

ERKEN ÇOCUKLUK DÖNEMİNDE ERKEN OKURYAZARLIK ÜZERİNE YAPILAN KÜRESEL ARAŞTIRMA EĞİLİMLERİ¹

THE GLOBAL RESEARCH TRENDS ON THE EARLY LITERACY IN EARLY CHILDHOOD EDUCATION

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(Araştırma Makalesi)

Abstract: This study examines global trends in early literacy articles published in the Web of Science (WoS) database. Using a descriptive survey model and bibliometric analysis, 2879 articles from 1985 to 2023 were analyzed. According to the results, the number of articles and citations has increased significantly since 2005. The Journal of Early Childhood Literacy is the most prolific journal in this field. Most studies originate from developed countries, notably the USA, Canada, and Australia, with English being the predominant language. Key contributing institutions include the State University System of Florida and Florida State University. The author Justice, L.M., is a leading contributor with 42 articles. The most cited article, by Sénéchal & LeFevre, at 2002 has 1044 citations. The 'Education & Educational Research' category leads with 1751 articles, covering topics like education, psychology, and language and linguistics. Literacy, emergent literacy, phonological awareness, reading are the prominent keywords and recent trends include topics such as literacy environments and dual language learners. Researchers from the USA, Canada, and Australia are prominent in collaborative efforts. This study analyzes global trends and key contributors in early literacy research, providing valuable insights for researchers and decision-makers about future directions and research gaps in the field.

Keywords: *Literacy, early literacy, bibliometric analysis*

Özet: Bu çalışma, Web of Science (WoS) veritabanında erken okuryazarlık üzerine yayınlanan makalelerin küresel eğilimlerini incelemektedir. Betimsel tarama modeli ve bibliyometrik analiz kullanılarak, 1985-2023 yılları arasında yayımlanan 2879 makale analiz edilmiştir. Sonuçlara göre, 2005'ten bu yana makale ve atıf sayısında önemli bir artış gözlemlenmiştir. The Journal of Early Childhood Literacy bu alanda en üretken dergidir. Çalışmaların çoğunluğu, Amerika Birleşik Devletleri, Kanada ve Avustralya gibi gelişmiş ülkelerden gelmekte olup, İngilizce en yaygın dil olarak öne çıkmaktadır. Önemli katkı sağlayan kurumlar arasında Florida Eyalet Üniversitesi Sistemi ve Florida Eyalet Üniversitesi bulunmaktadır. Justice, L.M. adlı yazar, 42 makale ile önde gelen katkı sağlayıcıdır. En çok atıf alan makale, Sénéchal ve LeFevre 2002 yılında yazılmış olup, 1044 atıf almıştır. 'Eğitim ve Eğitim Araştırmaları' kategorisi, eğitim, psikoloji ve dilbilim gibi konuları kapsayan 1751 makale ile öne çıkmaktadır. Öne çıkan anahtar kelimeler arasında okuryazarlık, erken okuryazarlık, fonolojik farkındalık ve okuma yer almakta olup, son eğilimler arasında okuryazarlık ortamları ve çift dil öğrenenler gibi konular bulunmaktadır. ABD, Kanada ve Avustralya'dan araştırmacılar işbirliği çabalarında öne çıkmaktadır. Bu çalışma, erken okuryazarlık araştırmalarının

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küresel eğilimlerini ve önemli katkı sağlayıcılarını analiz ederek, alandaki araştırmacılar ve karar vericiler için alanın gelecekteki yönelimleri ve araştırma boşlukları hakkında değerli içgörüler sunmaktadır.

Anahtar Kelimeler: *Okuryazarlık, erken okuryazarlık, bibliyometrik analiz*

Introduction

Defining literacy, a skill long regarded as crucial for gathering and spreading knowledge from ancient times to the modern era, appears to be a complex task that cannot be encapsulated in a mere single sentence. In the most general and traditional expression, literacy is defined as reading and writing written texts through the alphabet (Longman, 2003). On the other side, emergent literacy, or early literacy as it has been used frequently in recent years is the collective term for the foundational competencies, knowledge, and dispositions towards literacy that preschool-aged children are typically expected to acquire (Lamas, 2015; Sulzby & Teale, 1991; Uzuner, 1997; Whitehurst & Lonigan, 1998).

A key advancement in 21st-century educational practices is the emphasis on supporting literacy skills from the pre-school years, and recently, there has been a growing interest and exploration in the field of Early Childhood Education (ECE) literature regarding literacy. A primary factor driving the recent surge in emphasis on early literacy development during the preschool years is the observation that one in every three children entering first grade starts school with a lack of motivation and basic skills necessary for school success (Lamas, 2015). These children pose a risk for various early academic difficulties, and expectations for future success are highly affected by these difficulties. Investigations in this area reveal a robust link between a child's ability to enter school and his later academic performance (Dickinson & Tabors, 2001; Whitehurst & Lonigan, 2001). In these studies, it was stated that the basic literacy skills that children learn in primary school shape their academic, professional, and social skills. These studies also emphasize that children who start school without the necessary skills can face significant difficulties in acquiring basic literacy skills.

Receptive and expressive language skills, vocabulary, phonological awareness, writing awareness, and letter knowledge are defined as sub-skills that make up early literacy (Casey & Howe, 2002; Elliott & Olliff, 2008). These sub-skills play crucial roles in children's literacy development, as

they form the foundation upon which further reading and writing abilities are built (Gray & McCutchen, 2006). It is stated that language skills often form the basis of reading. Receptive and expressive language skills, for example, are essential for understanding spoken language and effectively communicating ideas, which are foundational for reading comprehension (Dickinson & Tabors, 2001) and written expression (Storch & Whitehurst, 2002). Vocabulary development that children have significantly influences their ability to learn to read (Hirsch, 2003) is another critical component, as a rich vocabulary enhances a child's ability to decode text and grasp meanings, directly impacting reading comprehension (Greene & Lynch-Brown, 2002). For effective reading comprehension, which is the primary objective of reading, a child must not only read the words accurately but also understand their correct meanings. Phonological awareness, which involves recognizing and manipulating sounds in language (Wright & Jacobs, 2003), is a strong predictor of future reading success, as it helps children understand the relationship between sounds and letters (Gray & McCutchen, 2006). Writing awareness includes understanding that writing represents spoken language and recognizing the conventions of written text, which aids in the transition to more advanced writing skills in school settings (Pullen & Justice, 2003). Finally, letter knowledge, which encompasses recognizing letters and knowing their corresponding sounds, is closely linked to reading and comprehension skills, providing a fundamental basis for learning to read (Denton & West, 2002). These early literacy skills not only contribute to immediate academic success but also lay the groundwork for long-term educational and social outcomes.

Prior research has indicated that engaging young children in literacy-related activities enhances their language skills, including vocabulary acquisition and comprehension (National Institute for Literacy, 2008). These early literacy experiences are directly linked to future reading proficiency, a key determinant of overall academic achievement (Snow, Tabors, Nicholson & Kurland, 1995). Additionally, early literacy fosters cognitive development, enhancing critical thinking and problem-solving skills (Whitehurst & Lonigan, 1998). Several scholars, including Neuman and Dickinson (2001) and Whitehurst and Lonigan (1998), have conducted comprehensive reviews of early literacy in ECE. Their work has provided valuable insights into specific aspects of early literacy, such as developmental milestones and pedagogical strategies, and highlighted the importance of early interventions in literacy for long-term academic success. However, these reviews have not extensively analyzed the broader academic landscape, such as citation patterns, influential institutions, and international collaborations.

Building on these foundational studies, our research aims to fill this gap by conducting a comprehensive bibliometric analysis of early literacy research within ECE. By examining data from the WoS database, known for its rigorous review protocol and a reliable bibliographic resource (Pranckutė, 2021), we explored the most influential publication institutions, countries, and sources, the distribution of articles by year and language of publication, and co-authorship networks. Additionally, our study analyzed the most frequently cited works and keywords, identifying emergent and promising research trajectories. This approach is not only enhance the understanding of the current landscape of early literacy publications but also provide a clearer picture of how this body of research has evolved over time and its implications for future studies. By doing so, we aim to contribute a more nuanced understanding of the field's development and highlight areas for further exploration. This study, therefore, positions itself as a significant contribution to the existing body of knowledge on early literacy, offering new perspectives and comprehensive analysis that previous reviews may have overlooked.

Research Aims and Questions

Given the absence of extensive research examining comprehensive analysis in early literacy, this study aims to investigate articles on this topic within ECE published between 1985 and 2023, specifically focusing on those indexed in the WoS database. In pursuit of this aim, the study has formulated nine research questions to direct its inquiry:

- What is the annual publication trends in early literacy research in ECE by years?
- What are the most productive publication sources, countries/regions, institutions, most used language, most relevant authors, and most cited articles?
- What are the categories/classification and research areas of the early literacy research in ECE?
- What are the most frequently used keywords in academic publications in early literacy research in ECE?
- What are the trend topics of the early literacy research in ECE?

- How are the thematic map of the early literacy research in ECE?
- How is the structures of knowledge in early literacy research within ECE, focusing on collaboration and co-occurrence networks?
- How is the thematic evolution of early literacy research within ECE?

Method

Research Model

This research employed a descriptive method, specifically the survey model. As Karasar (2005) explains, survey models aim to depict the current or historical state of affairs in its natural context, without intervention or manipulation. The focus of this study is to evaluate the bibliometric indicators of publications on early literacy and assess their current status. For this purpose, the bibliometric analysis technique was applied to quantitatively evaluate the bibliographic characteristics of the literature (Hawkins, 2001).

Bibliometric analysis, which is well-established in library and information sciences (Pritchard, 1969), is particularly adept at quantitatively assessing the scope of research related to a specific subject over a certain period. Key bibliometric indicators include the number of publications, citations, language of publication, influential institutions, countries, and sources (Su & Yang, 2023). This method provides valuable insights into evolving trends in scholarly publications, helping to identify prominent journals and institutions, emerging research themes, and potential future developments (Mazloumian, 2012; Song, Chen, Hao, Liu & Lan, 2019). Furthermore, bibliometric analysis assists researchers in pinpointing potential research themes and collaborators, which is crucial for advancing the field (Martínez, Cobo, Herrera & Herrera-Viedma, 2015; Song et al., 2019).

In the educational sector, bibliometric analyses have been widely conducted across various domains, including higher education (Budd, 1988), technology-enhanced learning (Shen & Ho, 2020), and mathematics education (Özkaya, 2019). Notably, Xiao, Amzah, Khalid and Rong (2023) conducted a bibliometric study on early literacy using the Scopus database, which

highlighted a consistent upward trend in early literacy research and the expansion of topics to include emerging literacy skills and parent-centered literacy approaches.

The validity and reliability of this study are established through rigorous methodological steps in the literature review and analysis processes. The literature review was conducted using a comprehensive database, ensuring thorough coverage of the subject matter. Keywords were carefully selected to accurately delineate the study's scope. Contemporary and validated methodologies were utilized in conducting the bibliometric analyses. Throughout the study, findings were interpreted and presented in relation to the existing literature in the field. At every phase, the principles of transparency and openness were strictly adhered to, ensuring a robust and reliable research process.

Data Collection Tools

As part of the research's framework, the WoS database was employed as the primary tool for data collection. It originated as a product of the Thomson Reuters Institute of Scientific Information (ISI) during the early 1960s, with its primary aim being the facilitation of citation monitoring and evaluation (Boyle & Sherman, 2006; Falagas, Pitsouni, Malietzis, & Georgios-Pappas, 2008). Notably, it stands as one of the oldest-established citation databases, boasting robust coverage of both citation and bibliographic data (Adriaanse & Rensleigh, 2011; Boyle & Sherman, 2006). This extensive database encompasses a staggering collection of more than 171 million records. Given these attributes, it stands as a paramount resource, offering comprehensive opportunities for in-depth examination, research, and classification of scientific research

Data Collection Procedures

This research approach follows the five-step methodology (Setyaningsih, Indarti & Jie, 2018; Tranfield, Denyer & Smart, 2003) as depicted in Figure 1.

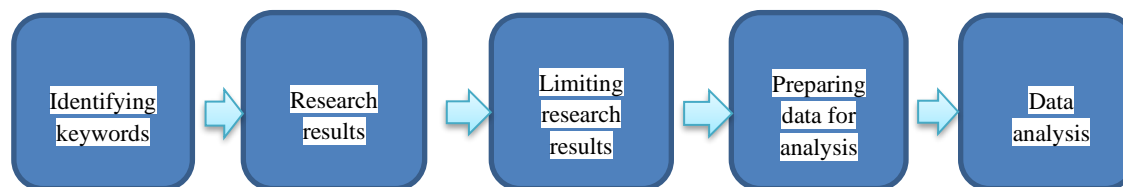


Figure 1. The five step method in bibliometric analysis

In the research, “preschool literacy”, “early childhood literacy”, “early literacy” and “kindergarten literacy” were initially determined as keywords. As a result of the first search, 3373 scientific studies were found. In line with the purpose of the research, "article" was preferred as the publication type and "all time interval" was chosen in order to reach all articles that meet the criteria determined in the database. In the conclusion of the study, the number of articles was found to be 2879. In order to make the data ready for analysis, it was recorded, and bibliometric data was obtained.

The study was conducted between June 2022 and August 2023. It did not require approval from a research ethics committee; therefore, the researchers did not obtain it prior to the data collection process.

Data Analysis

A total of 2879 articles pertaining to early literacy, spanning from 1985 to 2023, were provided for analysis through the utilization of bibliometric analysis techniques. The data were organized in accordance with the research inquiries of the study, accompanied by the generation of visual representations and the computation of percentage and frequency values. The mapping of the countries and the word cloud were made using the R-Studio program. These package programs used in the R program are very useful for bibliometric analyzes in quantitative research (Aria & Cuccurullo, 2017). The VOSviewer program (Version 1.6.16) was used for visualizing social network analysis.

Results

Annual Publication Trends

The dispersion of articles published in WoS by year is represented in the Figure 2. Based on the data, it can be observed that the years 2020, 2019, and 2021 recorded the highest number of articles published on the subject of early literacy. Over half of the scholarly papers focusing on early literacy in ECE were released in the period from 2005 to 2022. This statistic underscores a growing interest and emphasis on early literacy research within the ECE field in recent times. The reason

for the low number of articles in 2023 is related to the timing of the research, which was conducted in January 2023.

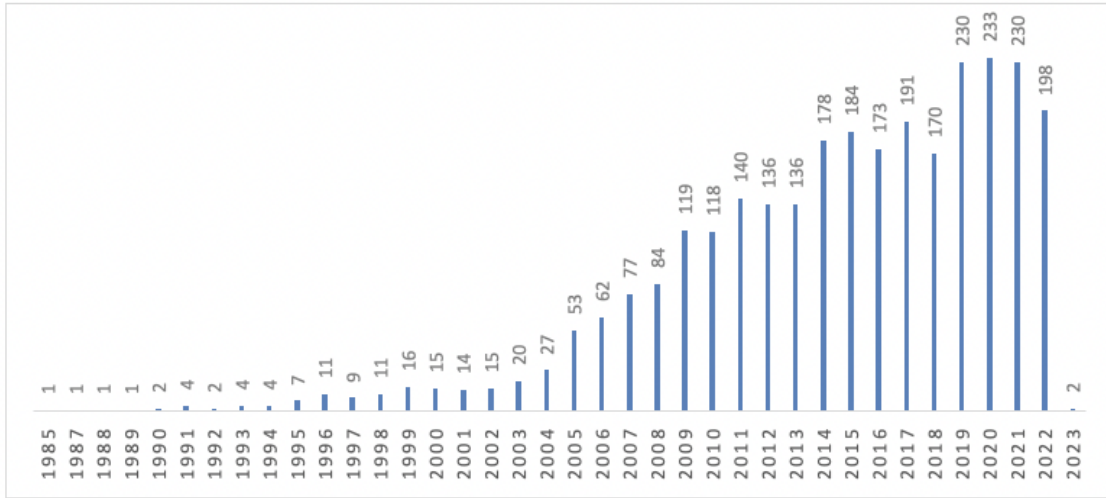


Figure 2. The yearly pattern of publications on early literacy in ECE from 1985 to 2023

It is seen that while there was no registered citation information for the articles published on early literacy until 1986, the citations remained at a low rate between 1986 and 1997, and there has been a significant surge in the number of citations every year after 1998. This rise can be associated with the growing acknowledgment of the significance of early literacy, along with a concurrent rise in the volume of articles addressing early literacy. In 2021, the research papers on early literacy in ECE reached their peak in terms of citations, accumulating a total of 6659 citations. This number marginally surpassed the citation count recorded in the previous year, 2020. (Figure 3).

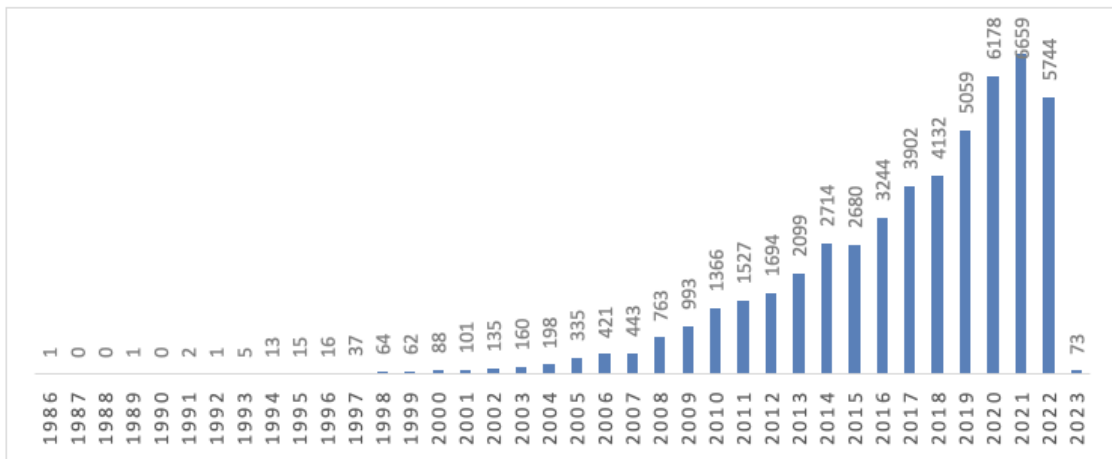


Figure 3. The yearly pattern of citations on early literacy in ECE from 1985 to 2023

The Most Productive Publication Sources, Countries/Regions, Institutions, Most Used Language, Most Relevant and Productive Authors and Most Cited Articles

Figure 4 reveals that the leading international journals publishing the most papers on early literacy in ECE from 1985 to 2023. These are the Journal of Early Childhood Literacy, Early Childhood Quarterly, Early Childhood Education Journal, and Reading and Writing. Among these, the Journal of Early Childhood Literacy stands out as the most prolific, with a total of 379 publications, thereby positioning it at the forefront of publishing literature in the realm of early literacy within ECE.

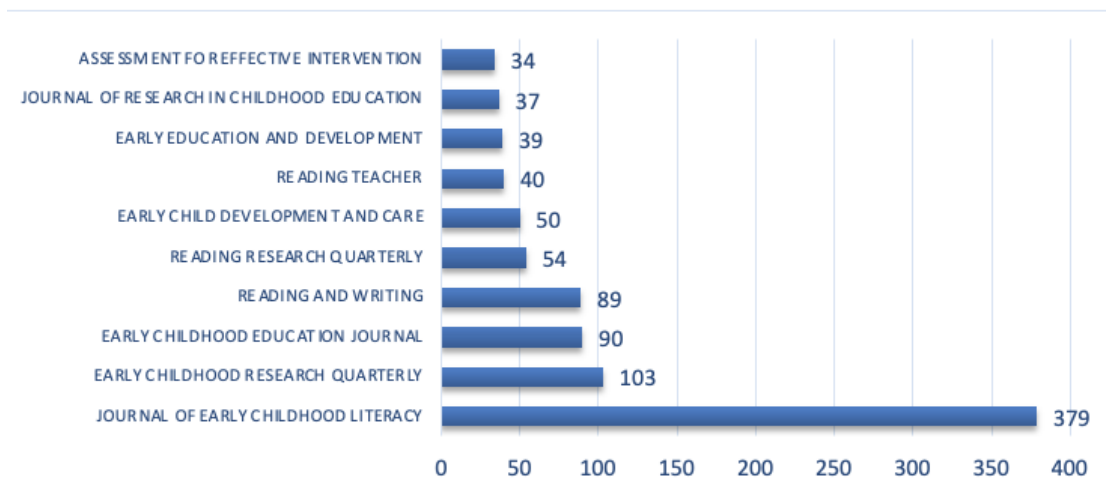


Figure 4. The most publication sources

Regarding the geographical origin of the research, the majority of studies on early literacy in ECE originated from developed countries, notably the USA, Canada, and Australia. The USA, in particular, has established a significant lead in this area, contributing 1596 articles, which is notably higher than the output from any other country (Table 1).

Table 1

The Countries/regions Where Early Literacy in ECE Research were Published

Countries	Article
Usa	1596
Canada	180
Australia	172

The countries where the articles on early literacy are published are shown on the map in Figure 5. Colors on the map represent the number of articles by researchers in countries. It is decreasing as color goes from dark blue to light blue. In the countries with gray color, there are no articles scanned in the WoS database. The map shows that most of the African continent and the interior of Asia are gray areas. It can be interpreted that the articles published on early literacy research in these areas are limited in number or they are scanned in a different database.

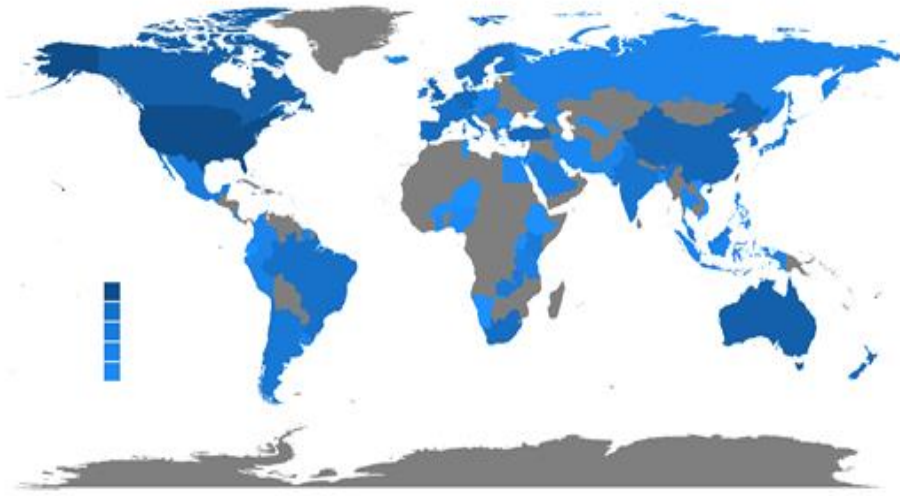


Figure 5. The countries/regions where early literacy in ECE research were published

In our investigation of the institutions that have published the largest number of articles on early literacy in ECE from 1985 to 2023, we found that the State University System of Florida, the University System of Ohio, and Florida State University were at the forefront. They emerged as leaders in this research area and were grouped among the most prolific contributors to the field during this period (Figure 6).

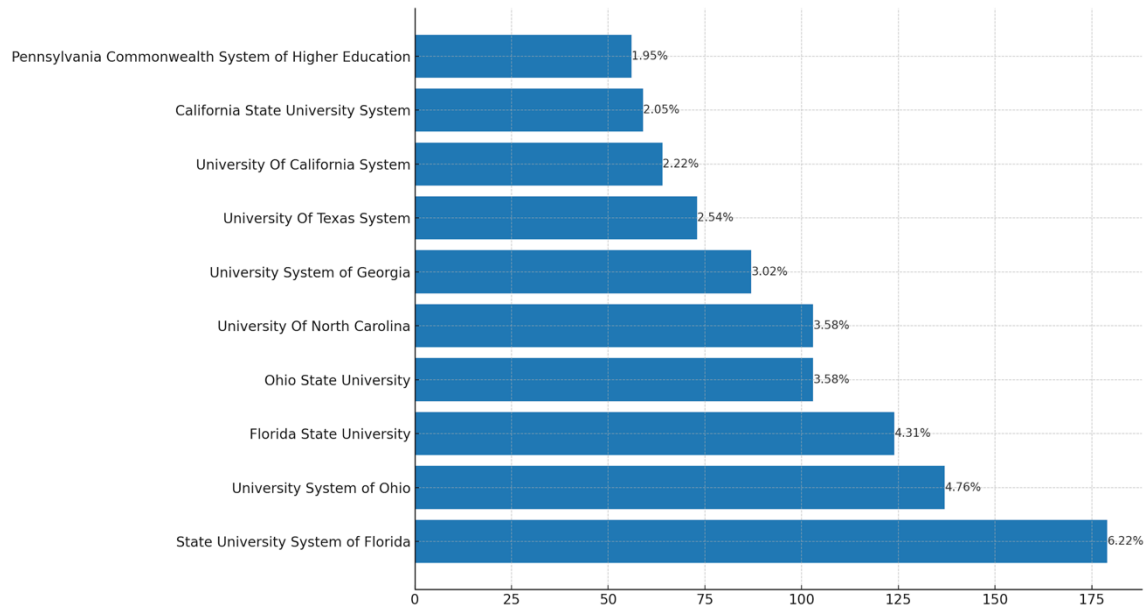


Figure 6. The leading institutions which produced research related to early literacy in ECE

Upon reviewing the data presented in Table 2, it is clear that the primary language used for publishing articles on early literacy in ECE is English. The relatively high number of articles in English compared to other languages may be due to the language preferences for articles in journals included in WoS databases.

Table 2

Distribution of Articles on Early Literacy by Language of Publication

Language	f	%
English	2,771	96.25
Spanish	39	1.36
German	18	0.63
Portuguese	15	0.52
French	10	0.35
Korean	10	0.35
Turkish	5	0.17

Figure 7 displays the most relevant authors, plotting the number of articles they have contributed to. The vertical axis lists the authors by name, and the horizontal axis indicates the number of

articles. Each author is symbolized by a blue circle, with the the circle's size correlating to the number of articles they have authored or contributed to. The numbers inside the circles provide exact counts. For instance, the author at the top, Justice, L.M., has contributed to 42 articles which is the highest in this dataset, followed by Longian, C.J. with 39 articles and Aram D. with 34 articles. The distribution of contributions across authors appears to be quite varied, with some authors contributing to a significantly higher number of articles than others.

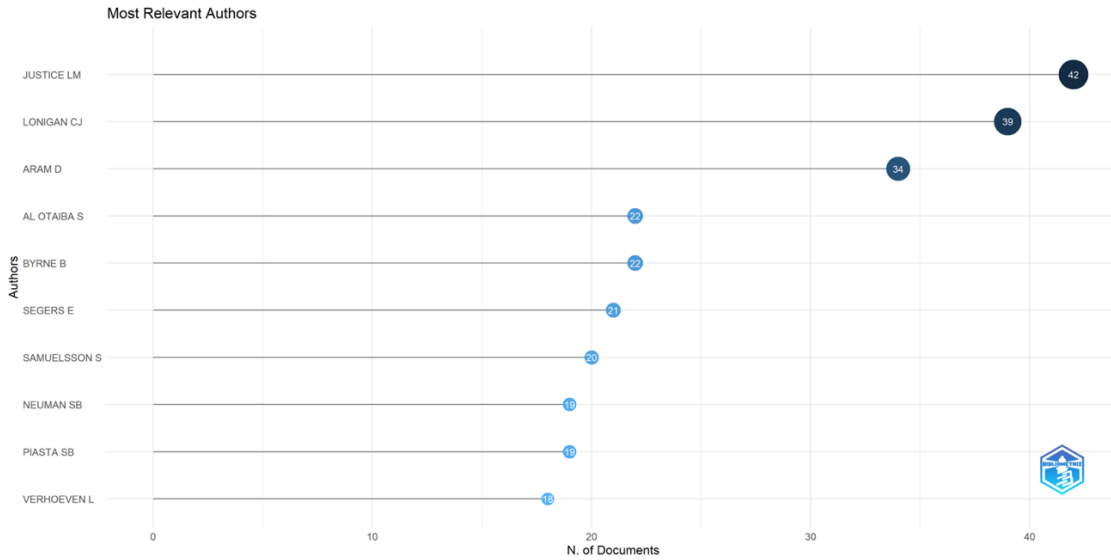


Figure 7. Top 10 most relevant authors

Figure 8 illustrates the publication output of authors over time. They are listed on the vertical axis, with years spread out along the horizontal axis. Each author has blue dots corresponding to the years in which they published articles. The dot's size reflects the quantity of articles published in that year, with larger dots indicating more publications. Additionally, the opacity of the dots' color reflects the total number of citations per year (TC per year); darker colors mean more citations. For example, the top author (Justice L.M.) has the largest dots in 2005 and 2006, indicating a high number of publications and also citations in those years. This graph serves as a visual representation of the authors' academic influence by showcasing both their publication volume and their citations.

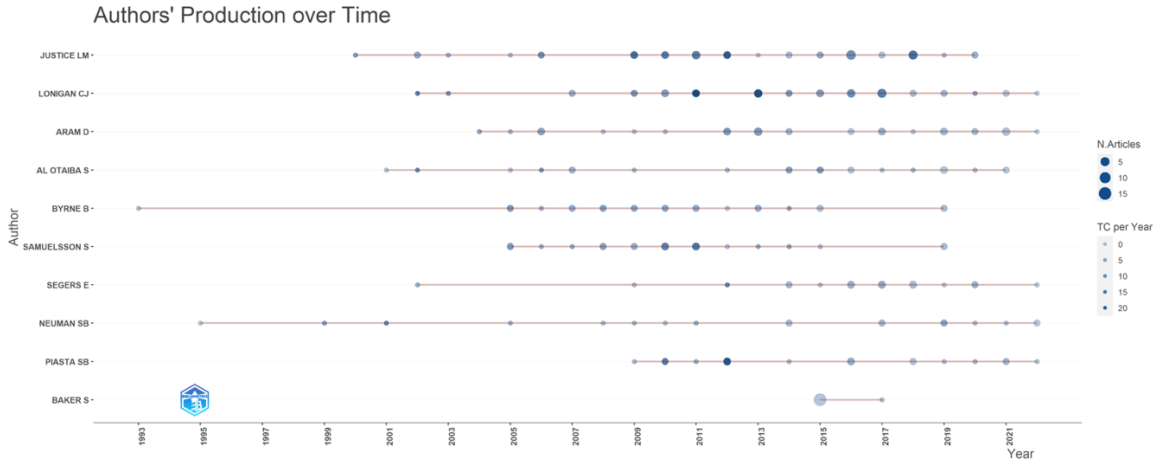


Figure 8. Authors' production over time

Figure 9 titled most global cited documents presents a list of documents on the vertical axis, each associated with a specific author and publication year, alongside the journal or source they were published in. On the horizontal axis, the chart quantifies the total number of global citations received by each document. Each document is reflected by a blue circle and their size corresponds to its citation count. This visualization allows one to easily compare the relative impact of each document within the global academic community. For example, the document by Sénéchal and LeFevre (2002) published in Child Development, has received the highest number of citations, reaching 1044. Other documents, such as those by Graziano, Reavis, Keane and Calkins (2007), and Pianta, Howes, Burchinal, Bryant, Early, Clifford and Barbarin (2008) also show a significant number of citations, suggesting that these works have had a substantial influence in their respective fields.

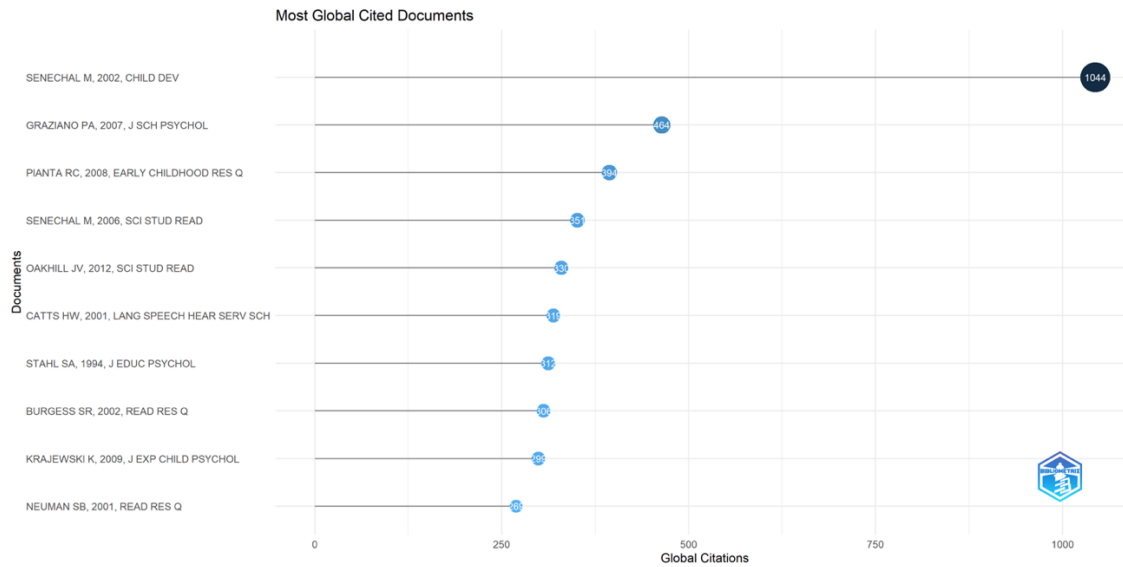


Figure 9. Most global cited documents

Categories/Classification and Research Areas

Figure 10 presents a summary of the leading 10 categories/classifications, and Figure 11 outlines the top 5 research areas in the field of early literacy within ECE. The category ‘Education & Educational Research’ leads with 1751 articles from 1985 to 2023, followed by ‘Psychology Educational’ with 550 articles. The WoS database comprehensively catalogues details about each publication in the early literacy domain, offering valuable insights into the various facets of this research field.

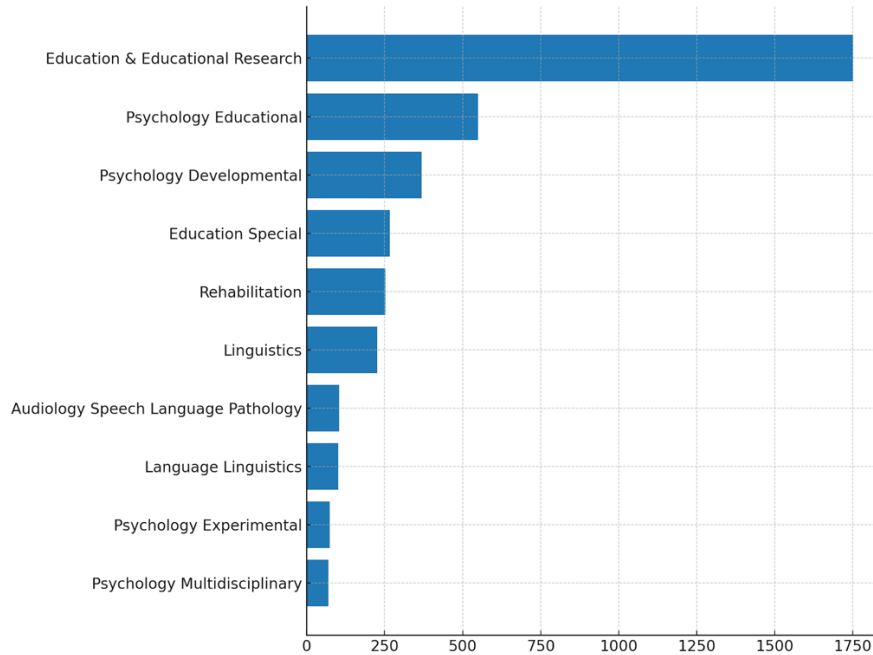


Figure 10. Top 10 categories/classification of early literacy research in ECE

Figure 11 indicate that the topic of early literacy has found application across various fields, including education, psychology, and language and linguistics, among others. Within these, the Education & Educational Research field leads with 2003 articles, with Psychology following with 973 articles in the realm of early literacy. This clearly demonstrates the significant impact and scope of early literacy within ECE research.

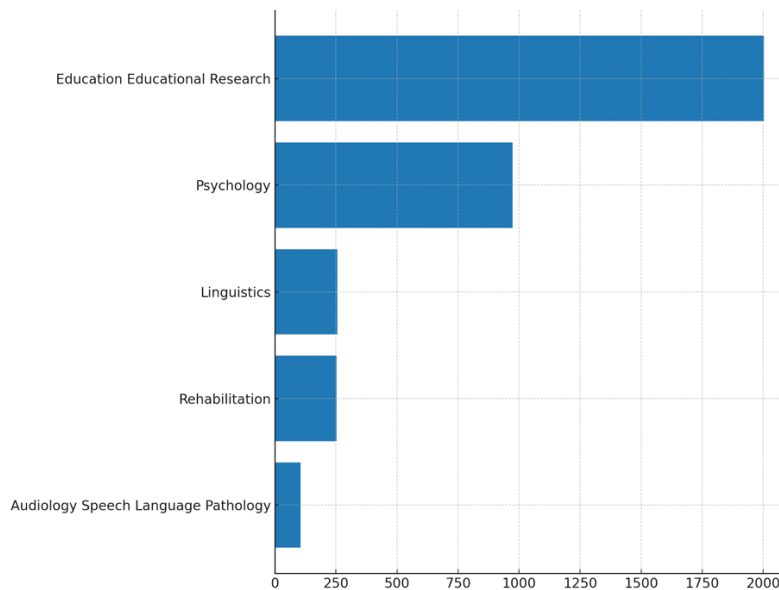


Figure 11. Top 5 research areas of early literacy research in ECE

Keywords

Keyword analysis stands as a paramount bibliometric indicator. It involves the inclusion of keywords furnished by publication authors, which have been recurrently found within the WoS database. Figure 12 draws its inspiration from the key terms emphasized by the authors, where they singled out the 50 most frequently employed words and phrases in their text retrieval. Noteworthy among these are the prominent word clusters such as "literacy," "emergent literacy," "phonological awareness," "reading," "early childhood," "preschool," and "early childhood education." This alignment with the study's overarching theme becomes apparent when constructing the subsequent keyword network.



Figure 12. Word cloud of the authors' keywords

Trend Topics and Thematic Map

Figure 13 display trend topics associated with early literacy in ECE over time. Blue dots' size on each line correlates with the term frequency for a given year—the larger the dot, the greater the frequency with which the term was mentioned or relevant in that year. The scale on the right indicates that term frequencies range from 100 to 500 mentions.

From the graph, we can observe that certain topics have become more prevalent in recent years. For instance, terms like "literacy environment," "dual language learners," and "phonological awareness" have larger dots in the later years, a growth in their frequency as time progresses. This implies that these areas have gained more attention or have become more relevant in research,

policy discussions, or educational practices. Other topics, like "home literacy environment" and "language disorders," appear consistently throughout the years, which could imply ongoing or sustained interest in these areas.

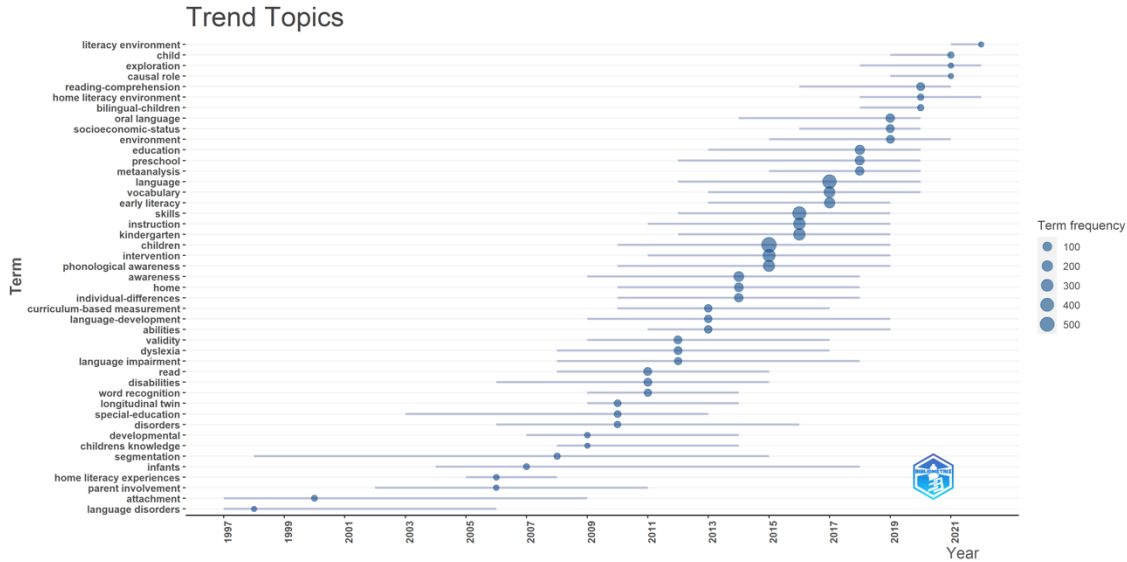


Figure 13. Trend topics in early literacy in ECE

Understanding trend topics helps researchers identify what is currently popular or underserved in their field. This can guide them in choosing research topics that are timely and relevant, or in finding niche areas that require further exploration. It often aligns with areas where funding is being directed. Knowing the trends can help researchers and institutions align their grant applications with topics that are more likely to receive funding. Also, identifying trends can facilitate collaboration with other researchers or institutions that share an interest in these topics, leading to more robust studies and multidisciplinary approaches.

Figure 14 appears to be a thematic map categorizing research topics based on their developmental degree and relevance degree. It classifies research themes within a field into four quadrants. Motor Themes are thoroughly developed and serve as central topics that are likely steering research in the research area. They are established topics with a dense amount of research and are central to the field's discourse. Examples from the map include "children," "skills," and "phonological awareness." Niche Themes are developed but not as central to the field. They may represent specialized areas within the field that have a body of research but are not as influential on the broader discourse. "Early literacy development," "environmental influences," and "longitudinal

twin" studies are placed in this category. Basic Themes are central but less developed topics that are emerging as foundational to the field. They may become motor themes as they develop. "Language," "intervention," and "instruction" are considered basic themes. Emerging or Declining Themes are neither well-developed nor central. They could be either new areas that are just beginning to be explored or older areas that are losing relevance. "Early literacy skills," "validity," and "fluency" are located here.

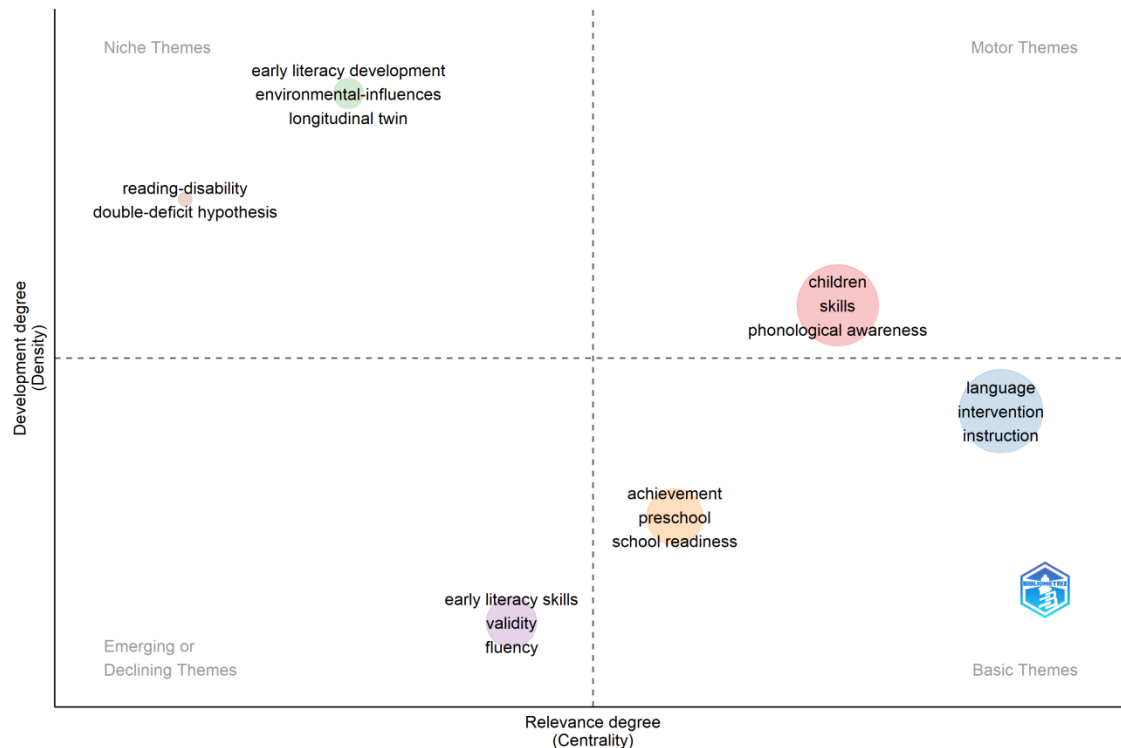


Figure 14. Thematic map of studies of early literacy in ECE

Understanding the placement of themes on such a map can inform researchers about the maturity and centrality of topics, guiding them towards areas ripe for investigation or indicating which topics may need more foundational research to become central to the discourse.

Collaboration and Network Analysis

The initial sections provided an overview of bibliometric data related to early literacy in ECE, highlighting the key areas of productivity. To delve deeper into this field, it's essential to collaborative analysis the existing literature on early literacy in ECE. This approach is increasingly relevant due to the growing diversity and interplay among various disciplines, enabling a more

comprehensive understanding of specific topics and their collective contribution to the existing knowledge base (González-Teruel, Abad-García & Alcaraz-Iborra, 2015). Recognizing that co-authorship, a critical aspect of research collaboration, encompasses more than just resource sharing is important. Its most significant elements are often informal and relational (Ponomariov & Boardman, 2016). Co-authorship symbolizes the collaboration in research, acting as a bridge connecting scholars from different backgrounds to produce significant research findings. This mechanism also aids in deciphering the network of co-authorship, identifying unexplored areas, and thereby enhancing and diversifying the contributions to the field. (Kumar, 2015). Visual analysis, specifically through maps illustrating author-based and country-based co-authorship networks, was employed in this bibliometric study focusing on early literacy in ECE.

Co-authorship by authors. When two or more authors collaborate to write and publish a scholarly article, they establish a co-authorship network, creating a network of partnerships. Such a network is depicted in a collaborative map, which is a valuable tool for researchers seeking to explore possible collaborative ventures (Beaver & Rosen, 1978) Publishers can also utilize this network map to strengthen their editorial teams (Xu & Chang, 2018).

Illustrated in Figure 15 is a co-authorship network map centered around authors in the field of early literacy. This diagram uses circles to represent individual authors, with the circles' diameters proportional to each author's publication count in the referenced list. The lines interlinking the circles denote joint authorship among papers, where the line thickness symbolizes the depth of the bond. Essentially, the interconnections between the circles illustrate the shared authorship of scholarly works.

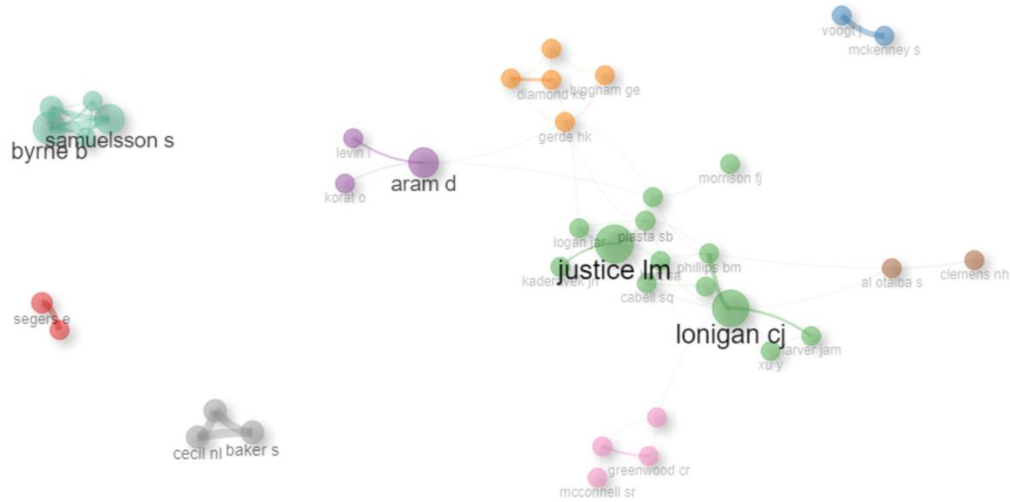


Figure 15. Map visualization of co-authorship networks by authors

Co-authorship by countries. Figure 16 offers detailed analysis of major collaborations in early literacy field across different countries. Countries and institutions are depicted as nodes, with the nodes' size representing the quantity of published articles, and the distance and thickness of the connecting lines symbolizing the extent of cooperation. The visualization clearly indicates that scholars from the United States are leading these collaborative efforts, with significant contributions also coming from Canada and Australia. This overlay in the visual representation makes it straightforward to discern the leading roles these countries play in advancing research and knowledge in early literacy. When we establish a minimum of 3.58 cited articles from countries as the criterion, 87 countries satisfy this threshold. There are 11 clusters formed by these countries, and there exists a network of 192 connecting lines interlinking them.

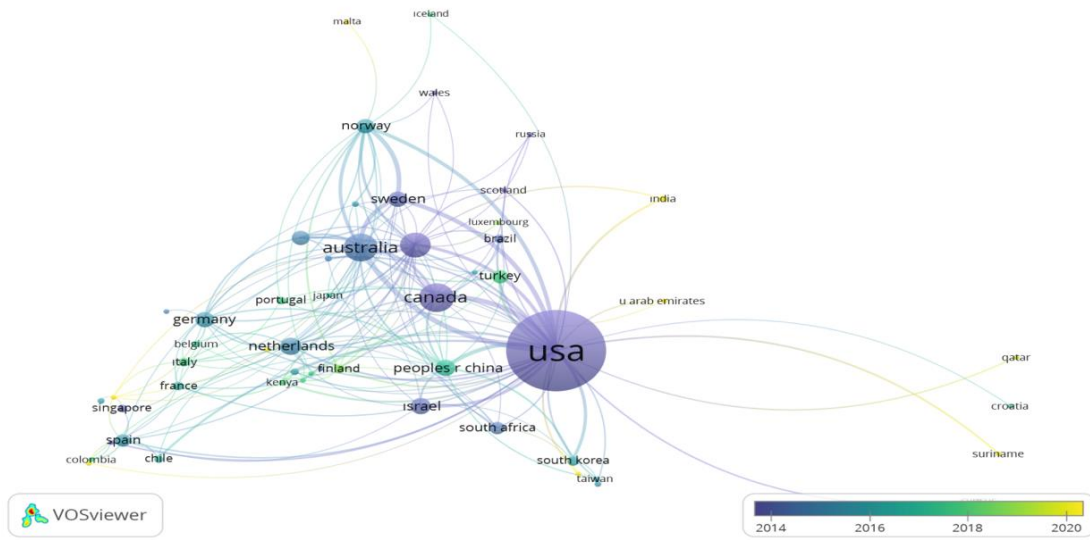


Figure 16. Map visualization of co-authorship by countries

Indeed, when it comes to ECE, countries in the West renowned for their profound research expertise and considerable scholarly achievements. These elements have been crucial in laying down the essential framework of knowledge in this domain. As international exchanges continue to grow, there's a notable emergence of influential contributors from Asian countries, especially between 2016 and 2018. Countries like China, Indonesia, Malaysia, and South Korea have made notable strides in this field (Xiao et al., 2023). Particularly, China and South Korea stand out as the primary Asian partners actively engaged in collaboration with the United States in early literacy research, highlighting a dynamic and evolving landscape of global academic collaboration.

Co-occurrence network of early literacy. The visualization in Figure 17 offers an intriguing network created using author keywords, effectively mapping the recent advancements in early literacy research. In this visualization, the color assigned to each bubble correlates with the average year in which articles related to a specific keyword were published. Cool colors, like purple, signify research themes with older average publication years, whereas warm colors indicate keywords linked to newer research. This color-coded approach allows for an intuitive understanding of the temporal evolution of research topics. The figure's lower right corner shows a color shift from purple to blue, then to green, and finally yellow, illustrating the temporal progression of co-occurring keywords in the research. The density and presence of connecting lines between the bubbles reveal the robustness of the relationships among different keywords, while

the lack of lines implies a non-existent or unestablished connection between them. Additionally, the proximity of the bubbles to each other in the network indicates the similarity in keyword usage by authors. Closer bubbles imply a stronger relationship between the research themes they represent. Furthermore, each bubble's size in the visualization acts as a measure of how frequently each keyword is cited, thereby signifying the importance or commonness of each term within the realm of early literacy research. This multifaceted approach to data visualization provides a comprehensive and dynamic view of the evolving trends and connections in early literacy studies.

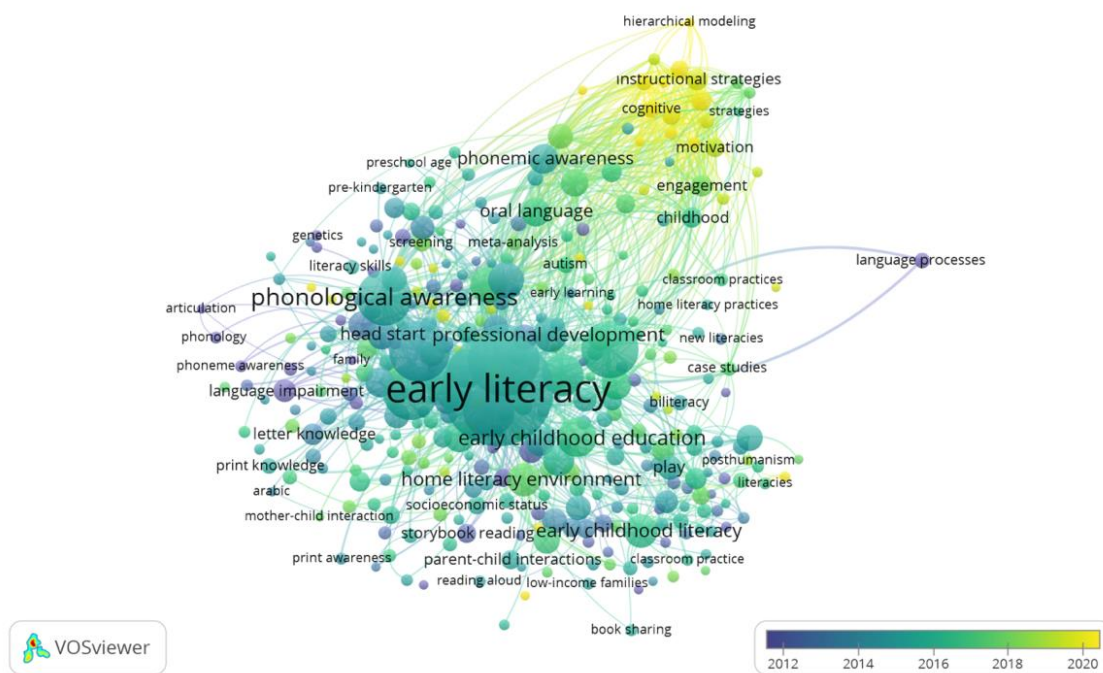


Figure 17. Overlay visualization of all authors' keywords

The keyword network graph's cluster analysis categorizes academic publications pertaining to early literacy into 10 distinct clusters, grouping them based on their thematic connections. The keywords that are most commonly employed within these clusters and those that exhibit the strongest connections are early literacy ($f=597$, $cs=1349$), literacy ($f=243$, $cs=580$), reading ($f=175$, $cs=450$), early childhood ($f=156$, $cs=469$), phonological awareness ($f=146$, $cs=506$), preschool ($f=143$, $cs=362$).

Thematic Evolution of Early Literacy

It plays a vital role in influencing the efficacy and results of research inquiries. Figure 18 demonstrates the trajectory of subject matter transformation through the lens of author-chosen keywords in early literacy in ECE. Thematic evolution offers a distinct and sequential perspective on the progression of specific terms or expressions, enhancing comprehension of the derived findings. From the illustration, one can discern the progression of topics associated with the initial stages of early literacy from the early era (1985–2006), through an intermediary phase (2007–2017), to a more recent phase (2017–2023). Across a span of thirty-eight years, the original sixteen themes from the initial phase coalesced into five key themes during the intermediary stage, which subsequently refined down to two primary themes.

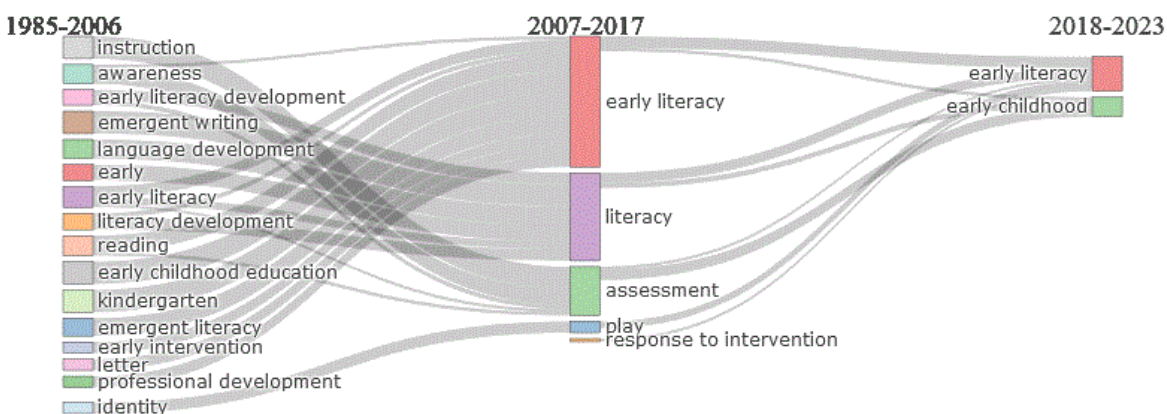


Figure 18. The thematic evolution (based on Authors' Keywords) from 1985-2006 to 2007-2017 to 2018-2023

Discussion

This study represents the first comprehensive bibliometric examination of early literacy within ECE, merging and extending inquiries into literacy and preschool education. The primary goal was to analyze relevant data, identify central terms, and explore themes and future research prospects in early literacy, thereby guiding researchers toward fruitful avenues. While the analysis acknowledges the study's limitations, it aims to offer insights to readers and professionals in early literacy, highlighting areas that need further exploration to enrich the existing body of knowledge.

Since the early 2020s, there has been a noticeable uptick in scholarly works, a trend likely linked to the heightened focus on 21st-century competencies in preschool education. These skills have been increasingly spotlighted in recent discussions. Examining annual publication patterns and the languages used can offer valuable insights and directions for upcoming research endeavors. The data analysis underscores the growing attention early literacy is garnering in the research community, marking its rising prominence. Moreover, there's been a notable surge in studies exploring literacy facets such as technological, physical, and financial literacy, in the latter years (Lugossy, Froehlich-Chow & Humbert, 2022; Wang & Si, 2023). While the WoS database is a rich resource of academic information, covering aspects like authorship, citations, and journal impact, it does not encapsulate the entirety of scholarly literature. It may overlook certain areas, regions, or specific literature types. Therefore, upcoming scholars should consider reviewing various literary databases to to achieve an in-depth grasp of the field.

The dominance of the USA in early literacy research, as revealed by the study, underscores the significant influence of Western educational paradigms on global research trends. This influence is evident in both the quantity and quality of publications originating from this region, notably contributing to early literacy's development. The prominent role of journals such as the *Journal of Early Childhood Literacy* and others highlights the concentrated efforts in these regions to push forward the boundaries of knowledge in early literacy. However, the rising contributions from Asian countries like Hong Kong, China, and Indonesia indicate a growing global interest and diversification in the field. This trend suggests an increasing recognition of the cultural and contextual factors influencing early literacy, which can enrich the field with diverse perspectives and methodologies.

Journal and article analyses reveal that early literacy, crucial for pre-elementary children, extends its scope beyond individual developmental factors for them. There is a growing focus on comprehensive studies transcending the limitations of focusing on just one facet, like literacy assessment. These enduring, proactive, and evolving research themes advocate for a holistic approach that considers multiple elements and domains (Koller, Hojnoski & Van Norman, 2022). This holistic view, which includes factors such as pre-service teacher training, the home environment, social status, and technological tools, is critical for understanding the complex nature of literacy development in young children (Metsala & Kalindi, 2022; Peterson & Friedrich, 2022).

The integration of these diverse factors highlights the need for research that does not isolate literacy from the broader socio-cultural and technological contexts in which children live. For instance, the role of the home environment, including parental involvement and the availability of literacy resources, is crucial for reinforcing the literacy skills children acquire in educational settings.

The study also emphasizes the need for stronger international collaboration. The analysis of co-authorship and co-occurrence networks reveals that current international cooperation is not as robust as it could be, potentially limiting the cross-fertilization of ideas and methodologies. Strengthening international partnerships can lead to more comprehensive and culturally inclusive research, enhancing the field's overall depth and applicability.

Key terms identified in the study, such as reading, phonological awareness, home literacy environment, and family literacy, are fundamental components of early literacy. The emphasis on these elements aligns with the understanding that early literacy is foundational for later academic success. For example, research by Kulju and Mäkinen (2021) and Napoli, Korucu, Lin, Schmitt, & Purpura (2021) underscores the importance of diverse phonological strategies and the home literacy environment in developing children's literacy skills. These findings highlight the need for educational policies and practices that support the development of these fundamental skills from an early age.

Moreover, evolving research methods and strategies in early literacy, including new and emerging approaches, offer valuable insights into the field's progression. The use of methodologies such as teacher interviews, questionnaires, and action research provides a direct window into the experiences and perspectives of educators, who are on the front lines of implementing literacy programs (AlShamsi, AlShamsi & AlKetbi, 2022; Christiani, Retnowati, Wening, Hasan & Ratnawati 2022). Understanding these perspectives is crucial for developing effective literacy interventions that are responsive to the real-world challenges faced by educators.

Preschool education encompasses various facets, particularly concerning literacy. Key questions include how literacy is perceived and comprehended by young learners and the techniques employed for mastering its content. Additionally, it's crucial to explore ways to enhance preschoolers' absorption of this knowledge. Insights from bibliometric analysis, particularly through a network of co-occurrence relationships, offer guidance in this area. Acknowledging the

significant contributions of early childhood educators and parents is essential. These stakeholders are instrumental in creating environments that support children's literacy development. Educators, in particular, play a crucial role in implementing curricula that are responsive to children's needs and promoting a love for reading and learning. The support from parents and the broader community also plays a vital role in reinforcing the literacy skills taught in schools, making the transition from preschool to elementary school smoother and more successful (Cronin, Kervin & Mantei, 2022).

Conclusion and Implications for Future Directions Concerning Early Literacy

Consequently, this study has established a comprehensive framework encompassing various elements such as publications, authors, journals, countries, citations, collaborations, resource types, ongoing research areas and emerging future trends, all contributing significantly to the advancement of the early literacy field.

As we conducted our literature review in the early literacy research field, several important implications emerged. Primarily, our findings revealed that early literacy research is predominantly focused in developed countries. We advocate for an urgent necessity to enhance geographical diversity in the sources of early literacy research. Addressing this issue is crucial for creating a truly global knowledge base in this discipline. While American and European societies dominate early literacy research, there has been a noticeable increase in contributions from other regions over time. However, only a limited number of societies and universities have a significant impact, as shown by citation analyses indicating limited influence beyond these regions.

To broaden the scope and impact of early literacy research, we recommend that editors and editorial boards actively seek and include studies from a wider range of geographical contexts. This approach will help diversify the perspectives and experiences represented in the literature, ultimately enriching the field. Furthermore, to foster a more inclusive and comprehensive body of knowledge, it is advisable to strengthen collaborations between international researchers and promote more cooperative research projects among institutions across different regions. Such collaborations can facilitate the exchange of diverse ideas and methodologies, enhancing the depth and breadth of early literacy research.

Additionally, as researchers experienced in conducting reviews through traditional methods like research synthesis and meta-analysis, we want to emphasize the added value that bibliometric approaches bring to the table. While quantitative methods ensure accuracy, bibliometric approaches also encourage researchers to utilize their tacit knowledge in synthesizing and interpreting data, based on the relationships observed within the literature. This holistic approach not only provides a more nuanced understanding of the field but also helps identify emerging trends and gaps in research that may not be immediately apparent through traditional review methods alone.

Limitations

This study's limitations are associated with the type of publication, databases used, and language restrictions. We have only examined articles as a type of publication. Future studies could expand the scope to include other publication types. Additionally, only the WoS database was used to search for articles, which means journal articles not indexed in the WoS database were excluded from this study. Researchers are encouraged to review studies in their country's national databases or other academic databases, such as Scopus and EBSCO, for future research. Moreover, this study only included articles published in English, which may have led to the exclusion of relevant studies published in other languages. This language restriction could limit the generalizability of the findings, as it might not fully capture the global perspective on early literacy research. The inclusion of non-English language studies in future research could provide a more comprehensive understanding of the field and contribute to a more diverse and inclusive body of knowledge.

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Türkçe Uzun Özet

Giriş

Okuma-yazma, genellikle alfabeyi kullanarak yazılı metinleri okuma ve yazma olarak tanımlanır (Longman, 2003). Okul öncesi çocuklarda beklenen bilgi, beceri ve tutumlar "erken okuryazarlık" olarak adlandırılır (Sulzby & Teale, 1991; Uzuner, 1997; Whitehurst & Lonigan, 1998). Araştırmalar, birinci sınıfa başlayan her üç çocuktan birinin temel becerilerde eksikliklerle başladığını ve bu durumun ileride akademik zorluklara yol açabileceğini göstermektedir (Lamas, 2015). Erken okuryazarlık becerilerinin çocukların okuma öğrenme ve anlama başarısında önemli rol oynadığı belirtilmiştir (Dickinson & Tabors, 2001; Storch & Whitehurst, 2002; Hirsch, 2003). Bu bağlamda, erken çocukluk eğitiminde okuryazarlık üzerine yapılan araştırmaların akademik trendlerini analiz etmek önem kazanmaktadır.

Bibliyometrik analizler yayın sayısı, alıntı sayısı, bilimsel haritalama, yayın dili, etkili yayın kurumları, ülkeler ve kaynaklar gibi öğeleri içerir (Su & Yang, 2023). Bibliyometrik analiz, ayrıca, araştırma fonları ve akademik iş birlikleri için kritik referans noktaları sağlar ve yayın yapan dergi ve kurumları, yeni araştırma temalarını ve gelecekteki bilimsel başarıları belirlemede yardımcı olur (Mazlounian, 2012; Song ve diğ., 2019).

Araştırma Amacı ve Soruları

Bu çalışma, Erken Çocukluk Eğitimi içindeki erken okuryazarlık üzerine yayınlanmış makaleleri incelemeyi amaçlamaktadır. 1985 ile 2023 yılları arasında WoS veritabanında indekslenen makalelere odaklanarak, bu alandaki eksiklikleri doldurmayı ve erken okuryazarlıkta ortaya çıkan trendleri analiz etmeyi hedeflemektedir. Bu araştırma, erken okuryazarlıkla ilgili önemli bilgileri

ortaya çıkararak, gelecekteki araştırma yolları için değerli bir rehber sunmayı amaçlamaktadır. Bu hedefe ulaşmak için aşağıdaki araştırma soruları oluşturulmuştur:

- 1) Erken Çocukluk Eğitimi'nde erken okuryazarlık araştırmalarında yıllara göre yıllık yayın trendi nedir?
- 2) En verimli yayın kaynakları, ülkeler/bölgeler, kurumlar, en çok kullanılan dil, en öne çıkan yazarlar ve en çok alıntı yapılan makaleler nelerdir?
- 3) Erken Çocukluk Eğitimi'nde erken okuryazarlık araştırmalarının kategorileri/sınıflandırmaları ve araştırma alanları nelerdir?
- 4) Erken Çocukluk Eğitimi'nde erken okuryazarlık araştırmalarında en sık kullanılan anahtar kelimeler nelerdir?
- 5) Erken Çocukluk Eğitimi'nde erken okuryazarlık araştırmalarının trend konuları nelerdir?
- 6) Erken Çocukluk Eğitimi'nde erken okuryazarlık araştırmalarının tematik haritası nasıldır?
- 7) Erken Çocukluk Eğitimi içindeki erken okuryazarlık araştırmalarında işbirliği ve birlikte oluşum ağlarına odaklanan bilgi yapıları nasıldır?
- 8) Erken Çocukluk Eğitimi'nde erken okuryazarlık araştırmalarının tematik evrimi nasıldır?

Yöntem

Araştırma Modeli

Bu çalışma, betimleyici bir tarama modeli kullanmıştır. Karasar (2005) tarafından tanımlandığı gibi, bu model, bir konuyu doğal bağlamında, herhangi bir müdahale olmaksızın incelemeyi amaçlar. Çalışmanın geçerliliği ve güvenilirliği, kapsamlı literatür taraması ve çağdaş metodolojilerle yapılan bibliyometrik analizlerle sağlanmıştır. Bulgular, alandaki mevcut literatürle karşılaştırılmış ve araştırmanın tüm aşamalarında şeffaflık ve açıklık ilkelerine uyulmuştur, bu yaklaşım çalışmanın bilimsel geçerliliğini ve güvenilirliğini güçlendirmektedir.

Veri Toplama Araçları ve Süreci

Bu çalışmada, veri toplama aracı olarak WoS veritabanı kullanılmıştır. Veri toplama süreci beş aşamalı bir metodolojiyi takip etmektedir: anahtar kelimelerin belirlenmesi, araştırma sonuçlarının elde edilmesi, araştırma sonuçlarının sınırlandırılması, verilerin analize hazırlanması ve veri analizi (Setyaningsih ve diğ., 2018; Tranfield ve diğ., 2003). 2023 Ocak ayında yapılan yayın taraması,

ilgili anahtar kelimeleri kullanılarak gerçekleştirilmiş ve ilk aramada 3.373 bilimsel çalışma bulunmuştur. Araştırmanın amacına uygun olarak, yayın türü olarak "makale" seçilmiş ve veritabanında belirlenen kriterlere uyan tüm makalelere ulaşmak için "tüm zaman aralığı" tercih edilmiştir. Çalışmanın sonucunda, makale sayısının 2.879 olduğu belirlenmiştir. Verilerin analize hazır hale getirilmesi için kaydedilmiş ve bibliyometrik veriler elde edilmiştir. Bu araştırma için araştırma etik kurulu onayı gerekmediğinden, araştırmacılar veri toplama sürecinden önce bu onayı almamışlardır.

Veri Analizi

Bu çalışmada, 2879 makale, bibliyometrik analiz teknikleri kullanılarak analize sunulmuştur. Ülkelerin haritalanması ve kelime bulutu oluşturulması için R-Studio programı kullanılmıştır. Sosyal ağ analizinin görselleştirilmesi için VOSviewer programı (Sürüm 1.6.16) kullanılmıştır.

Bulgular

1985 ile 2023 yılları arasında yayınlanan 2879 makale analiz edilmiştir. 2005 yılından sonra makale ve alıntı sayılarının arttığı sonuçlarına göre, Erken Çocukluk Eğitiminde erken okuryazarlık konusunda en çok makale yayınlayan uluslararası dergi Journal of Early Childhood Literacy'dir. Çalışmaların çoğu gelişmiş ülkelerden gelmekte olup, özellikle ABD, Kanada ve Avustralya öne çıkmaktadır. En çok makale yayınlanan dil İngilizce'dir. En çok makale yayınlayan kurumlar Florida Eyalet Üniversitesi Sistemi, Ohio Üniversitesi Sistemi ve Florida Eyalet Üniversitesi'dir. Yazar -Justice, L.M.- Erken Çocukluk Dönemi çalışmalarında erken okuryazarlığa yönelik 42 makaleye katkıda bulunmuş, onu 39 makale ile Longian, C.J. ve Aram D. 34 makale ile takip etmiştir. Sénéchal ve LeFevre (2002) Child Development dergisinde yayınlanan makalesi 1044'e ulaşarak en fazla alıntı alan makale olmuştur. 'Eğitim & Eğitim Araştırmaları' kategorisi 1985'ten 2023'e kadar 1751 makale ile lider konumdadır. Erken okuryazarlık konusu, eğitim, psikoloji ve dilbilim gibi çeşitli alanlarda uygulama bulmuştur. Okuryazarlık, erken okuryazarlık, fonolojik farkındalık ve okuma, yayın yazarları tarafından sunulan öne çıkan anahtar kelimelerdir. Ülkelerarası işbirlikçi çabaların ön saflarında Amerika Birleşik Devletleri'nden gelen araştırmacılar bulunmakta olup, Kanada ve Avustralya'dan da önemli katkılar gelmektedir. Anahtar kelime ağ grafiğindeki küme analizine göre, erken okuryazarlıkla ilgili akademik yayınların 10 küme altında gruplandığı anlaşılmaktadır.

Tartışma

Bu çalışma, Erken Çocukluk Eğitiminde erken okuryazarlık üzerine yapılan ilk kapsamlı bibliyometrik incelemeyi temsil eder. Özellikle 2020'lerin başından itibaren, okul öncesi eğitimde 21. yüzyıl yetkinliklerine odaklanmanın artmasıyla birlikte, bu alanda artan bir akademik ilgi gözlenmiştir (Lugossy vd., 2022; Wang & Si, 2023).

Çalışma, ABD'nin erken okuryazarlık araştırmalarında lider bir rol oynadığını ve bu alanda yüksek kaliteli makalelerle önemli katkılarda bulunan diğer bölgelerin Kuzey Amerika, Okyanusya ve Avrupa olduğunu belirtmektedir. Ayrıca Avustralya, Birleşik Krallık, Kanada, Almanya, Hollanda ve Norveç gibi ülkelerin yanı sıra, Asya bölgeleri ve Hong Kong, Çin ve Endonezya gibi ülkelerin de erken okuryazarlık araştırmalarında ilerleme kaydettiği vurgulanmaktadır.

Erken okuryazarlık alanında yapılan çalışmalar, bireysel gelişim faktörlerinin ötesine geçerek, çeşitli etmenleri dikkate alan bütüncül yaklaşımları vurgulamaktadır. Örnek çalışmalar, öğretmen eğitimi, ev ortamı, sosyal statü ve teknolojik araçların kullanımı gibi çeşitli faktörleri kapsayan araştırmaların önemini ortaya koymaktadır.

Çalışma, uluslararası işbirliğinin mevcut düzeyinin daha da güçlendirilmesi gerektiğini vurgularken, özellikle okuryazarlık gelişiminde okuma, fonolojik farkındalık, ev okuryazarlık ortamı ve aile okuryazarlığı gibi anahtar terimlere odaklanmaktadır (Kulju & Mäkinen, 2021; Napoli ve diğ., 2021). Ayrıca, erken okuryazarlıkta kullanılan araştırma yöntemleri ve stratejilerinin evrimi üzerine de değerli içgörüler sunmaktadır, örneğin öğretmen görüşmeleri ve anketler gibi yöntemler bu alanda önemli bir yer tutmaktadır. Sonuç olarak, bu çalışma, erken okuryazarlık alanında önemli gelişmeleri ve gelecekteki araştırma yönlerini belirlemekte ve bu alandaki mevcut bilgi birikimini zenginleştirme potansiyelini vurgulamaktadır.

ETİK BEYAN: “The Global Research Trends on the Early Literacy in Early Childhood Education” başlıklı çalışmanın yazım sürecinde bilimsel, etik ve alıntı kurallarına uyulmuş; toplanan veriler üzerinde herhangi bir tahrifat yapılmamıştır. TR Dizin Dergi Değerlendirme Kriterleri’nin 8. maddesine göre “etik kurul onayı” gerektirmeyen bir çalışma olduğu için Etik Kurul Onayı alınmamıştır. Karşılaşılacak tüm etik ihlallerde “Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi Yayın Kurulunun” hiçbir sorumluluğunun olmadığı, tüm sorumluluğun Sorumlu Yazara ait olduğu ve bu çalışmanın herhangi başka bir akademik yayın ortamına değerlendirme için gönderilmemiş olduğunu taahhüt ederim.