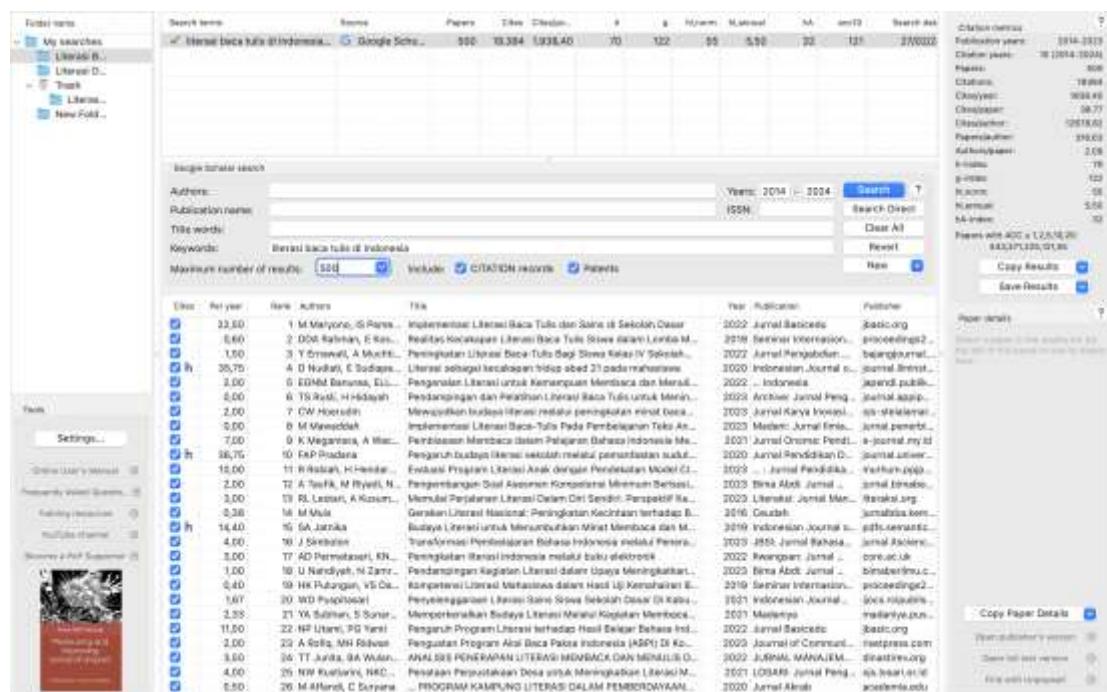


Figure 1. Metadata from *Google Scholar*

Based on meta data from Google Scholar with a time frame of 2014-2024, it was obtained with a limit of 500 articles, with a total of 19,384 citations, an average annual citation of 1,938.4, an average citation per article of 38.8, an h-index of 70, a g-index of 122, a hi norm of 55, an annual hi of 5.50., and an hA-index of 32.

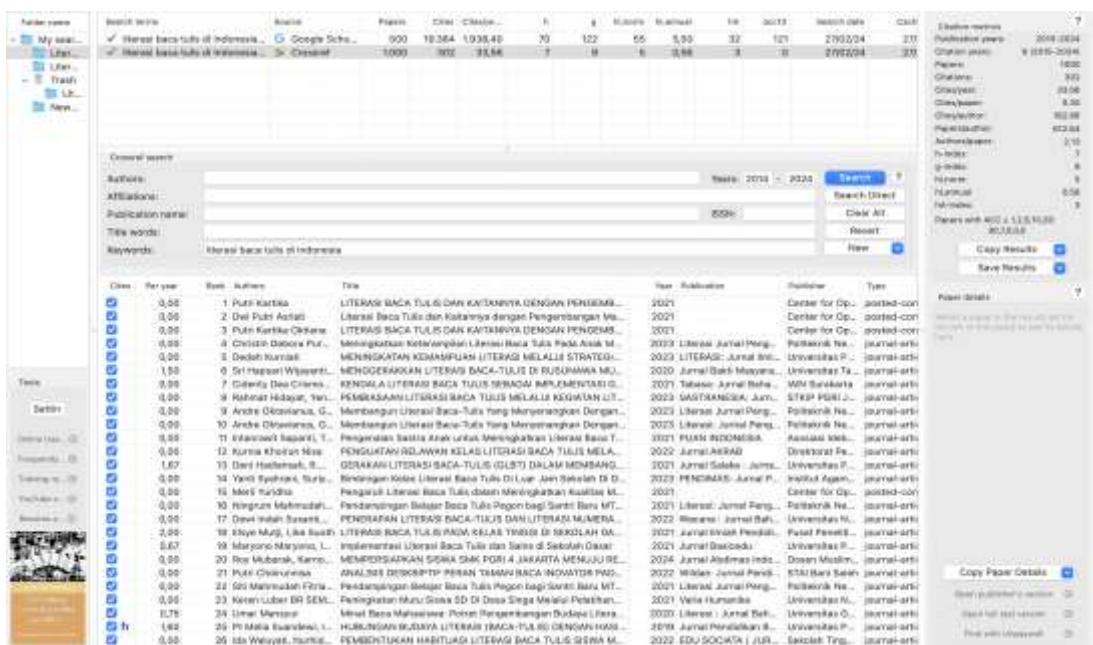


Figure 2. Metadata from Crossref

From the Crossref metadata from the 2014-2024 time range, a total of 1000 articles were obtained, with a total of 302 citations, an average annual citation of 33.56, an average citation per article of 0.30, an h-index of 7, a g-index of 9, a normal of 5, a year of hi of 0.56, and an average of 3 hA-indexes. Comparing the two data above, the number of citations between Google Scholar is higher than that of Crossref, even though the metadata obtained from Google Scholar is only 500 articles, but the total citations reach 19,384. Unlike Crossref, the article results are 1000 but the total number of citations is 302. After obtaining metadata from Googlescholar and Crossref through the Publish or Perish application, metadata is stored in RIS file format. This RIS format is then analyzed using the VOSviewer application with the following data display:

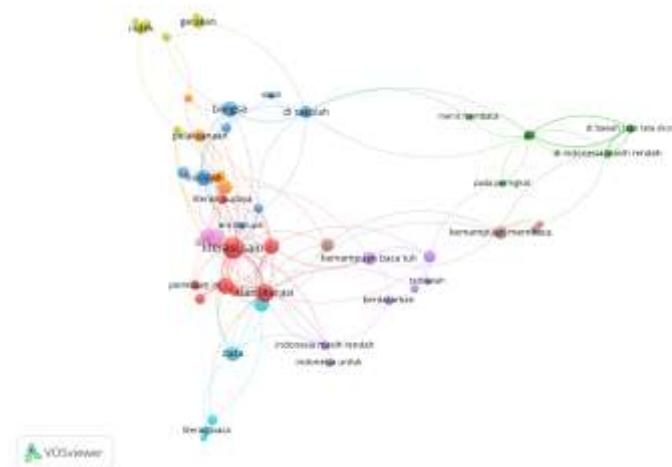


Figure 3. Visualization Results from VOSviewer

Discussion

This study provides an important contribution to the mapping of reading-writing literacy research in Indonesia, particularly within the 2014–2024 period. The metadata analysis from Google Scholar and Crossref reveals a significant disparity in the number and quality of citations between the two databases. The metadata from Google Scholar includes 500 articles with a total of 19,384 citations, while the metadata from Crossref consists of 1,000 articles with only 302 total citations. This indicates that articles indexed in Google Scholar tend to have a greater impact within the academic community. This finding aligns with Moed et al. (2016), who noted that Google Scholar is often used to detect research trends due to its broader coverage, albeit with less rigorous standards compared to databases such as Scopus. Moreover, the findings are consistent with Ezinwa (2024), who emphasized that the quality of metadata significantly influences the effectiveness of bibliometric analysis in literacy studies.

In terms of educational level, this research identifies that most reading-writing literacy studies focus on primary education. This emphasis arises from the urgent need to strengthen literacy skills from an early age as a foundation for academic and social success. As Llorent et al. (2022) stated, literacy at the primary education level is vital for building cognitive and affective skills that support individual development. Furthermore, Harras highlighted that basic literacy—particularly reading and writing skills—is a prerequisite for mastering advanced literacies such as digital literacy and numeracy. The present study supports this perspective by showing that innovative learning models based on technology, such as digital literacy programs, are increasingly implemented in primary education to enhance student engagement and capability.

Additionally, the literacy models identified in this study demonstrate significant diversification. For instance, digital literacy has become one of the main focuses in recent research. Digital literacy encompasses not only reading and writing skills but also the ability to access, evaluate, and integrate information from diverse digital sources (Alshraah, 2024). This finding aligns with Liu et al. (2020), who emphasized the importance of digital literacy in supporting academic and professional success in the digital era. Similarly, Maria José argued that digital literacy is an essential competency for addressing the challenges of globalization and technological transformation. The study also shows that digital literacy is being introduced not only at the higher education level but also at the primary and secondary levels in Indonesia.

The visualization results generated using VOSviewer provide deep insights into the collaboration networks of authors, citations, and bibliographic coupling in literacy studies. The network analysis shows that certain authors and institutions play central roles in advancing literacy research in Indonesia. These collaboration networks reflect patterns of synergy among researchers, as identified by Katz and Martin, who noted that academic collaboration plays a crucial role in enhancing research productivity and quality. Moreover, Hsiao and Chen (2020) demonstrated that bibliographic coupling helps identify common research foci among different authors, thereby fostering stronger academic collaboration.

The discussion of the findings also reveals a research gap in reading-writing literacy studies in Indonesia. Although many studies focus on basic and digital literacy, there is a lack

of research addressing functional and media literacy. According to UNESCO (2006), functional literacy involves an individual's ability to use literacy skills in daily life contexts—such as reading instructions or understanding health information—while media literacy, as defined by Buckingham (2020), refers to the ability to analyze, evaluate, and create media messages. This study recommends further exploration of these dimensions, particularly within Indonesia's unique cultural and geographical diversity.

In terms of novelty, this analysis shows that literacy research in Indonesia is evolving toward an interdisciplinary approach. This is reflected in the increasing number of studies integrating reading-writing literacy with numeracy, scientific literacy, and technological literacy. As Casal-Otero et al. (2023) suggest, interdisciplinary approaches can broaden the scope of literacy to encompass multiple aspects of modern life. Furthermore, this study notes the rising popularity of project-based literacy models, such as the School Literacy Movement (Gerakan Literasi Sekolah or GLS), as effective learning methods. Almulla (2020) supports this by showing that project-based learning enhances student engagement and promotes active learning.

Finally, the implications of this research include policy recommendations to strengthen literacy development in Indonesia. Governments and educational institutions should utilize these findings to design more inclusive, evidence-based literacy programs. For example, digital literacy implementation can be expanded through teacher training and the development of technology-integrated curricula. This aligns with the recommendations of the Organisation for Economic Co-operation and Development (OECD) as cited by Martínez-Bravo (2022), emphasizing digital literacy as a core 21st-century competency. Additionally, collaboration between academics, educators, and policymakers is essential to ensure that literacy programs encompass multiple dimensions—from basic and digital literacy to media and critical literacy.

CONCLUSION

The analysis of reading-writing literacy research metadata in Indonesia from 2014 to 2024 revealed a notable disparity between Google Scholar and Crossref databases, with Google Scholar showing fewer articles but significantly higher citations and impact. Research predominantly focused on primary education, emphasizing innovative, technology-based learning methods to boost literacy skills. Network analysis identified influential authors and key themes, while highlighting gaps in functional and media literacy—skills vital for everyday application and critical media evaluation. The study also noted a growing interdisciplinary trend linking literacy with numeracy and scientific and technological literacies. Future research should explore these underexamined areas and evaluate the effectiveness of integrated literacy approaches to inform evidence-based policies and teacher training for more inclusive education in Indonesia.

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