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From home to classroom: A 20-year global bibliometric analysis of children's reading literacy

Shanina Sharatol Ahmad Shah [1*], Lim Seong Pek [2], Zuwati Hasim[3], Simah Mamat[4], Lo Yueh Yea[5], and Huzaina Abdul Halim[6]

[1,3,4,5,6]Faculty of Education, Faculty of Education, University Malaya, Kuala Lumpur, Malaysia
[2]Centre for Educational Sustainability Development and Strategies, Faculty of Educational and Liberal Arts, Inti International University, Malaysia

ABSTRACT

Reading literacy is crucial for children's academic achievement. This bibliometric analysis aims to study children's reading literacy development from 2005 to 2024. Data were obtained from the Web of Science Core Collection by applying inclusion criteria that narrowed the search to peer-reviewed journal articles and conference proceedings published in English. Utilising VOSviewer, 190 documents meeting the eligibility criteria were assessed to identify notable works, establish publishing trends, and examine subject structures via co-occurrence, co-citation, and performance analyses. The results indicate a continuous enhancement in research input, with notable contributions to socioeconomic challenges, educational strategies, domestic literacy environments, and the application of extensive assessment frameworks such as PISA and PIRLS. A comprehensive conceptual framework grounded in modern literacy models, sociocultural points, and comparative educational research was illustrated through co-citation analysis. Co-occurrence analysis identified key themes in educational environments, including reading comprehension, achievement, linguistic proficiency, motivation and early intervention. Cluster analysis revealed four principal thematic categories, underscoring the intricacy and interrelation of literacy studies. The results underscore the intricacies of reading literacy, shaped by structural, cognitive, emotional, and societal factors. To offer more comprehensive frameworks for literacy development, they also disclose opportunities for enhanced integration across academic subjects. This study offers an evidence-based synthesis aligned with Sustainable Development Goal 4 (Quality education) to inform future research, policy and instructional activities aimed at promoting equitable and effective reading outcomes for children globally.

Keywords: Children; education quality; home literacy environment; literacy achievement; reading literacy

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INTRODUCTION

Reading is more than just a cognitive ability; it is a gateway to knowledge, critical thinking, self-determination, and public participation. Children's academic performance, employability, and social involvement are all significantly impacted by reading literacy in the twenty-first century (Daniel et al., 2025; Liu, 2022). There are still concerns regarding children's capacity to read effectively and meaningfully (Domke, 2022; Levesque & Deacon, 2022), even with more access to schooling worldwide. Promoting strong reading literacy is essential for justice and sustainable development as digital materials become increasingly multimodal and textually dense. Reading literacy is a multifaceted concept encompassing decoding, comprehension, motivation, and engagement, all of which are influenced by social, linguistic, and technological factors (Giguere et al., 2024; Li et al., 2021; Liu et al., 2025). Informed by Vygotsky's

*Corresponding author
Email: shanina@um.edu.my

(1978) theory of socially mediated learning, literacy development is increasingly understood as a process shaped through social interaction, cultural tools, and guided participation within home and educational environments. The field of literacy research has broadened due to the shift from print-centric practices to digital and multimodal literacies (Campbell & Olteanu, 2023; Chen & Xiao, 2024; Scholes, 2023); however, systemic barriers – like unequal access to early education, underfunded schools, and linguistic marginalisation – remain, particularly in low- and middle-income environments (Adam, 2025; Romaine, 2024).

Global assessments reveal a persistent learning crisis: despite intensive instruction, a sizable portion of students struggle with basic reading comprehension (Förster et al., 2022; Lee et al., 2025; Shaul et al., 2024; Vanguri et al., 2025). Regardless of parental literacy capabilities, the home literacy environment (HLE) has a major influence on the development of emergent skills and subsequent reading competency (Zhang et al., 2024). Early adoption of shared reading, characterised by rich language interactions, has been shown to enhance vocabulary, comprehension, and phonological awareness (Rocha & Mota, 2022). Benefits can be observed even if the practice is initiated before the child turns 1 year old (Lenhart et al., 2021). By disrupting formal schooling, particularly for pupils in the early grades, the COVID-19 pandemic widened literacy gaps. Current disparities in parental support and resource availability were made worse by this disruption (Altun et al., 2021). Recent longitudinal research highlights the predictive value of early phonological skills, letter recognition, and socioeconomic determinants for later reading accomplishments (Ecalle et al., 2023). Important cognitive functions that interact with emotional and motivational elements to affect literacy development include visual perception, information processing, and inference-making (Muzaki & Dawud, 2024).

Although several bibliometric studies have examined literacy-related topics such as digital literacy, information literacy, media literacy, and literacy education more broadly (Alam et al., 2025; Deng et al., 2025; Sun et al., 2024), limited attention has been given specifically to children's reading literacy. Existing reviews primarily focus on specific literacy domains or educational technologies rather than mapping the intellectual structure, thematic evolution, and collaborative networks surrounding children's reading literacy development. Consequently, a comprehensive bibliometric synthesis dedicated to this area remains lacking. Fixing these synthesis flaws is crucial. Without deliberate coordination, researchers might make the same mistakes, legislators might disregard proven therapies, and teachers would not use evidence-based practices. Children in vulnerable conditions are particularly at risk, as reading delays can perpetuate cycles of socioeconomic marginalisation. By highlighting trends, partnerships, and emerging goals, this bibliometric study aims to provide a comprehensive, data-driven summary of studies on children's reading literacy development from 2005 to 2024. It seeks to guide educational reform, influence research goals, and strengthen the international commitment to universal literacy.

METHOD

This study examines the research environment regarding children's reading literacy development over the past 20 years using bibliometric analysis. For their ability to provide a quantitative and objective evaluation of scientific output, collaborative networks, and topic growth, bibliometric approaches are increasingly recognised (Alam et al., 2025; Donthu et al., 2021; Zhao et al., 2023). Scholarly publications from 2005 to 2024 are carefully analysed in this effort to uncover publication trends, identify notable institutions and contributors, establish intellectual linkages, and track the development of research ideas. This period also aligns with the increasing international emphasis on foundational literacy through large-scale assessment frameworks such as the Programme for International Student Assessment (PISA) and the Progress in International Reading Literacy Study (PIRLS), both of which significantly influenced literacy research, policy, and instructional practices worldwide. Millions of children, although attending school, struggle with reading comprehension, making this mapping crucial to addressing the global learning issue (World Bank, 2021).

The dataset used in this study came from the Web of Science (WoS) Core Collection, a well-known academic database spanning multiple disciplines and known for indexing high-calibre, peer-reviewed publications (Ahn & Kim, 2024; Sarı & Aypay, 2024). Although other databases such as Scopus provide extensive scholarly coverage, the Web of Science (WoS) Core Collection was selected because it is widely recognised as one of the most authoritative databases for bibliometric research due to its rigorous journal selection criteria, standardised citation indexing system, and high-quality metadata (Donthu et al., 2021; Martín-Martín et al., 2018). The following keywords were used in a targeted search: "reading literacy," "children," "early reading," "reading development," "primary education," and "foundational literacy." Boolean operators and filtering techniques were used to ensure that only relevant publications about reading literacy in early childhood settings were retrieved. To guarantee analytical rigour, the search was limited to English-language publications and excluded editorials and non-scholarly literature. While these inclusion criteria enhanced consistency and analytical precision, they may also introduce language and database bias by underrepresenting relevant studies

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published in non-English contexts or indexed outside WoS. Items authored between January 2005 and December 2024 are included in the final collection.

Following data purification and validation, VOSviewer was used to implement three main bibliometric approaches (Kushwaha & Talib, 2024). Three types of analysis were used: co-occurrence, co-citation, and performance. A thorough understanding of the field's productivity, influence, and topic organisation can be gained from these many approaches (Deng et al., 2025).

Performance Analysis

The focus of performance analysis is on quantitative indicators of academic influence and production. It evaluates the influence of citations, identifies influential people, journals, and organisations, and measures publication frequency over time. This approach tracks the development of reading literacy research worldwide and highlights important contributors (Moed, 2021). Understanding the academic environment around reading literacy can be achieved by examining the most common publications, venues, and citation patterns of scholarly work. According to Zhang et al. (2024), it highlights influential works, finds emerging research hubs, and evaluates the global distribution of research activities.

Co-Citation Analysis

Co-citation analysis reveals conceptual or methodological relationships by examining the frequency with which two works are cited simultaneously (Wider et al., 2024). This method has been widely used to identify keywords and research areas in literacy and educational research (Sun et al., 2024). This study examines how topics such as phonics instruction, sociocultural theory, and digital literacy shape academic discourse by using co-citation analysis to identify key references and foundational literature on reading literacy development (Lenhart et al., 2021).

Co-Occurrence Analysis

Co-occurrence analysis, which is useful for theme mapping, examines how frequently keywords co-occur in titles, abstracts, or author-defined keyword lists (Chen et al., 2022). With this approach, current research themes and emerging trends are identified, such as digital reading platforms, early interventions, multilingual literacy, and inclusive education (Ecalle et al., 2023). It also highlights areas that need further research. Together, performance analysis, co-citation analysis, and co-occurrence analysis are three bibliometric approaches that offer a comprehensive picture of reading literacy research over time and space. By combining these data, the study provides useful insights for scholars, educators, and policymakers to improve global literacy results.

Search Strategy

To ensure accuracy and relevance and generate a comprehensive dataset, we developed a search method (Table 1) for this bibliometric analysis of children's reading literacy development. To focus on content that was explicitly connected to the topic, the Web of Science (WoS) Core Collection's advanced search used all indexed databases and combined the terms "reading literacy" and "children" in the title, abstract, and keywords using the Topic Search (TS) field.

Table 1

Inclusion Criteria for Bibliometric Analysis

WoS Database	ALL
Time period	2005 to 2024
Search field	TS
Search keywords	"reading literacy" & "children"
Document type	Article & Proceeding Paper
Language	English

As shown in Table 1, the defined time frame, spanning 2005 to 2024, enables a two-decade examination of research trends and developments in the field. To maintain a high level of intellectual rigour, only conference proceedings and articles were included; non-research elements such as book reviews and editorials were excluded. To ensure consistent language analysis and content accessibility, we further limited the search to English-language articles. This technique, which ensures a thorough and targeted dataset for future bibliometric analysis, facilitates the study's capacity to generate important insights into the productivity, thematic trends, and intellectual framework of research on children's reading literacy. Figure 1 presents the PRISMA flowchart illustrating the article selection process used in this bibliometric study. The initial search of the Web of Science (WoS) database identified 240 records.

After applying the inclusion criteria for publication year, document type, and language, the final dataset comprised 190 eligible publications. The PRISMA framework enhanced transparency and ensured that only relevant and high-quality studies were included in the bibliometric analysis.

FINDINGS AND DISCUSSION

Over the past 20 years, there has been a consistent scholarly focus on children's reading literacy development, according to the trend analysis of these 190 publications. With 3,302 citations overall (3,240 excluding self-citations), these articles have a notable academic effect and involvement, with an

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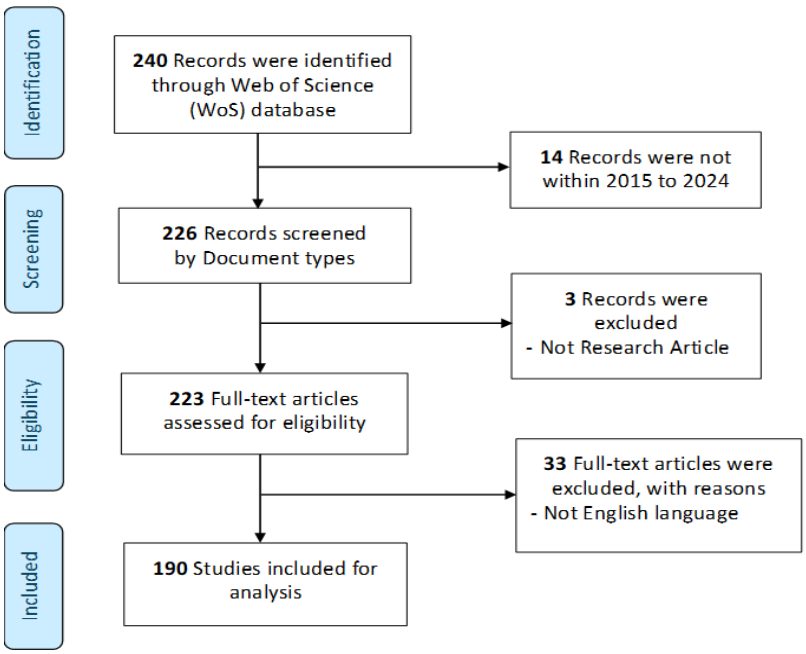
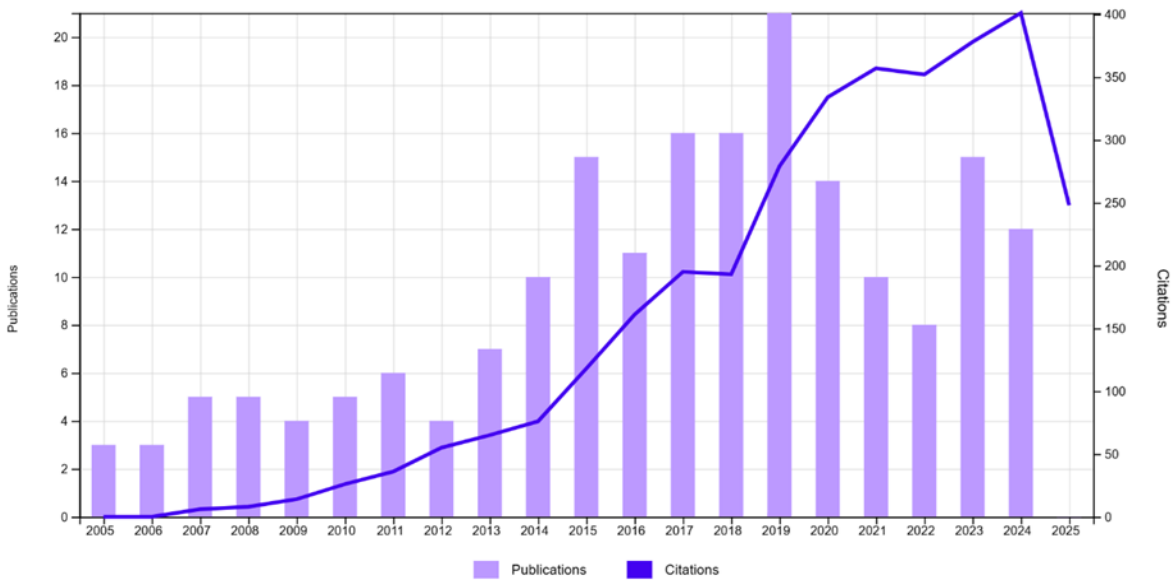
Figure 1
PRISMA Flowchart



average of 17.38 citations per publication. The dataset includes many highly cited publications that have influenced the field, as indicated by its H-Index of 32. The significance of reading literacy research outside educational contexts is demonstrated by the 2,977 citing publications identified (2,940 after omitting self-citations). The COVID-19 pandemic's impact on early-grade reading outcomes, global educational initiatives such as SDG 4 (Quality Education), and increased policy focus on foundational literacy are likely the main causes of the notable increase in research output in recent years, as shown by the annual publication and citation trends (shown in Figure 2). This increasing trend demonstrates the continued importance of literacy as a global research priority as well as the shifting nature of related academic discourse.

Figure 2
Quantity of publications and citations between 2005 and 2024



Performance Analysis

Performance analysis is a key technique in bibliometric studies to evaluate and understand the impact and productivity of research outputs on a given topic. Using metrics such as citation counts, publication frequency, and network link strength, the

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focus is on measuring the contributions of papers, authors, journals, institutions, and nations to evaluate their intellectual influence. To determine which works and individuals are contributing to a field of study, performance analysis provides an empirical basis for identifying the most prolific and frequently cited contributors. To determine the top publications and authors, as well as the institutional and geographic patterns that influence literacy research worldwide, the current study on children's reading literacy development uses performance analysis.

By Documents

With 173 citations, Park (2008) is the most cited work. It highlights the global nature of literacy research by providing a comparative examination of home literacy contexts across 25 nations. The sociocultural approach in literacy research is highlighted by Tramonte and Willms (2010), who have received 149 citations for their work on cultural capital and its effects on educational results. Other noteworthy works include Lei et al. (2011), with 125 citations, which explores the reading development paths of Chinese children, and Cabell et al. (2013), with 137 citations, which examines instructional interactions in preschool settings. These widely cited papers show that the most influential studies usually concentrate on longitudinal studies of early literacy development or large-scale, cross-national comparisons.

By Sources

Large-Scale Assessments in Education is the most frequently used source, with seven articles and 104 citations, highlighting the importance of large-scale data in shaping the conversation around literacy. Even with just five publications, Learning and Individual Differences stands out for its high number of citations (238), indicating the publication of significant, high-quality research. With 278 citations from just four articles, Educational Research and Evaluation is clearly influential. This distribution shows that while some journals have a large impact due to their high volume, others have fewer articles that are more frequently cited.

By Authors

As the most prolific author with six publications and 104 citations, Verhoeven, L. has demonstrated a consistent level of scholarly engagement in reading literacy. Droop, M., and Netten, A., the authors, each have three publications with a noteworthy citation count of 71, demonstrating their constant contributions. For achieving 135 citations from just three papers, Rosen, M., stands out for having a substantial influence with each publication. The diverse author affiliations provide a multidisciplinary and international viewpoint and show that literacy research benefits from input from a range of institutional and national contexts.

By Organisations

The University of Hong Kong is a leading institution in literacy studies, with nine publications and 120 citations. Second place goes to Radboud University Nijmegen in the Netherlands, with six publications and 85 citations, followed by Charles University Prague, with five publications and 25 citations. Despite producing only 4 papers, Beijing Normal University has a significant citation total of 173, indicating focused, high-impact research. The presence of universities from Asia, Europe, and Africa represents the global distribution of research resources for the development of reading literacy.

By Countries

The United States is the leading country in global literacy research, with 27 articles and a remarkable 998 citations. China's rising prominence in the field is demonstrated by its ranking second with 26 publications and 504 citations. Significant contributions come from Germany (16 articles, 291 citations) and the Netherlands (14 publications, 337 citations), with the Netherlands achieving the highest total link strength (22) out of the top 10. The participation of countries in the Global South is highlighted by South Africa's inclusion (16 papers, 71 citations), which broadens the scope of the global literacy research agenda. The inclusion of South Africa reflects the growing contribution of Global South nations to literacy research, particularly in relation to educational inequality, multilingualism, and post-pandemic literacy recovery.

Co-Citation Analysis

The co-citation analysis shows that meta-analyses of literacy determinants, longitudinal studies of home literacy environments, and broad international assessments all have a major impact on the intellectual foundation of reading literacy research in children. In Table 2, the significance of comparative, cross-national statistics for understanding literacy trends is emphasised by Mullis et al. (2012), the most co-cited publication on the PIRLS 2011 worldwide results (19 citations; total link strength 85). Sénéchal and LeFevre (2002) provide a thorough longitudinal analysis of parental participation (18 citations; link strength: 153), highlighting the long-lasting impact of early home literacy initiatives. Other important PIRLS-related reports, such as Mullis and Martin (2007) on PIRLS 2006, Mullis et al. (2003) on PIRLS 2001, and Campbell et al. (2001) describing the PIRLS framework, show how standardised assessment frameworks have consistently influenced literacy benchmarks and policy paths around the world.

These are complemented by Sénéchal (2006), which assesses the home literacy model, and Mol and Bus (2011), a meta-analysis that highlights the critical influence of early reading experiences and shows the importance of print exposure from infancy

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to early adulthood. Stanovich (1986) presents the idea of "Matthew effects" in reading, highlighting the compounding influence of early advantages or disadvantages, while Sirin (2005) does a meta-analysis connecting socioeconomic status to academic achievement. Finally, Becker et al. (2010) present a motivational viewpoint showing that reading motivation, both intrinsic and extrinsic, predicts literacy outcomes over time. Together, the top 10 co-cited publications show how to integrate large-scale assessment data, sociocultural and home literacy elements, and cognitive-motivational theories in a balanced way, creating a coherent body of knowledge that guides literacy research today.

Table 2
The Co-citations Analysis (Top 10 Articles)

Rank	Authors	Title	Citations	Total Link Strength
1	Mullis et al. (2012)	PIRLS 2011 international results in reading	19	85
2	Sénéchal & LeFevre (2002)	Parental involvement in the development of children's reading skill: A five‐year longitudinal study	18	153
3	Mullis & Martin (2007)	Overview of PIRLS 2006	16	99
4	Mullis et al. (2003)	PIRLS 2001 international report	13	79
5	Sénéchal (2006)	Testing the home literacy model: Parent involvement in kindergarten is differentially related to grade 4 reading comprehension, fluency, spelling, and reading for pleasure	13	119
6	Mol & Bus (2011)	To read or not to read: a meta-analysis of print exposure from infancy to early adulthood	12	91
7	Sirin (2005)	Socioeconomic status and academic achievement: A meta-analytic review of research	12	80
8	Stanovich (1986)	Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy	12	43
9	Becker et al. (2010)	Intrinsic and extrinsic reading motivation as predictors of reading literacy: A longitudinal study	10	79
10	Campbell et al. (2001)	Framework and Specifications for PIRLS Assessment 2001	9	30

Recent research continues to reinforce these theoretical foundations. For instance, Nag et al. (2024) demonstrate through a meta-analytic review that home literacy environments significantly influence children's language and reading development, particularly in low- and middle-income contexts. Similarly, Jiang et al. (2024) show that socioeconomic status affects children's literacy outcomes partly through differences in home literacy environments, while Michael and Kyriakides (2023) highlight the mediating role of reading motivation in the relationship between socioeconomic factors and reading achievement using large-scale assessment data.

Co-Citation Analysis by Clusters

The co-citation cluster analysis depicted in Figure 3 and Table 3 identifies four distinct theme concentrations that support research on children's reading literacy development, each reflecting a distinctive yet interconnected aspect of the topic.

Cluster 1 (Red) – Home Literacy Environment and Sociocultural Influences

This cluster is supported by seminal research (Sénéchal, 2006; Sénéchal & LeFevre, 2002; Mol & Bus, 2011) and further adopted in the following studies (Li et al., 2024; Esmaeeli, 2024; Sundqvist et al., 2024), which collectively highlight the critical role of print exposure, parental involvement, and literacy-related interactions within the home in shaping children's reading development. These studies examine how early literacy experiences, family reading practices, and sociocultural contexts influence later outcomes, including reading comprehension, fluency, and motivation. Basic theoretical contributions that conceptualise literacy acquisition as a socially mediated process include Vygotsky's sociocultural theory. The presence of methodological contributions focusing on advanced quantitative modelling and structural equation modelling techniques (Savalei, 2021) further suggests a strong emphasis on applying rigorous statistical approaches to examine literacy predictors. Overall, the studies within this cluster indicate a growing scholarly consensus that early literacy experiences embedded in culturally and socially supportive home environments provide a crucial foundation for long-term reading success.

Cluster 2 (Green) – International Assessments and Socioeconomic Disparities

This cluster emphasises the value of extensive international assessments in assessing reading literacy across countries, mainly because it includes studies connected to PIRLS (Mullis et al., 2003; 2012; Campbell et al., 2001). It also takes socioeconomic perspectives into account, as

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demonstrated by Stanovich's (1986) "Matthew effects" paradigm and Sirin's (2005) meta-analysis of socioeconomic status and academic success. This research cluster examines how cross-national policy frameworks, immigration status, and systemic inequality affect educational outcomes. By highlighting the connection between sociodemographic characteristics and literacy results, recent studies demonstrate this cluster as a key resource for understanding educational fairness in global literacy discussions (Böhmer & Wills, 2025; Ecalle et al., 2023; Lam et al., 2025).

Figure 3
Co-Citation Analysis (VOSviewer Visualisation)

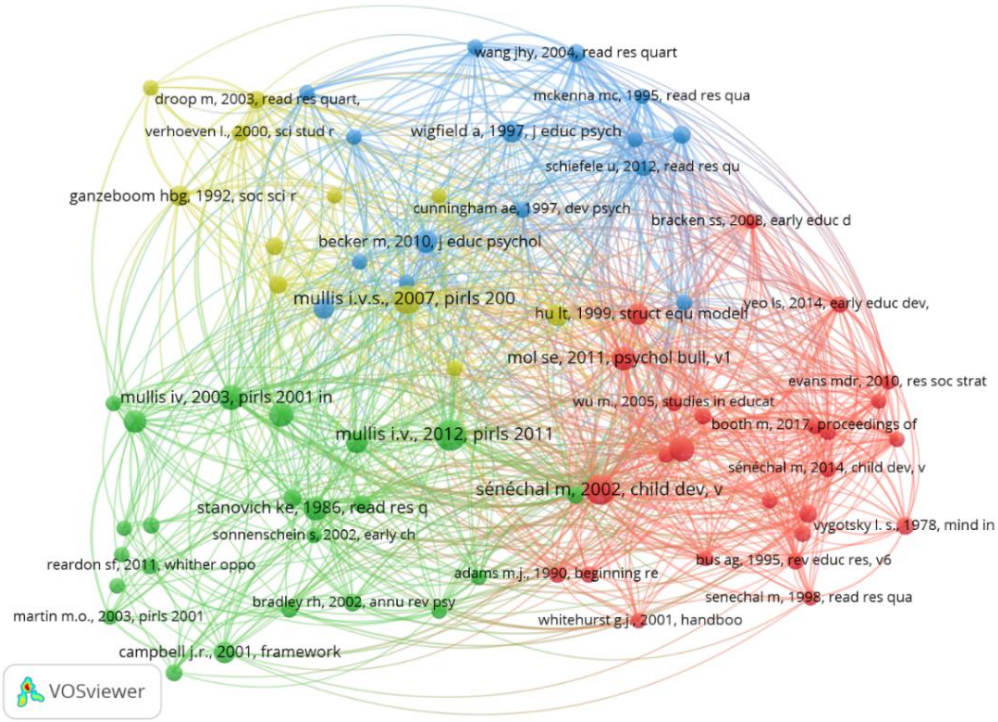

Table 3
Co-Citation Cluster on Children's Reading Literacy

Cluster Number and Colour	Cluster Labels	No. of Articles	Representative Publications
Cluster 1 (Red)	Home Literacy Environment and Sociocultural Influences	25	Sénéchal (2006); Sénéchal & LeFevre (2002); Mol & Bus (2011); Hu & Bentler (1999); Bracken & Fischel (2008); Van Steensel (2006); Yeo et al. (2014); Vygotsky & Cole (1978)
Cluster 2 (Green)	International Assessments and Socioeconomic Disparities	23	Mullis et al. (2012); Mullis et al. (2003); Sirin (2005); Campbell et al. (2001); Baker (2003); Stanovich (1986); Schnepf (2007)
Cluster 3 (Blue)	Reading Motivation, Engagement, and Affective Factors	15	Becker et al. (2010); Cohen (2013); Wigfield & Guthrie (1997); Schiefele et al. (2012). Claes et al. (2024); Ahmed et al. (2025); Miyamoto (2024)
Cluster 4 (Yellow)	Language Proficiency, Cognitive Models, and Second Language Reading	11	Mullis & Martin (2007); Gough & Tunmer (1986); Marks (2005); De Jong & Leseman (2001); Ganzeboom et al. (1992); Droop & Verhoeven (2003); Verhoeven (2014)

Cluster 3 (Blue) – Reading Motivation, Engagement, and Affective Factors

This cluster, led by Becker et al. (2010), Wigfield and Guthrie (1997), and Schiefele et al. (2012), focuses on the psychological and motivational components of reading literacy. It examines reading enjoyment, engagement, and internal and external motivation as factors that affect literacy outcomes across diverse cultural contexts. Ahmed et al. (2025) integrate parental involvement into motivational frameworks, while Claes et al. (2024) compare motivation and understanding between Chinese and American students. There is growing interest in demographic differences in reading attitudes, as evidenced by the inclusion of Miyamoto (2024) on gender roles and reading comprehension. This

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cluster suggests that affective and motivational factors, in addition to cognitive skills, are essential for sustaining reading proficiency over time.

Cluster 4 (Yellow) – Language Proficiency, Cognitive Models, and Second Language Reading
The fourth cluster combines linguistic and cognitive perspectives, emphasising the work of De Jong and Leseman (2001) on long-lasting home literacy implications and the groundbreaking "Simple View of Reading" by Gough and Tunmer (1986). Verhoeven (2014) and Droop and Verhoeven (2003) examine the reading development of bilinguals and second-language learners, highlighting the connection between literacy learning and language proficiency. There are clear socioeconomic indicators, as described by Ganzeboom et al. (1992), indicating that socioeconomic status is often considered alongside language development. Marks (2005) extends the discussion to immigrant populations, linking reading and language skills to broader issues of social integration. This cluster emphasises the importance of language proficiency as both a prerequisite and a result of literacy development, especially in multilingual environments.

When taken as a whole, these clusters show how complicated the study of children's reading literacy is, encompassing linguistic-cognitive processes, motivational and emotional dynamics, structural and socioeconomic elements, and family and cultural backdrops. Although the co-citation and co-occurrence analyses generated four dominant thematic clusters, these clusters should not be interpreted as rigid or fixed categories. Bibliometric clusters are dynamic and may evolve as new theoretical perspectives, interdisciplinary approaches, and emerging educational issues reshape the field.

Co-Occurrence Analysis
The co-occurrence analysis of the top 15 keywords provides important insights into the research's thematic focus on children's reading literacy development (see Table 4). While "reading literacy" (40 occurrences; 144 total link strength) and "literacy" (38 occurrences; 147 total link strength) highlight the field's primary subject matter, the most common phrase, "children" (59 occurrences; total link strength 253), highlights the field's developmental focus. Words like "achievement" (34 occurrences; 161 total link strength) and "performance" (21 occurrences; 95 total link strength) indicate the literature's strong evaluation focus and are often linked to international standards like "PIRLS" (14 occurrences; 51 total link strength) and "PISA" (13 occurrences; 59 total link strength), which allow for comparisons between educational systems.

"Comprehension" (22 instances; 90 total link strength), "skills" (22 instances; 125 total link strength), and "language" (22 instances; 91 total link strength) all exhibit cognitive and linguistic components, suggesting that academics have focused on the skills necessary for reading proficiency, such as vocabulary, decoding, and syntactic understanding. While "kindergarten" (14 instances; 78 total link strength) emphasises the importance of early literacy interventions in the preschool years, "students" (23 occurrences; 102 total link strength) situates the research within formal educational settings.

Table 4
Most Frequent Keywords in the Co-Occurrence Analysis

Rank	Keyword	Occurrences	Total Link Strength
1	children	59	253
2	reading literacy	40	144
3	literacy	38	147
4	achievement	34	161
5	students	23	102
6	comprehension	22	90
7	education	22	79
8	language	22	91
9	skills	22	125
10	performance	21	95
11	motivation	18	83
12	kindergarten	14	78
13	PIRLS	14	51
14	reading	14	46
15	PISA	13	59

Research on the effects of involvement, attitudes, and internal or external incentives on literacy development is shown by the fact that "motivation" (18 occurrences; 83 total link strength) is the source of affective factors. While "reading" (14 occurrences; 46 total link strength) serves as a comprehensive process term encompassing a variety of instructional and recreational contexts, "education" (22 occurrences; 79 total link strength) connects literacy studies to broader pedagogical and policy frameworks.

These keywords indicate a thorough research agenda covering developmental, cognitive, sociocultural, motivational, and policy issues. A holistic approach to enhancing reading literacy outcomes for kids around the world is highlighted by the interplay of early intervention, skill development, and evaluation.

Co-Occurrence Analysis by Clusters
The co-occurrence analysis of 977 keywords displayed in Figure 4 and Table 4 that meet the least-occurrence criterion reveals four unique theme clusters that reflect the thematic and intellectual framework of studies on the development of children's reading literacy. Each cluster is a centre of connected ideas, emphasising certain areas of scholarly research within the field.

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Figure 4
Co-Occurrence Analysis (VOSviewer Visualisation)

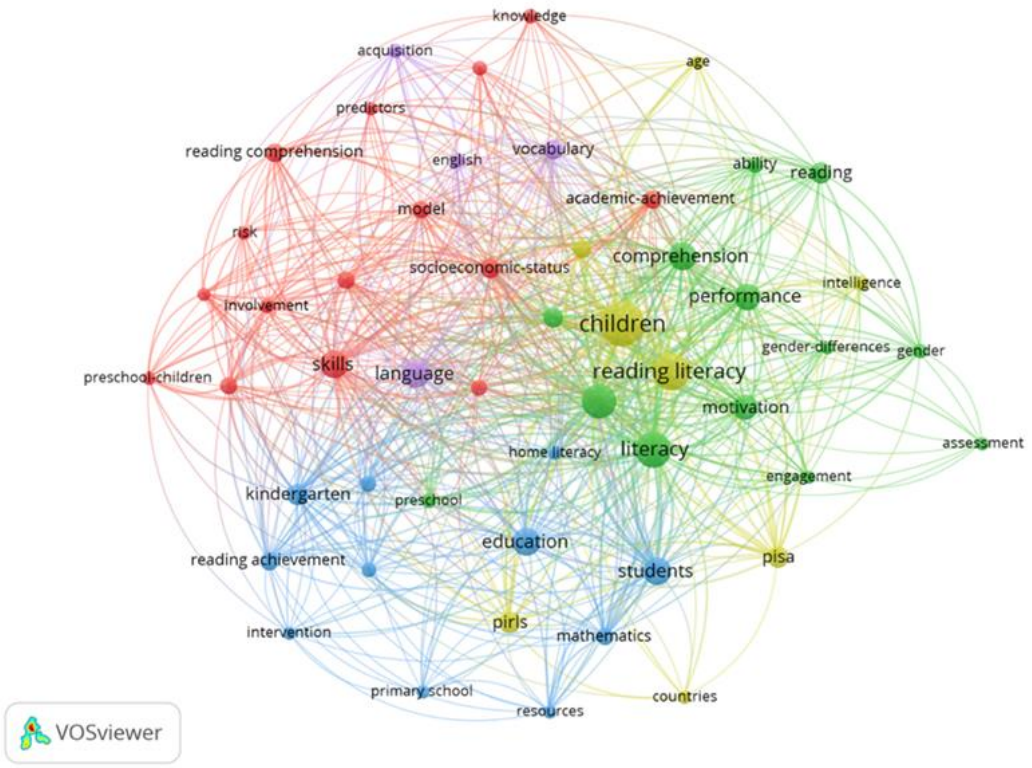

Table 5
Co-Occurrence Analysis of Keywords on Children's Reading Literacy

Cluster No and Colour	Cluster Label	Number of Keywords	Representative Keywords
1 (Red)	Home Literacy, Cognitive Foundations, and Socioeconomic Influences	15	'skills', 'reading comprehension', 'socioeconomic-status', 'model', 'parental involvement', 'home literacy environment', 'phonological awareness'
2 (Green)	Instructional Strategies, Motivation, and Literacy Attainment	13	'literacy', 'achievement', 'comprehension', 'performance', 'reading', 'motivation', 'instruction'
3 (Blue)	Educational Contexts, Early Learning, and Resource Provision	11	'students', 'education', 'kindergarten', 'reading achievement', 'environment', 'resources'
4 (Yellow)	Global Assessment Frameworks and Comparative Literacy Research	8	'children', 'reading literacy', 'PISA', 'PIRLS', 'school', 'intelligence'

Cluster 1 (Red) – Home Literacy, Cognitive Foundations, and Socioeconomic Influences.
This cluster includes keywords such as phonological awareness, abilities, reading comprehension, model, socioeconomic status, parental involvement, and home literacy environment. The main focus is on how early literacy development is impacted by cognitive capacities and domestic circumstances. This study cluster often looks at how socioeconomic factors, parental participation, and the availability of literacy resources at home affect basic reading abilities. The effect of phonological awareness on reading comprehension and the mediating role of home-based literacy frameworks are the subjects of research. The frequent use of the word "model" indicates the application of conceptual and structural equation models to clarify the complex relationships among literacy outcomes, cognitive ability, and socioeconomic background. This cluster highlights the importance of early intervention and fair living conditions for fostering kids' reading development.

Cluster 2 (Green) – Instructional Strategies, Motivation, and Literacy Attainment.
Keywords such as literacy, achievement, understanding, performance, reading, motivation, and instruction are used to describe this cluster. This study analyses how curriculum design, classroom

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procedures, and instructional strategies affect reading achievement, bridging the gap between pedagogical practice and learner psychology. Research on internal and external factors affecting students' reading interest and persistence is highlighted by the recurring issue of motivation. The terms "performance" and "achievement" signify the field's emphasis on measuring and tracking reading outcomes, often linking them to improvements in instruction and teaching quality. This cluster highlights that literacy development is influenced by ongoing learner engagement and the quality of instruction, in addition to skill acquisition.

Cluster 3 (Blue) – Educational Contexts, Early Learning, and Resource Provision.
Keywords in this cluster include kindergarten, reading achievement, students, education, environment, and resources. It highlights how important learning environments – from formal education to early childhood settings – are to the development of reading. This study examines the impact of early childhood education quality, school readiness programs, and the availability of enough human and material resources on reading competency. "Environment" covers the actual classroom and the broader educational environment, including interactions between teachers and students and institutional support. According to longitudinal studies that track literacy development from early education through primary schooling, the emphasis on "kindergarten" underscores the crucial role the preschool years play in laying the foundation for future literacy achievement.

Cluster 4 (Yellow) – Global Assessment Frameworks and Comparative Literacy Research.
Keywords like children, PISA, PIRLS, reading literacy, education, and intelligence are included in this cluster. The main reference points are PISA (Programme for International Student Assessment) and PIRLS (Progress in International Reading Literacy Study), which are cross-national and extensive assessments of reading proficiency. Using the comparative statistics these assessments provide, which inform international education policy, researchers can link reading performance across countries to both individual- and school-level factors, including cognitive abilities and instructional quality. "Intelligence" refers to studies that look at cognitive aspects of literacy performance, often to explain differences in test scores across countries. Reading literacy is viewed by this cluster as a global norm for evaluating and improving educational systems as well as a local educational goal.

Research on children's reading literacy development has grown significantly over the last 20 years, according to this bibliometric analysis, highlighting its continued importance in educational scholarship and policy debates. According to the performance analysis, publishing output has been steadily increasing, and socioeconomic factors, teaching methods, and home literacy contexts have received significant citations (Sénéchal & LeFevre, 2002; Mol & Bus, 2011). Together, this research supports the conclusions that parental participation and early home-based literacy exposure are essential for fostering later reading comprehension and academic achievement.

Co-citation analysis highlights the need for comprehensive assessment frameworks such as PISA and PIRLS (Mullis et al., 2012; OECD, 2019), which are crucial for defining national literacy standards and enabling cross-country comparisons. These assessments produce important performance data and influence theoretical frameworks that address the sociocultural, cognitive, and motivational facets of literacy (Gough & Tunmer, 1986; Vygotsky, 1978). The importance of motivational elements in co-occurrence studies (Becker et al., 2010; Wigfield & Guthrie, 1997) points to a shift in perspective towards recognising the emotional aspects of reading engagement alongside skill development.

The increasing reliance on international assessments such as PISA and PIRLS may also contribute to the standardisation of literacy policy by privileging globally comparable metrics over locally grounded understandings of literacy practices. In culturally and linguistically diverse contexts, including countries within Southeast Asia and the Global South, literacy development is often shaped by multilingual realities, indigenous knowledge systems, and community-based literacy traditions that may not be fully captured through standardised assessments. Consequently, while international benchmarking frameworks provide valuable comparative insights, policymakers should balance global indicators with culturally responsive and context-sensitive literacy approaches.

The theme clusters present a sophisticated research framework that includes macro-level factors such as educational resources and policy contexts, as well as micro-level factors such as phonological awareness and reading motivation. However, even though these clusters represent distinct research avenues, there is room for additional integration. The global goal of Sustainable Development Goal 4 (Quality Education) could be advanced by using family, school, and systemic perspectives, supported by qualitative and quantitative data, to develop more comprehensive frameworks for addressing literacy disparities.

This bibliometric study contributes to the theoretical framework of reading literacy research by outlining the field's intellectual structure, thematic development, and foundational works within the past 20 years. The Home Literacy Model

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(Sénéchal & LeFevre, 2002), which emphasises the connection between parental involvement, socioeconomic status, and children's reading outcomes, and the Simple View of Reading (Gough & Tunmer, 1986), which defines reading comprehension as the outcome of decoding and linguistic comprehension, are two popular frameworks whose enduring significance is validated by the co-citation and co-occurrence analyses.

Vygotsky's (1978) theory of socially mediated learning, which guides the importance of sociocultural views, suggests a continuous shift towards the recognition of literacy as a cognitive and socially contextualised practice. By integrating cross-national and policy-relevant elements, the inclusion of international assessment data (such as PIRLS and PISA) in theoretical discussions broadens the scope of literacy models (Mullis et al., 2012; OECD, 2019). The need for hybrid models that incorporate cognitive, motivational, and sociocultural facets of literacy development is further highlighted by this synthesis, which supports well-established theoretical systems.

From a pragmatic perspective, the results offer educators, legislators, and curriculum designers useful information. Evidence-based advice for improving literacy outcomes is provided by the identification of key themes, such as early intervention in kindergarten settings, targeted teaching strategies, and the development of reading motivation (Becker et al., 2010). Buzzwords like PIRLS and PISA are widely used, underscoring the importance of aligning national literacy programs with global standards so countries can track their progress and identify gaps in their educational offerings (OECD, 2019). Particularly in households with low incomes, research from the home literacy and socioeconomic cluster emphasises the importance of parental involvement programs and equitable resource distribution (Mol & Bus, 2011; Sirin, 2005). Thematic mapping of engaging and motivating components shows that literacy programs need to include both in-school and out-of-school experiences to promote long-lasting reading habits.

CONCLUSION

This bibliometric study offers a comprehensive review of studies on children's reading literacy development from 2005 to 2024, emphasising the theoretical foundations and thematic development of the field. Based on the findings, research is focused on four main areas: educational contexts and resources; instructional strategies and motivation; home literacy environments and socioeconomic determinants; and global assessment frameworks. All of these fields highlight that literacy development is a complex process influenced by systemic frameworks, emotional factors, cognitive strengths, and sociocultural contexts.

The analysis emphasises how important equitable resource allocation is, how important good instructional approaches are, and how early interventions have a lasting impact. It serves as an example of how important comprehensive assessments such as PIRLS and PISA are in providing comparative information that informs national and worldwide literacy programs. Nevertheless, universal benchmarks should not be the sole understanding of literacy development. It should also consider locally grounded perspectives. While indicating a high degree of subject specialism, the thematic clusters theoretically highlight the nature of literacy development across home, school and educational system, which offers a chance to better integrate family, school, and policy viewpoints in order to create more inclusive and comprehensive literacy policies.

However, these findings are constrained by the reliance on a single database (Web of Science) and English-only publications, potentially underrepresenting valuable research from non-English contexts. Hence, future research should prioritise: (1) longitudinal designs that track how digital home literacy environments interact with traditional print exposure, (2) comparative studies of the four identified clusters in low- and middle-income countries, and (3) qualitative meta-syntheses to complement the quantitative trends identified here.

By mapping the field's intellectual architecture, this study provides a strategic evidence base for researchers, policymakers, and educators committed to achieving Sustainable Development Goal 4. This study highlights the importance of offering all children, regardless of background, inclusive, egalitarian, high-quality education that fosters foundational literacy. Through the use of cross-national evidence, the reinforcement of home-school relationships, and the prioritisation of motivation alongside skill development, stakeholders may alleviate current disparities and lay the groundwork for lifelong learning. Through the transformative power of reading, this approach provides a strategic basis for improving literacy research, policy, and practice, supporting the worldwide goal of reducing learning poverty and empowering children.

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