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# Researching the Effects of E-book on Children's Emergent Reading Conducted from 1999 to 2022: A Bibliometric Review

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**Abstract**

This study focused on capturing the research landscape of past studies related to the effects of electronic books on young children's reading development from 1999 to 2022 through a bibliometric analysis. All 99 included bibliographic data were extracted from the Scopus database. The findings show an increasing trend in publications and citations over the last twenty years. The publications were distributed over six continents, namely North America, South America, Europe, Oceania, Africa, and Asia. The United States was the most productive country with the highest number of publications, h-index, and g-index. The foci of the research are (i) the important role digital device plays in children's book reading; (ii) strategies taken by families and teachers to support the emergent literacy skills based on e-book; (iii) cognition and language skills domains in e-book reading among preschoolers. The findings of this study help researchers to understand the current landscape of research on e-book reading among preschoolers and provide guidelines for researchers to understand the core issues.

***Keywords:*** electronic book, bibliometric analysis, e-book, emergent reading, preschoolers

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## 1. Introduction

An electronic book is defined as a digital form of a book with features that can assist the readers, such as background voices, word pronunciations, text highlighting, text-to-speech options, animations, music, and interactive learning activities that accompany the main story (Dore et al., 2018; Şimşek & Işıkoğlu Erdoğan, 2021; Takacs et al., 2015; Yin & Hwang, 2018). With the implementation of digital technologies, the nature of reading changes at a fast pace, and e-book reading has become a more natural context for young children. Studies showed that touch screen devices were rapidly gaining a place in the lives of families with preschoolers, and parents held positive views toward technology use for their children could read independently with motivation and enjoyment (Korat & Segal-Drori, 2016; Wang et al., 2021; Wang & Guan, 2020), and parents were able to identify a number of benefits that their children had acquired (López-Escribano et al., 2021).

Furthermore, the COVID-19 pandemic has dramatically changed education globally, with the distinctive rise of e-learning (López-Escribano et al., 2021; Wang, 2023; Wang, Pan et al., 2023), many activities in children's lives are digital, including education programs and early literacy experiences. In other words, e-book experiences are likely to change early literacy instructional practices as well as the ways in which preschool children encounter, perform and perceive reading (Hermansson & Olin-Scheller, 2022). Therefore, we need to gain more knowledge about how the change in the textual landscape, from paper-based books to electronic books, affects the teaching of reading in classrooms, as well as in the family parent-child reading. In fact, some research has been carried out in this area, taking e-book reading as a productive and important activity for their emergent reading development (Korat & Segal-Drori, 2016).

Emergent literacy comprises the skills, knowledge, and attitudes that serve as developmental precursors to reading and writing (Fu & Wang, 2022; Wang, Derakhshan et al., 2023; Whitehurst & Lonigan, 1998; Zare & Karimpour, 2023) and the environments that support these developments (Lonigan, 1994). It comes in many forms, and different strands of research provide diverse information about the components of emergent reading. Some studies proved that learning to read in an alphabetic orthography is critically dependent on phonological skills, and that word reading is predicted by phoneme awareness, print knowledge and rapid automatized naming (RAN) (Hulme et al., 2019; Whitehurst & Lonigan, 1998). Since well-designed e-books with a number of multimedia effects focused on storyline

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and language support, including print awareness or phonological support, this new technology may be particularly beneficial for children (Amani-Babadi et al., 2022; Korat & Segal-Drori, 2016). Therefore, teachers and parents at this age, who are educating and guiding technologically immersed groups of learners, are inevitably looking for a method to better use this electronic reading technology and devices and explore the possible benefits of technology-enhanced learning and instruction.

Various research has been conducted to test the influence of digital learning (Al-Obaydi et al., 2023). Among the potential advantages of e-books is that they are easily accessible and interactive for beginning readers who cannot yet decode words or are just beginning to learn to decode (López-Escribano et al., 2021). Even children who cannot yet read can explore e-books by themselves without the help of parents or teachers (Dore et al., 2018). Due to the affordances of the digital touch screen and the social settings in which it is used, this reading method may invite new practices that may differ from traditional book reading (Hoel & Tønnessen, 2019). However, there are also many concerns about the harmful effects of an increase in children's screen time caused by these multimedia features, and young children may miss the real story because of the high level of stimulation (López-Escribano et al., 2021). Although the previous results indicate that language learners' use of screen reading has the potential to increase the reading motivation of the students (Liman Kaban & Karadeniz, 2021), promote phonological awareness in children beginning to read (Chera & Wood, 2003; Flack et al., 2018), increase learning potential (Bus et al., 2015; Zakian, 2022), no significant difference was observed in their reading comprehension levels despite the use of different reading medium. What's more, when it comes to understanding the text and narrating the story, studies also indicate that traditional paper books are better, and when children listen to stories in digital format, they mostly interact with the tool Instead of focusing on memorizing words and story plots (Lauricella et al., 2014; Richter & Courage, 2017). It can be seen that there are still ongoing arguments about whether or not electronic books offer the same advantages as printed books in terms of children's literacy development (Willoughby et al., 2015). Thus, it is warranted to conduct a review of the past related studies to identify the research gaps and clarifying the disputes of previous studies (Cason et al., 2019).

Multiple literature review methods are used to accumulate the existing knowledge and hence capture the latest state of the research. The evidence and data reported in previous studies could be summarized thoroughly in a systematic

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literature review to address the research questions on a specific topic (Donthu et al., 2021; Xiao & Watson, 2019). On the one hand, researchers use systematic literature review to qualitatively analyze the content of the literature. On the other hand, some studies also use meta-analysis to quantitatively summarize the empirical evidence in the past research. Both meta-analysis and systematic literature review have been conducted by several researchers (i.e., López-Escribano et al., 2021; Savva et al., 2022). Nonetheless, only a small number of articles were included in the analysis, as Aguinis et al. (2021) pointed out that the literature included in a meta-analytic review tends to be less diverse.

Bibliometric analysis has the same advantages as meta-analysis, whereby a large amount of literature could be included in the reviewing process (Suseelan et al., 2022). It can provide a comprehensive overview of the research field for capturing the state-of-art of a given subject areas, such as the publication trend and the current research domain (Zupic & Čater, 2015). Precisely, the bibliometric analysis used in this study would portray the research trends in e-book reading among young children and the effects on emergent reading. The findings of the publication and citation data would suggest the directions of growth and change, while the geographical distribution of the publication would pinpoint the relevance of research areas.

## 2. Literature Review

### *2.1. Electronic Book Reading*

As a result of the exposure to technology, many activities in young children's lives are digital, including early literacy practices. Children's books are increasingly available in a digital format on electronic devices, which are often handheld and mobile (López-Escribano et al., 2021). E-books substantially increase interest in reading among children who are initially unenthusiastic (Maynard, 2010), as they can read picture books on multimedia devices not only by 'looking' with their eyes but also by 'listening' with their ears. Thus, e-books reading might be a productive and important activity for preschool children's emergent language development (Korat & Segal-Drori, 2016). Previous findings signal the problems of young digital users' reading habits, which have been identified as worrying parents and educators in many countries (Altun, 2019), and the strategic integration of e-book reading has become a necessity and a challenge which is frequently encountered by teachers of

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beginning learners.

Empirical studies on children's e-book reading have been conducted widely in the past. These studies were carried out to compare the effects of different reading techniques on young children's language development (Rvachew et al., 2017; Şimşek & Işıkoğlu Erdoğan, 2021), and identify the underlying causes of the insignificant increases in children's language scores (Ihmeideh, 2014; López-Escribano et al., 2021), expand understanding of young readers' motivations to read (Altun, 2019; Hermansson & Olin-Scheller, 2022; Liman Kaban & Karadeniz, 2021), and evaluate the e-book reading interventions with or without adult support assisted in children's emergent reading skills (Korat & Segal-Drori, 2016; Rvachew et al., 2017).

Several researchers (Savva et al., 2022; Verhoeven et al., 2020) have conducted meta-analyses on the literature of preschoolers' digital reading to synthesize the findings of past-related studies. For example, Savva et al. (2022) have found 29 relevant articles with 44 contrasts eligible for inclusion in the meta-analysis and examined the impact of e-book reading on language and literacy development of young children compared with print books. In addition, Verhoeven et al. (2020) have reviewed 59 relevant articles to determine the effects of computer-supported early literacy intervention on phonological awareness and reading-related skills in preschool and kindergarten. Instead of using meta-analysis to quantitatively review articles, some studies have opted for a systematic review and analytical review to synthesize the knowledge reported in the past decades. For instance, Eutsler et al. (2020) reviewed 61 studies to examine the influence of mobile technologies on prekindergarten−5th-grade students' literacy achievement. In addition, an analytical review based on data from 14 randomized controlled trial studies was conducted by López-Escribano et al. (2021) to compare the effects of interactive e-book interventions on young children's literacy development.

Although the previous research syntheses were conducted by reviewing the relevant articles to identify the specific research questions, this study tried to take a bibliometric analysis to explore the research trends. The findings of this study would deepen the understanding of the researchers' stage of e-book reading among preschool children from 1999 to 2022, and hence support them in shaping their research focus.

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### *2.2. Purpose of the Study*

This study aimed to profile the research landscape on children's emergent reading development using e-book from the year 1999 to 2022. The research questions addressed by this study are:

1) What is the current publication trend of research related to e-book reading involving preschool students?

2) What is the citation trend of research related toe-book reading involving preschool students?

3) What is the geographical distribution of the publication and the collaboration pattern among countries in research related to e-book reading involving preschool students?

4) What are the foci of the research on e-book reading involving preschool students?

## 3. Methodology

### *3.1. Data Collection Method*

The data collection process is summarized in Figure 1. The process of document search and refinement was done based on four stages, namely identification, screening, eligibility, and inclusion, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Moher et al., 2009). The data relating to the topic 'Effects of Electronic Book on Children's Emergent Reading Development' were extracted from the Scopus database due to its wide interdisciplinary coverage.

The first stage involved the identification of relevant publications using the search string and the removal of duplicates. While the research topic focused on 'Effects of Electronic Book on Children's Emergent Reading Development', the commonly presented keywords in the literature, such as 'electronic book', 'children' and 'reading' were identified for performing the search. The double quotation marks (" ") were used in the search to ensure the search result includes the approximate phrases such as 'e-book', 'E-book', 'electronic books' (Suseelan et al., 2022). To perform a more effective document search, the advanced search was

conducted by limiting the search scope based on the subject area.

Specifically, the search was limited to subject areas of 'social science', 'arts and humanities and 'psychology' because electronic reading is the research domain in the field of literacy education, and 'education' is the research field under the subject area of 'social science', while the 'literacy', which is related to 'psychology' is the research field under the subject area of 'arts and humanities. In other words, only the articles with the presence of the words 'e-book', 'E-book' or 'electronic books' in the title, which were categorized under both subject areas of 'social science', 'arts and humanities and 'psychology' would be shortlisted during the advanced search. A total of 171 publications had been identified using the search string 'TITLE ("e-book" OR "E-book" OR "electronic books" AND 'reading' AND 'children') AND SUBJAREA (soci) AND SUBJAREA (psyc) AND SUBJAREA (arts)' and no duplicates were identified.

In the second stage, screening was conducted to limit the documents to the required language and document type. Only English and Chinese publications were included because English is the most widely used language in scientific communication and our future study will be conducted in China. For document type, only articles, conference papers, reviews, and book chapters were taken into consideration. The publications in the form of erratum and notes were excluded because they only consisted of very minimal research information. After the screening process, 7 articles were removed because they do not satisfy the basic screening criteria. With this, only 164 publications remained.

In stage three, the documents were assessed for eligibility. The title and abstract of the records were assessed manually by the researchers to identify the records that satisfied the inclusion criteria, which is the research on e-book reading involving preschool students. Only the publications that satisfied this criterion were included in the analysis following the research topic. At the end of stage three, 65 records were removed with the reason that the research involved e-book reading in primary school or adults learning contexts or focusing on the artificial intelligence design of e-books. As such, 99 records remained.

While the study aimed to capture the research trends and landscapes, all records were included regardless of the publication years to ensure the objectivity of the results and interpretation (Donthu et al., 2021). These records were extracted on 3 December 2022 during the inclusion stage. The titles of the 99 publications could be accessed through the URL: https://docs.qq.com/sheet/DSVFOdG1qcFFCR3JV

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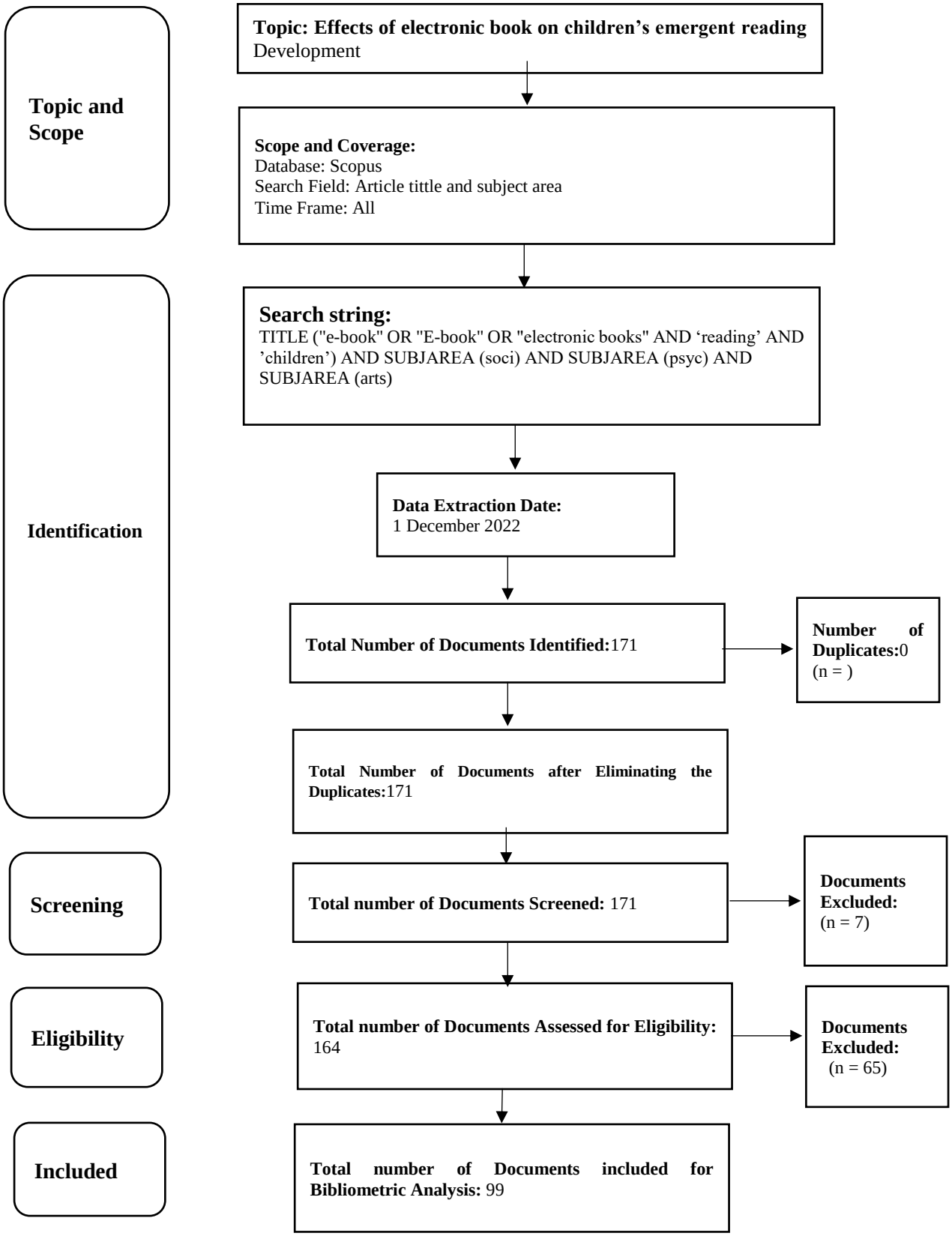
**Figure 1**
*Data Collection Process*

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### *3.2. Data Analysis Method*

The current publication trend of publications related to E-book reading among preschool children was determined by performing descriptive analysis on the bibliometric data retrieved from the Scopus database. The graphs representing the number of publications and the cumulative number of publications in each year were generated using Microsoft Excel 2210.

To study the citation trend of publications related to E-book reading among preschool children, the data extracted from Scopus was segregated by year. The average citation per publication and the average citation per cited publication was calculated using Microsoft Excel 2210. Then, the g-index and h-index of the documents published by year were obtained using Harzing's Publish or Perish software.

To capture the geographical distribution of the publication, Microsoft Excel 2210 was used to generate a world map with the distribution of the publication. The average citation per publication, the average citation per cited publications, the g-index and the h-index were calculated using the same method used for citation trend analysis. Then, the VOSviewer was used to generate the network visualization and overlay visualization map that shows the collaboration pattern among the countries.

Lastly, the keywords co-occurrence analysis was conducted to determine the foci of the research on E-book reading among preschool children. The author and index keywords were extracted from the database. Before the analysis process, data pre-processing was conducted.

The keyword co-occurrence network was generated using VOSviewer. As such, the foci of the research could be determined based on the keywords which cluster together in the network (Chen et al., 2016).

### *3.3. Results*

Based on the 99 shortlisted records, the publication years spanned the years from 1999 to 2022. The majority of the records were articles (84.85.%), followed by conference papers (6.06%), reviews (5.05%) and book chapters (4.04%).

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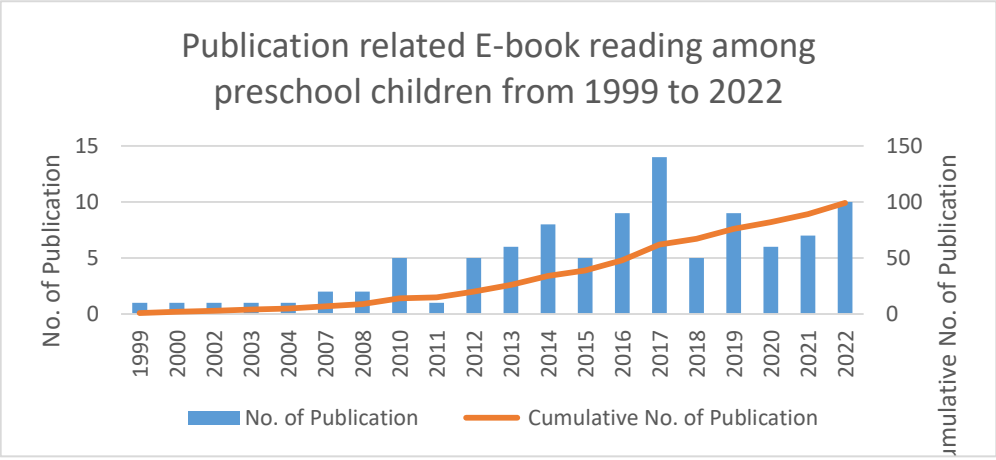
### *3.4. Publication Trend*

Figure 2 shows a bar graph representing the distribution of annual publications over the years from 1999 to 2022. During this time frame, the maximum number of records published was in 2017 (14.14%) followed by the year 2022 (10.10%). Before 2012, the number of publications remained below five every year except 2010 (*n* = 5). After 2012, almost every year recorded at least five publications.

**Figure 2**
*Publication from 1999 to 2022*




There was an obvious increase in the number of publications from 2012 to 2017. The number of publications in 2017 (*n* = 14) was more than double the number of publications in the previous year, 2012 (*n* = 5). A cumulative frequency graph was plotted to capture the growth pattern of the publications. Although the number of publications increased to 5 in 2010, the overall growth was very slow from 1999 to 2011.The curve is concave upwards, and this indicates an increasing publication trend over the years with a sharper slope from 2012 to 2022 compared to 1999 to 2011. This indicates that the growth of research on E-book reading among preschool children was quite slow from the year 1999 to 2011. However, there was a rapid research growth since 2012.

### *3.5. Citation Trend*

The citation analysis of E-book reading among preschool children from 1999 to 2022 is summarized in Table 1.

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**Table 1**
*Citation Analysis of Publications*

| Year | TP (%) | NCP | TC | C/P | C/CP | h | g |
|---|---|---|---|---|---|---|---|
| 2022 | 10(10.1%) | 6 | 14 | 1.4 | 2.33 | 2 | 3 |
| 2021 | 7(7.07%) | 5 | 25 | 3.57 | 5 | 4 | 5 |
| 2020 | 6(6.06%) | 5 | 23 | 3.83 | 4.6 | 3 | 4 |
| 2019 | 9(9.09%) | 9 | 97 | 10.78 | 10.78 | 6 | 9 |
| 2018 | 5(5.05%) | 5 | 102 | 20.4 | 20.4 | 4 | 5 |
| 2017 | 14(14.14%) | 13 | 350 | 25 | 26.92 | 9 | 13 |
| 2016 | 9(9.09%) | 7 | 208 | 23.11 | 29.71 | 7 | 7 |
| 2015 | 5(5.05%) | 5 | 165 | 33 | 33 | 4 | 5 |
| 2014 | 8(8.08%) | 8 | 411 | 51.38 | 51.38 | 8 | 8 |
| 2013 | 6(6.06%) | 6 | 246 | 41 | 41 | 5 | 6 |
| 2012 | 5(5.05%) | 4 | 214 | 42.8 | 53.5 | 4 | 4 |
| 2011 | 1(1.01%) | 1 | 22 | 22 | 22 | 1 | 1 |
| 2010 | 5(5.05%) | 5 | 409 | 81.8 | 81.8 | 5 | 5 |
| 2008 | 2(2.02%) | 2 | 116 | 58 | 58 | 2 | 2 |
| 2007 | 2(2.02%) | 2 | 250 | 125 | 125 | 2 | 2 |
| 2004 | 1(1.01%) | 1 | 159 | 159 | 159 | 1 | 1 |
| 2003 | 1(1.01%) | 1 | 15 | 15 | 15 | 1 | 1 |
| 2002 | 1(1.01%) | 1 | 189 | 189 | 189 | 1 | 1 |
| 2000 | 1(1.01%) | 1 | 68 | 68 | 68 | 1 | 1 |
| 1999 | 1(1.01%) | 1 | 18 | 18 | 18 | 1 | 1 |

*Notes. TP*=total number of publications, *NCP*=number of cited publications, *TC*=total citations, *C/P*=average
citations per publication, *C/CP*=average citations per cited publication, h=h-index, g=g-index

Based on Table 1, the number of cited papers (NCP) was the highest in the year 2017 (*NCP* = 13) followed by 2019 (*NCP* = 9), and year 2014 (*NCP* = 8). Despite the low publication rate recorded before 2008, all publications produced in each year were cited publications.

The total citations were the highest in the year 2014 with a total publication of eight, and the second highest is the year 2010 although it only recorded a total publication of five. Each publication in 2010 received 81.80 citations on average. Even though the number of publications was not very high in 2006, all these publications had great research impact and hence were being cited frequently. After 2010, the total number of citations dropped rapidly to 22 in 2011. Although the total

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citations fluctuated from 2012 to 2019, they remained at a high value until 2020 in which a sudden valley was observed with a total citation of 23. Thereafter, the total citations remained below 30 until 2022.

The highest h-index and g-index were recorded in the year 2017 with a value of ‘9’and ‘13’ respectively. This indicates that publications in 2017 had the highest impact within the time frame of 1999 to 2022. With the h index of nine, and g index of 13, at least nine publications in 2017 had been cited eighty-one (81) times in total and at least 13 publications in 2017 had been cited at least 13 times each. The g-index was noticeably higher than the h-index as it permits citations from papers with a lower number of citations to be bolstered by papers with higher citations to meet the required threshold (Egghe, 2006). It is worth noting that the g-index and h-index were at most two before 2011 except 2010 which was 5. On the other hand, the g-index and h-index were at least three after 2012, except for 2022 (*g-index* = 3, *h-index* = 2). This trend is in line with the increase in research growth since 2012. While there is a positive research growth since 2012, the research impact of publications was still warranted.

### *3.6. Geographical Distribution of the Publications*

The geographical distribution of the publications is illustrated in Figure 3. The countries were identified based on the author’s affiliations. The color coding of the map explains the distribution based on the number of publications in each country. The highest number of publications is indicated by the darkest shade and as the number of publications decreases, the shade gets lighter. The publications were distributed over different continents.

Based on the map as shown in Figure 3, a total of 19 countries from North America (*n* = 2), South America (*n* = 1), Europe (*n* = 9), Oceania (*n* = 1), Africa (*n* = 1), and Asia (*n* = 4) were stained with colors with different intensities. With the darkest shade, the United States is the country with the highest contributions to publications on mathematics problem solving in elementary education. Nearly one-third of the publications were produced by institutions in the United States (*TP* = 31). This was followed by Israel (*TP* = 26) with the second darkest shade.

The countries with at least three publications are listed in Table 2. As shown in Table 2, there were 8 countries with at least 3 publications on E-book reading among preschool children. The top five most productive countries fall on three

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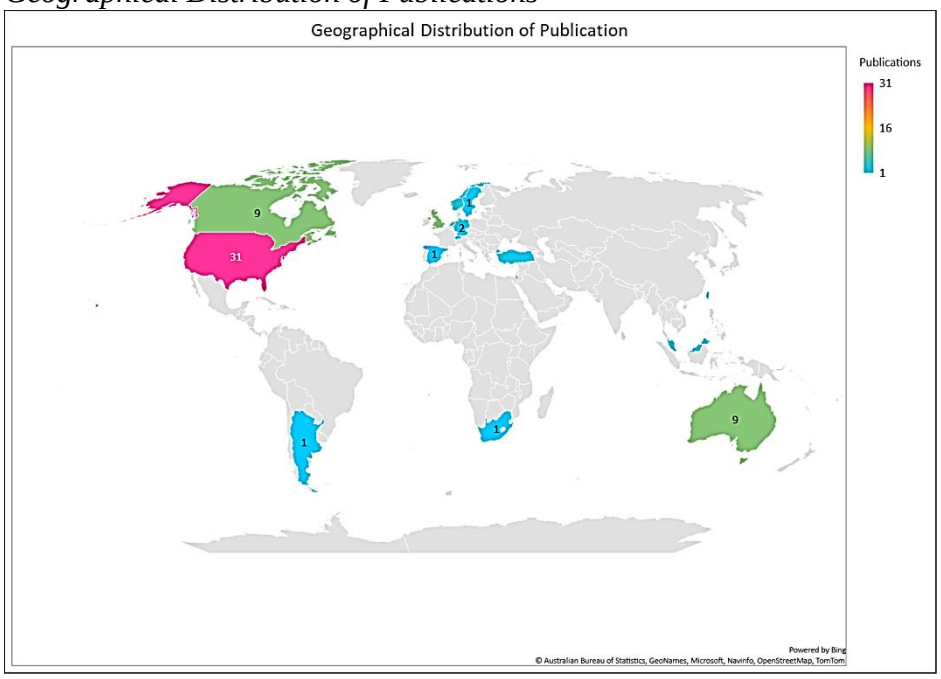
continents namely North America (United States and Canada), Asia (Israel) and Oceania (Australia).

The total publications from these five countries comprise more than four-fifths (84.85%) of the total publications published from 1999 to 2022. The publications from these countries recorded a high citation rate.

**Figure 3**
*Geographical Distribution of Publications*




All publications from Canada, United Kingdom, and Turkey are categorized as cited publications, while more than 90 percent of publications from Australia, Israel, Australia, Canada, and the United Kingdom, each has been cited at least once.

**Table 2**
*Countries with more than Two Publications*

| Country | TP (%) | NCP | TC | C/P | C/CP | h | g |
|---|---|---|---|---|---|---|---|
| United States | 31(31.31%) | 27 | 968 | 31.23 | 35.85 | 16 | 27 |
| Israel | 26(26.26%) | 25 | 843 | 32.42 | 33.72 | 14 | 25 |



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| Country | TP (%) | NCP | TC | C/P | C/CP | h | g |
|---|---|---|---|---|---|---|---|
| Australia | 9(9.09%) | 8 | 186 | 20.67 | 23.25 | 6 | 8 |
| Canada | 9(9.09%) | 9 | 331 | 36.78 | 36.78 | 8 | 9 |
| United Kingdom | 9(9.09%) | 9 | 244 | 27.11 | 27.11 | 5 | 9 |
| Netherlands | 7(7.07%) | 6 | 604 | 86.29 | 100.67 | 6 | 6 |
| Norway | 3(3.03%) | 2 | 14 | 4.67 | 7 | 1 | 2 |
| China(Taiwan) | 3(3.03%) | 2 | 9 | 3 | 4.5 | 2 | 2 |
| Germany | 2(2.02%) | 1 | 1 | 0.5 | 1 | 1 | 1 |
| Malaysia | 2(2.02%) | 1 | 28 | 14 | 28 | 1 | 1 |
| Turkey | 2(2.02%) | 2 | 11 | 5.5 | 5.5 | 2 | 2 |

*Notes. TP*=total number of publications, *NCP*=number of cited publications, *TC*=total citations, *C/P*=average
citations per publication, *C/CP*=average citations per cited publication, h=h-index, g=g-index

With the highest number of publications, the United States was recorded as the most cited country with the greatest research impact (*h-index* = 16; *g-index* = 27). This indicates that the publications from the United States had the highest impact among the countries included in the dataset. Nearly 90 percent of the published research works caught the attention of other researchers and had been cited in their studies 968 times in total.

Out of the 27 cited publications distributed in the United States, at least 16 of them had been cited at least 16 times each. At least 27 cited publications from the United States had contributed to a minimum of 729 total citation counts. Next to the United States, Israel recorded a high h-index and g-index with a value of 14 and 25 respectively. This was followed by Canada with an h-index of eight and a g-index of nine. Even though the number of cited publications from United Kingdom (*NCP* = 9) was higher than that of Australia (*NCP* = 8), the h-index of United Kingdom (*h-index* = 5) was lower than that of Australia (*h-index* = 6). This is because the number of highly cited publications from United Kingdom is less than that from Australia. At least six publications from Australia received at least six citations each, while only five publications from United Kingdom received at least five citations each.

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### *3.7. Global Collaboration Pattern*

To study the global collaboration pattern, the co-authorships were analyzed with the country as the unit of analysis. The VOSviewver software was used to visualize the collaboration between countries with at least one related publication. As shown in Figure 4, the collaboration pattern of the 19 countries which surpassed the minimum publication threshold was represented by the incomplete network with 11 isolated components.

The largest component of the incomplete network consisted of 4 nodes. The rest of the components are similarly small. There was an isolated component (light yellow component) with two nodes and two isolated components (blue and green components) with three nodes each. The other isolated components are presented as a single node. The cluster of Australia was not clearly presented because Malaysia and Turkey were hidden behind the larger nodes. While the nodes and edges in the network represent the countries and the collaboration among the countries respectively, the isolated component with single nodes indicates the country with no research collaboration in electronic book reading among preschool education recorded.

In general, the incomplete network as shown in Figure 4 indicates the fragmentation of the global collaboration pattern. Despite more than half of the countries ($n$ = 12, 63.16%) being interconnected with collaboration ties, another half of the countries with relevant publications were poorly interconnected. In fact, no research collaboration in mathematics problem solving involving elementary education was recorded in more than one-third of the countries ($n$ = 7, 36.84%).

The 19 countries were grouped into 11 clusters in the global collaboration network. However, only three of the clusters were visible in the network shown in Figure 4. Seven of these invisible clusters were the isolated components with a single node, which were hidden behind the larger nodes. And one cluster (Australia, Malaysia, and Turkey) could be seen after enlarged. The largest component consisted of three clusters coded with different colors (i.e., red, blue, and light green). The three cluster showed an inter-continent collaboration. For the read one, it consisted of three North American Countries (i.e., the United States and Canada), one Asian country (i.e., the China Taiwan), and one European Countries (i.e., Spain).

Based on the network, the United States is the largest node. This indicates the

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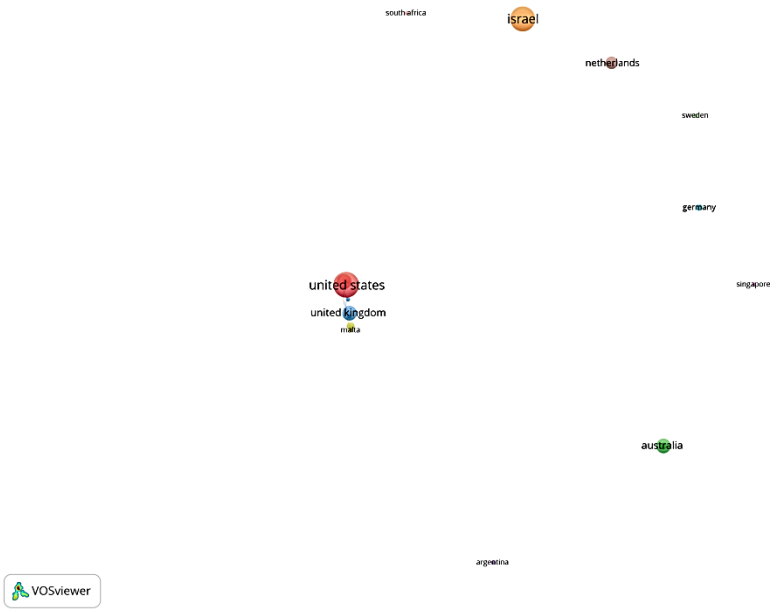
United States has a higher number of publications related to electronic book reading among preschool children. There were three edges connected to this largest node (i.e., United States). This indicates the United States has collaborated with three different countries. It also was the most active country in collaborating with others and had collaborated with five different countries. Although Israel had the second largest number of publications, it showed an inactive collaboration with other countries. Besides, there was not much difference in the thickness of edges among the various collaborations of the largest node, this scenario might be due to an almost equal number of collaborations among two countries.

**Figure 4**
*The Collaboration between Countries*




### *3.8. Research Foci*

The foci of the research on electronic book reading among preschool children were determined by conducting keywords co-occurrence analysis. A total of 49 keywords which surpassed the co-occurrence threshold of two were included in the analysis. To generate the network with a clear clustering result, the keywords with total link strength of less than five were removed from the list. By setting the minimum cluster size as five nodes, the cooccurrence network of the remaining 37 keywords

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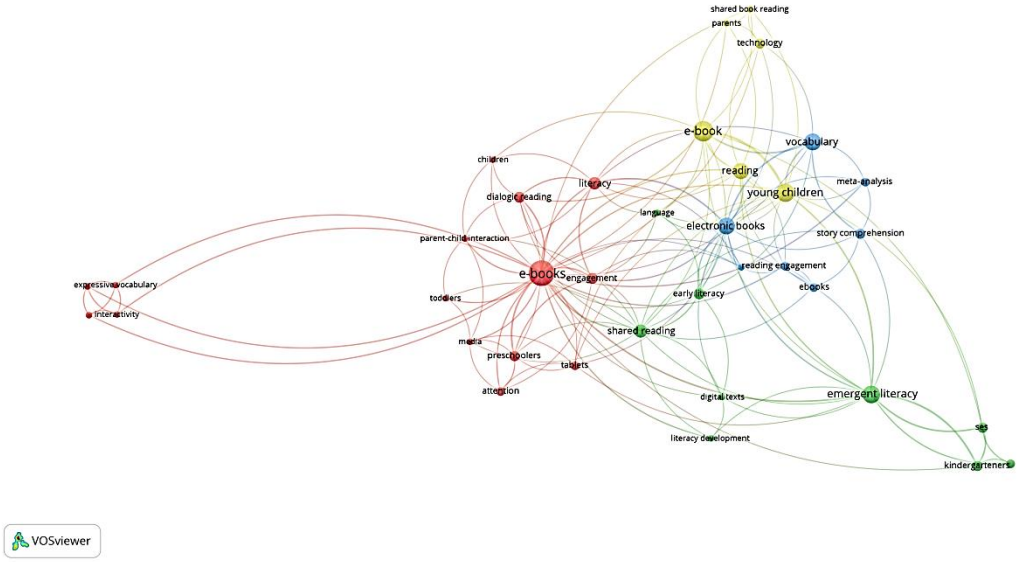
was generated. As shown in Figure 5, the nodes and edges in the map represent the keywords and the co-occurrence of the keywords respectively. As shown in Figure 5, e-books are represented by the largest red node followed by e-book (the largest yellow node), emergent literacy (the largest green node) and vocabulary (the largest blue node) with almost equal size with reading and young children, which were the second largest in parallel. The relatively thick edges between keyword pairs such as e-book and young children, e-book and reading, as well as e-book and vocabulary (blue node adjacent to e-book) denote a high co-occurrence between them (Chen et al.,2016).

**Figure 5**
*Keyword Co-Occurrence Network (Occurrence Threshold ≥ 2)*




The 37 keywords were grouped into clusters which are represented with different colors in the network displayed in Figure 5. Each cluster reflects a research focus. The red cluster is the largest cluster with 15 keywords. The node size of 'literacy', 'digital reading' and 'engagement' are relatively large compared to other nodes in the cluster. Thus, these keywords reflect the research focus named 'electronic book reading among children.' The green cluster consisted of nine keywords, in which 'emergent literacy', 'shared reading' and 'digital texts' were the three keywords with the largest node size. Following this, the green cluster reflects the research

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focus named ‘emergent reading development in the background of e-book’. The blue cluster consisted of seven keywords, whereby ‘electronic books’, ‘vocabulary’, and ‘story comprehension’ were the three largest nodes in the cluster. Thus, the blue cluster reflects the research focus named ‘Influence of E-books on the elements of reading’. The light-yellow cluster is the smallest cluster which only consists of six keywords. ‘e-book’ is the node with the largest size, followed by ‘young children, reading’. Notably, the size of the nodes labeled with ‘shared book reading’, ‘parent’ and ‘technology’ were slightly smaller. In other words, these keywords were almost equivalent to each other in terms of their relevance to the research focus. Thus, the light-yellow cluster represented the research focus named ‘electronic book reading among parents and children’.

## 4. Discussion

This study intended to capture the research landscape related to electronic book reading among preschoolers from the year 1999 to 2022. The discussion of the findings corresponding to each research question is presented in the following sections.

### *4.1. What Is the Current Publication Trend of Research Related to Electronic Book Reading among Reschool Children?*

The findings indicate an increased number of publications related to electronic book reading among preschool children from the year 1999 to 2022 (except 2011). There was a rapid research growth since 2012, and the peak of data appeared in 2017. This is in line with the analysis conducted by Eutsler et al. (2020) in which nearly half of the studies were published between 2017 and 2019. According to Korat et al. (2014) as well as López-Escribano et al. (2021), the co-reading of e-books between parents and young children is becoming more frequent with the marked increase in e-learning. Designed to facilitate supportive adult reading strategies, e-books can improve emergent literacy skills, especially in children with deficient skills at school entry (Rvachew et al., 2017). Thus, research on reading e-books with preschoolers has increased in recent decades.

In this study, two steeper increases were noted from 2012 to 2014 and 2017 to 2022. This finding is supported by Savva et al. (2022), who also found the highest

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number of research publications on the effects of electronic storybooks on children in 2017 (Savva et al., 2022). The number of articles published in 2014, 2015 and 2020 was the second largest. The rapid growth of research since 2012 could be due to the fact that more research projects have been conducted to address the trend of e-reading, which is popular worldwide, where the average time spent reading has declined over the last decade, while screen time has increased (Altun, 2019). Notably, there was a rapid and sustained growth from 2020 to 2022. This was because the COVID-19 pandemic has changed education dramatically and globally, as online education has become a hot topic, with a corresponding increase in e-reading studies.

### *4.2. What Is the Citation Trend of Research Related to E-Book Reading in Preschool Education?*

There is a smooth increase in the cumulative number of citations over the past ten years. This suggests that digital reading among young children has become an active and influential research issue in several countries (Savva et al., 2022) with the growing awareness and concern of parents and teachers, although it has been documented in the Scopus database starting since 1999. Specifically, the year 2017 witnessed the highest number of cited papers. This further bears witness to its influential status in e-book reading among preschoolers because many research articles published in 2017 at the latest were cited. Although citation counts accumulate over time according to Leydesdorff et al. (2016), the analysis in 2017 recorded a higher number of cited publications than in 2018 and 2016. Thus, the research publications on young children's e-book reading as recorded in 2017 have received great attention from the research community.

The year 2017 recorded the highest h-index (*h-index* = 9) and g-index (*g-index* = 13) of all time, which also indicates that most of the articles published in this year are of high impact (Costas & Bardons, 2008). The documents published in 2017 are as listed in Table 3. Notably, 12 out of the 14 publications were cited more than 5 times, and half of the articles were cited more than 20 times. These highly cited articles were written by researchers from various countries to address the three research questions: (i) What is the influence of e-books on the development of children's emergent reading compared to print book? (ii) What are the relationships between emergent literacy skills, emergent digital literacy skills and proficiency in emergent literacy? (iii) What is the appropriate way for children to read e-books,



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and what measures should parents and teachers take to use e-books to promote emergent reading development? These publications outlined the major research directions in e-book reading among preschoolers and have received great attention from researchers because they might support them in determining the research gaps as well as providing foundation information of e-book reading over the whole world. For instance, the article written by Neumann et al. (2017) received a high citation, as the framework related to digital literacy skills alongside conventional literacy skills might have been used by many researchers to support their studies thereafter.

**Table 3**
*List of Documents Published in 2017*

| Country | Citation |
|---|---|
| [1] Roni & Merga. (2017). The Influence of Device Access and Gender on Children's Reading Frequency | 6 |
| [2] YalÇintaŞ Sezgin & Ulus. (2017). The early literacy at preschool education: The book or the E-book? | 6 |
| [3] Neumann et al. (2017). A Conceptual Framework for Emergent Digital Literacy | 55 |
| [4] Revelle & Bowman. (2017). Parent-child dialogue with ebooks | 8 |
| [5] Merga & Mat Roni. (2017). The influence of access to eReaders, computers and mobile phones on children's book reading frequency | 28 |
| [6] Strouse & Ganea. (2017a). Parent-toddler behavior and language differ when reading electronic and print picture books | 36 |
| [7] Rvachew et al. (2017). Improving emergent literacy with school-based shared reading: Paper versus ebooks | 21 |
| [8] Rees et al. (2017). Story-related discourse by parent–child dyads: A comparison of typically developing children and children with language impairments | 10 |
| [9] Strouse & Ganea. (2017b). Toddlers' word learning and transfer from electronic and print books | 47 |
| [10] Chew & Eau. (2017). Creativity teaching through E-Book reading program among the children in Malaysia | 0 |
| [11] Kucirkova et al. (2017). Young children's reading for pleasure with digital books: six key facets of engagement | 29 |
| [12] Shamir. (2017). Expanding the boundaries of kindergartners' e-book reading: Metacognitive guidance for e-book support among young children at risk for learning disabilities | 3 |
| [13] Richter & Courage. (2017). Comparing electronic and paper storybooks for preschoolers: Attention, engagement, and recall | 83 |
| [14] Bates et al. (2017). E-Books and E-Book Apps: Considerations for Beginning Readers | 17 |

Even though there were only two publications documented in Scopus in 2007,



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the average number of citations per publication is high. This may be due to the fact that the papers published are rich in content and provide abundant information for the studies that cited these two papers. The article written by Grimshaw et al. (2007) received the higher citation. This article investigated the differences in children's comprehension and enjoyment of storybooks according to the two mediums. As the study includes some questions for children to make inferences and teases out specific factors which might influence the comprehension, it might have added to the knowledge of examining methods in this area. The article written by Korat and Shamir (2007) also received a high citation count. They compared the effects of children's reading of an educational electronic storybook on their emergent literacy with those of being read the same story in its printed version by an adult. This study is essential for the researchers to pay attention to the e-book reading of children from different socio-economic status (SES) groups: low (LSES) and middle (MSES).

### *4.3. What Is the Geographical Distribution of the Publication and the Collaboration Pattern among Countries in Research Related to E-Book Reading among Preschoolers?*

The top five countries in the production of publications related to e-book reading involving preschool children are the United States, Israel, Australia, Canada, and the United Kingdom. The distribution of these five countries is spread throughout four main continents, namely North America, Asia, Oceania, and Europe. The United States emerged as the most productive country, contributing almost a third of the total publications over the years with the highest number of total citations, average citations per cited publication, h-index and g-index. This is in line with the record stating that the United States conducted the majority of the studies (Eutsler et al., 2020), while Canada, UK, and Israel were the countries with the best performance and highest publication rate in the field of young children's e-book reading (Savva et al., 2022).

The collaboration pattern also indicates that the United States produces the highest number of publications totally and has collaborated with various countries from the same and different continents. In addition to being the third country with the highest number of publications, Australia also emerges as a pioneer country in publications involving children's e-book reading, which has collaborated with two countries, namely Malaysia and Turkey. This may be due to the emphasis and

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research by Australian educators and parents, as the average reading time of their children has declined in the last decade, while screen time has increased in this country as well as in the United States (Altun, 2019).

Countries such as Malaysia and Singapore are relatively new in publications (stated from 2017) related to e-book reading among preschoolers because these multilingual countries may have given importance to the influences of e-book on emergent reading slightly later. Besides, although Israel is the second top country with the most publications, it shows a weak cooperation with other countries. This might be due to the Hebrew language used in Israel, and articles might have been published in other languages. As less developed countries in the America, Argentina, Malta, and Spain both have a small number of publications related to children's e-book reading, which could be due to an insufficient number of researchers in preschool education and limited economic conditions.

### *4.4. What Are the Foci of the Research on E-Book Reading among Preschool Children?*

The foci of research work related to electronic book reading among preschool children identified are (i) the important role that digital device play in children's book reading, (ii) strategies taken by families and teachers to support the emergent literacy skills based on e-book, and (iii) cognitive and linguistic domains in preschool e-book reading.

The most prominent is consistent with many previous studies, which assessed the preschool children's attention, engagement, and other skills during readings from comparable electronic and paper storybooks (Chew & Eau, 2017; De Jong & Bus, 2004; Rvachew et al., 2017; Wang & Hemchua, 2022). In these studies, children are more attentive to and engaged in the e-book and show more interactions with the animations embedded in electronic stories (Richter & Courage, 2017). Although existing studies suggest that interactive e-books can promote children's emergent reading abilities, such as phonological awareness (Chera & Wood, 2003; Shamir, 2017), and increase reading potential (Bus et al., 2015), there are still ongoing arguments on whether this new medium can promote children's reading development (Şimşek & Işıkoğlu Erdoğan, 2021). As advocated by De Jong and Bus (2002), Miller and Warschauer (2014), e-book-incorporated features such as hotspots and other multimedia elements may distract preschoolers from the story

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content and damage their comprehension of the story. Following this, the second foci about the appropriate methods to use e-book is raised in many types of research. As the primary research hotspot, the different roles of e-books playing in children's emergent reading has been rigorously studied by researchers around the world. This suggests that digital reading is a new concept in the field of early childhood and the effects of such types of reading are still undetermined (Altun, 2019). Therefore, relevant studies are needed to confirm the effectiveness of e-book reading among preschoolers.

The second focus is on the strategies for teachers and parents to make in order to support emergent reading based on e-book. This is consistent with some research findings that when e-books are properly used, that is, integrated with parental or teacher scaffolding, the benefits of e-books will be maximized (Neumann, 2016), and children develop literacy skills equally as well and sometimes even better than with paper books (López-Escribano et al., 2021). As we all know, cognitive control mechanisms are still immature in preschool children (Luna et al., 2015) and the high exposure to digital games (also found in e-books may make them vulnerable to developing pathological gaming behavior (Paulus et al., 2018). Thus, there has been an increasing amount of talk in relevant studies about controlling the device and managing child's behavior and use of technology (Gao et al., 2022; Parish-Morris et al., 2013). In addition, some e-books may include multimedia effects that are incongruent with or incidental to the storyline, and the hotspots may interfere with children's understanding of the story and lead to cognitive overload (Smeets et al., 2014). Therefore, assistance from adults is necessary to help children advance in their emergent reading skills (Korat et al., 2014; Rvachew et al., 2017). This urges more research on interactions between children and the parents or teachers during e-book reading.

The third focus is on cognition and skill domains in preschoolers' e-book reading. Debates about the role of digital texts in emergent reading development are complemented by concerns that traditional definitions of emergent literacy should be expanded to include emergent digital literacy skills (Burnett, 2010; Neumann et al., 2017). Unlike traditional print books, e-books typically include two types of features, namely multimedia features and highlighted text, which are designed to enhance learning and engagement by facilitating vocabulary learning, story comprehension (Takacs et al., 2015), and the acquisition of print concepts (Rvachew et al., 2017). As advocated by Neumann et al. (2017), the framework for

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emergent digital literacy contains several elements such as, digital and non-digital texts, emergent literacy, emergent digital literacy, proficient conventional literacy, and proficient digital literacy. After understanding the concept of digital literacy, the research also points out that important proposed relationships, transference, and overlap of knowledge through the use of both reading tools potentially occur between these elements (Neumann et al., 2017). In fact, proficient digital literacy involves several skills, knowledge and attitudes that should be used effectively to access, manage, create information, and communicate with others (Ng, 2012). Thus, the proposed framework for e-book reading skills and digital literacy could help conceptualize the role of digital tools in emergent literacy development and guide empirical research to understand children's literacy learning through different reading tools.

## 5. Conclusion

This study was conducted to profile the landscape of research on preschoolers' e-book reading published between 1999 and 2022. The gradual increase in the trends of publications related to e-book reading among preschoolers indicates that a continuous increase will be witnessed in the future years. The research on e-book reading among preschool children has substantial wide geographical distribution and the publications have a significant impact on the field of preschool education. The scientific mapping of bibliographic data reveals the three research domains:

(i) the important role of the digital device in children's book reading;

(ii) strategies adopted by families and teachers to support the emergent literacy skills based on e-books;

(iii) cognitive and linguistic domains in e-book reading among preschoolers.

While the research gaps are shown in the three research foci, studies are encouraged to conduct studies on these three foci. The findings of this study might provide insights into the research landscapes and propose pathways for future studies to conduct relevant studies to enhance preschoolers' emergent reading ability through e-books.

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## 6. Limitations

Several limitations of the present study should be addressed. First, the data for this analysis were extracted only from the Scopus database and this might miss part of the total publications. Secondly, though the study intentionally excluded conference reviews and dissertations in an effort to increase the quality of the included research, some valuable articles may have been omitted. Finally, as the data were retrieved on 2 December 2022, articles published after that date were not taken into consideration. Thus, the findings of this study might be subject to some errors due to the increase of relevant documents and thereby should be interpreted with caution.

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[ DOI: 10.29252/LRR.14.3.12 ]

## References

Aguinis, H., Pierce, C. A., Bosco, F. A., Dalton, D. R., & Dalton, C. M. (2011). Debunking myths and urban legends about meta-analysis. *Organizational Research Methods*, *14*(2), 306–331. https://doi.org/10.1177/1094428110375720

Al-Obaydi, L. H., & Pikhart, M., Shakki, F. (2023). Digital gaming as a panacea for incidental L2 acquisition in an EFL context. *Applied Research on English Language*, *12*(1), 73-94. https://doi: 10.22108/are.2022.135344.2001

Altun, D. (2019). Preschoolers' emergent motivations to learn reading: A grounded theory study. *Early Childhood Education Journal*. https://doi.org/10.1007/s10643-019-00939-3

Amani-Babadi, M., Ghiasian, M. S., Zandi, B., & Ahadi, H. (2022). The study of the effect of audio-visual social stories and pragmatic exercises on improving (non)verbal communication skills in children with autism. *Language Related Research*, *12*(6), 707–740. https://doi.org/10.52547/LRR.12.6.22

Burnett, C. (2010). Technology and literacy in early childhood educational settings: A review of research. *Journal of Early Childhood Literacy*, *10*(3), 247–270. https://doi.org/10.1177/1468798410372154

Bus, A. G., Takacs, Z. K., & Kegel, C. A. T. (2015). Affordances and limitations of electronic storybooks for young children's emergent literacy. *Developmental Review*, *35*, 79–97. https://doi.org/10.1016/j.dr.2014.12.004

Cason, M., Young, J., & Kuehnert, E. (2019). A meta-analysis of the effects of numerical competency development on achievement: Recommendations for mathematics educators. *Investigations in Mathematics Learning*, *11*(2), 134–147. https://doi.org/10.1080/19477503.2018.1425591

Chen, X., Chen, J., Wu, D., Xie, Y., & Li, J. (2016). Mapping the research trends by co-word analysis based on keywords from funded project. In D. I. Cordova F. Shi Y. ,. Lee H. ,. Lee J. (Ed.), *Procedia Computer Science* (91), 547–555. https://doi.org/10.1016/j.procs.2016.07.140

Chera, P., & Wood, C. (2003). Animated multimedia "talking books" can promote phonological awareness in children beginning to read. *Learning and Instruction*, *13*(1), 33–52. doi:10.1016/s0959-4752(01)00035-4

Chew, F. P., & Eau, K. L. (2017). Creativity teaching through E-Book reading

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[ DOR: 20.1001.1.23223081.1401.0.0.312.4 ]

[ DOI: 10.29252/LRR.14.3.12 ]

program among the children in Malaysia. *Advanced Science Letters*, *23*(3), 2043–2047. https://doi.org/10.1166/asl.2017.8588

De Jong, M. T., & Bus, A. G. (2002). Quality of book-reading matters for emergent readers: An experiment with the same book in a regular or electronic format. *Journal of Educational Psychology*, *94*(1), 145–155. https://doi.org/10.1037/0022-0663.94.1.145

De Jong, M. T., & Bus, A. G. (2004). The efficacy of electronic books in fostering kindergarten children's emergent story understanding. *Reading Research Quarterly*, *39*(4), 378–393. https://doi.org/10.1598/RRQ.39.4.2

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, *133*, 285–296. https://doi.org/10.1016/j.jbusres.2021.04.070

Dore, R. A., Hassinger-Das, B., Brezack, N., Valladares, T. L., Paller, A., Vu, L., Golinkoff, R. M., & Hirsh-Pasek, K. (2018). The parent advantage in fostering children's e-book comprehension. *Early Childhood Research Quarterly*, *44*, 24–33. https://doi.org/10.1016/j.ecresq.2018.02.002

Egghe, L. (2006). Theory and practise of the g-index. *Scientometrics*, *69*(1), 131–152. https://doi.org/10.1007/s11192-006-0144-7

Eutsler, L., Mitchell, C., Stamm, B., & Kogut, A. (2020). The influence of mobile technologies on preschool and elementary children's literacy achievement: A systematic review spanning 2007–2019. *Educational Technology Research and Development*, *68*(4), 1739–1768. https://doi.org/10.1007/s11423-020-09786-1

Flack, Z. M., Field, A. P., & Horst, J. S. (2018). The effects of shared storybook reading on word learning: A meta-analysis. *Developmental Psychology*, *54*(7), 1334–1346. https://doi.org/10.1037/dev0000512

Fu, J., & Wang, Y. (2022). Inspecting EFL teachers' academic literacy development in multilingual contexts: A global vision. *Heliyon*, *8*(12),1 – 6. http://doi.org/10.1016/j.heliyon.2022.e12143.

Gao, Y., Zeng, G. Wang, Y., Klan, A. & Wang, X. (2022). Exploring educational planning, teacher beliefs, and teacher practices during the pandemic: A study of science and technology-based universities in China. *Frontiers in Psychology*, (13),1–11. https://doi.org/10.3389/fpsyg.2022.903244.

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[ DOR: 20.1001.1.23223081.1401.0.0.312.4 ]

[ DOI: 10.29252/LRR.14.3.12 ]

Grimshaw, S., Dungworth, N., McKnight, C., & Morris, A. (2007). Electronic books: Children's reading and comprehension. *British Journal of Educational Technology*, *38*(4), 583–599. https://doi.org/10.1111/j.1467-8535. 2006.00640.x

Hermansson, C., & Olin-Scheller, C. (2022). Across textual landscapes: The role of affect during digital reading encounters. *Children's Literature in Education*, *53*(3), 327–342. https://doi.org/10.1007/s10583-022-09502-y

Hoel, T., & Tønnessen, E. S. (2019). Organizing shared digital reading in groups: Optimizing the affordances of text and medium. *AERA Open*, *5*(4). https://doi.org/10.1177/2332858419883822

Hulme, C., Zhou, L., Tong, X., Lervåg, A., & Burgoyne, K. (2019). Learning to read in Chinese: Evidence for reciprocal relationships between word reading and oral language skills. *Developmental Science*, *22*(1). https://doi.org/10.1111/ desc.12745

Ihmeideh, F. M. (2014). The effect of electronic books on enhancing emergent literacy skills of pre-school children. *Computers and Education*, *79*, 40–48. https://doi.org/10.1016/j.compedu.2014.07.008

Korat, O., & Segal-Drori, O. (2016). E-book and printed book reading in different contexts as emergent literacy facilitator. *Early Education and Development*, *27*(4), 532–550. https://doi.org/10.1080/10409289.2016.1095613

Korat, O., & Shamir, A. (2007). Electronic books versus adult readers: Effects on children's emergent literacy as a function of social class. *Journal of Computer Assisted Learning*, *23*(3), 248–259. https://doi.org/10.1111/j.1365-2729. 2006.00213.x

Korat, O., Shamir, A., & Segal-Drori, O. (2014). E-books as a support for young children's language and literacy: The case of Hebrew-speaking children. *Early Child Development and Care*, *184*(7), 998–1016. https://doi.org/10.1080/ 03004430.2013.833195

Lauricella, A. R., Barr, R., & Calvert, S. L. (2014). Parent-child interactions during traditional and computer storybook reading for children's comprehension: Implications for electronic storybook design. *International Journal of Child-Computer Interaction*, *2*(1), 17–25. https://doi.org/10.1016/j.ijcci. 2014.07.001

Liman Kaban, A., & Karadeniz, S. (2021). Children's reading comprehension and

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[ DOR: 20.1001.1.23223081.1401.0.0.312.4 ]

[ DOI: 10.29252/LRR.14.3.12 ]

motivation on screen versus on paper. *SAGE Open*, *11*(1). https://doi.org/10.1177/2158244020988849

Lonigan, C. J. (1994). Reading to preschoolers exposed: Is the emperor really naked? *Developmental Review*, *14*(3), 303–323.

López-Escribano, C., Valverde-Montesino, S., & García-Ortega, V. (2021). The impact of e-book reading on young children's emergent literacy skills: An analytical review. *International Journal of Environmental Research and Public Health*, *18*(12). https://doi.org/10.3390/ijerph18126510

Luna, B., Marek, S., Larsen, B., Tervo-Clemmens, B., & Chahal, R. (2015). An integrative model of the maturation of cognitive control. *Annual Review of Neuroscience*, *38*(1), 151–170. https://doi.org/10.1146/annurev-neuro-071714-034054

Maynard, S. (2010). The impact of e-books on young children's reading habits. *Publishing Research Quarterly*, *26*(4), 236–248. https://doi.org/10.1007/s12109-010-9180-5

Miller, E. B., & Warschauer, M. (2014). Young children and e-reading: Research to date and questions for the future. *Learning, Media and Technology*, *39*(3), 283–305. https://doi.org/10.1080/17439884.2013.867868

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & PRISMA Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Journal of Clinical Epidemiology*, *62*(10), 1006–1012. https://doi.org/10.1016/j.jclinepi.2009.06.005

Neumann, M. M. (2016). Young children's use of touch screen tablets for writing and reading at home: Relationships with emergent literacy. *Computers and Education*, *97*, 61–68. https://doi.org/10.1016/j.compedu.2016.02.013

Neumann, M. M., Finger, G., & Neumann, D. L. (2017). A conceptual framework for emergent digital literacy. *Early Childhood Education Journal*, *45*(4), 471–479. https://doi.org/10.1007/s10643-016-0792-z

Ng, W. (2012). Can we teach digital natives digital literacy? *Computers & Education*, *59*(3), 1065–1078. https://doi:10.1016/j.compedu.2012.04.016

Parish-Morris, J., Mahajan, N., Hirsh-Pasek, K., Golinkoff, R. M., & Collins, M. F. (2013). Once upon a time: Parent-child dialogue and storybook reading in the

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[ DOR: 20.1001.1.23223081.1401.0.0.312.4 ]

[ DOI: 10.29252/LRR.14.3.12 ]

electronic era. *Mind, Brain, and Education*, *7*(3), 200–211. https://doi.org/10.1111/mbe.12028

Paulus, F. W., Ohmann, S., von Gontard, A., & Popow, C. (2018). Internet gaming disorder in children and adolescents: A systematic review. *Developmental Medicine and Child Neurology*, *60*(7), 645–659. https://doi.org/10.1111/dmcn.13754

Richter, A., & Courage, M. L. (2017). Comparing electronic and paper storybooks for preschoolers: Attention, engagement, and recall. *Journal of Applied Developmental Psychology*, *48*, 92–102. https://doi.org/10.1016/j.appdev.2017.01.002

Rvachew, S., Rees, K., Carolan, E., & Nadig, A. (2017). Improving emergent literacy with school-based shared reading: Paper versus ebooks. *International Journal of Child-Computer Interaction*, *12*, 24–29. https://doi.org/10.1016/j.ijcci.2017.01.002

Savva, M., Higgins, S., & Beckmann, N. (2022). Meta-analysis examining the effects of electronic storybooks on language and literacy outcomes for children in grades Pre-K to grade 2. *Journal of Computer Assisted Learning*, *38*(2), 526–564. https://doi.org/10.1111/jcal.12623

Shamir, A. (2017). Expanding the boundaries of kindergartners' e-book reading: Metacognitive guidance for e-book support among young children at risk for learning disabilities. *Teachers College Record*, *119*(13). https://www.scopus.com/inward/record.uri?eid=2-s2.0-85044397058&partnerID=40&md5=17a510d3db86d1c650342cab953f4d6b

Şimşek, Z. C., & Işıkoğlu Erdoğan, N. (2021). Comparing the effects of different book reading techniques on young children's language development. *Reading and Writing*, *34*(4), 817–839. https://doi.org/10.1007/s11145-020-10091-9

Smeets, D. J. H., van Dijken, M. J., & Bus, A. G. (2014). Using electronic storybooks to support word learning in children with severe language impairments. *Journal of Learning Disabilities*, *47*(5), 435–449. https://doi.org/10.1177/0022219412467069

Suseelan, M., Chew, C. M., & Chin, H. (2022). Research on mathematics problem solving in elementary education conducted from 1969 to 2021: A bibliometric review. *International Journal of Education in Mathematics, Science and*

[ Downloaded from lrr.modares.ac.ir on 2024-11-28 ]

[ DOR: 20.1001.1.23223081.1401.0.0.312.4 ]

[ DOI: 10.29252/LRR.14.3.12 ]

*Technology*, *10*(4), 1003–1029. https://doi.org/10.46328/ijemst.2198

Takacs, Z. K., Swart, E. K., & Bus, A. G. (2015). Benefits and pitfalls of multimedia and interactive features in technology-enhanced storybooks: A meta-analysis. *Review of Educational Research*, *85*(4), 698–739. https://doi.org/10.3102/0034654314566989

Verhoeven, L., Voeten, M., van Setten, E., & Segers, E. (2020). Computer-supported early literacy intervention effects in preschool and kindergarten: A meta-analysis. *Educational Research Review*, *30*, 1–22. https://doi.org/10.1016/j.edurev.2020.100325

Wang, Y., Derakhshan, A., & Zhang, L. J. (2021). Researching and practicing positive psychology in second/foreign language learning and teaching: The past, current status and future directions. *Frontiers in Psychology*, *12*, 1-10. https://doi.org/10.3389/fpsyg.2021.731721.

Wang, Y., Derakhshan, A., Pan, Z., & Ghiasvand, F. (2023). Chinese EFL teachers' writing assessment feedback literacy: A scale development and validation study. *Assessing Writing*. 56: 1-16. https://doi.org/10.1016/j.asw.2023.100726.

Wang, Y., Pan, Z. W., & Wang, M. Z. (2023). The moderating effect of participation in online learning on EFL teachers' teaching ability. *Heliyon*, *9*(3), 1-12. https://doi.org/10.1016/j.heliyon.2023.e13890.

Wang, Y., & Guan, H. (2020). Exploring demotivation factors of Chinese learners of English as a foreign language based on positive psychology. *Revista Argentina de Clinica Psicologica*, *29*(1), 851–861. https://doi.org/10.24205/03276716.2020.116.

Wang, Y., & Hemchua, S. (2022). Can we learn about culture by EFL textbook images?: A semiotic approach perspective. *Language Related Research*, *13*(3), 479–499. https://doi.org/10.29252/LRR.13.3.18.

Wang, Y. (2023). Probing into the boredom of online instruction among Chinese English language teachers during the Covid-19 pandemic. *Current Psychology*, *43*(1):1–15. https://doi.org/10.1007/s12144-022-04223-3.

Whitehurst, G. J., & Lonigan, C. J. (1998). Child development and emergent literacy. *Child Development*, *69*(3), 848–872. https://doi.org/10.1111/j.1467-8624.1998.tb06247.x

[ Downloaded from lrr.modares.ac.ir on 2024-11-28 ]

[ DOR: 20.1001.1.23223081.1401.0.0.312.4 ]

[ DOI: 10.29252/LRR.14.3.12 ]

Willoughby, D., Evans, M. A., & Nowak, S. (2015). Do ABC eBooks boost engagement and learning in preschoolers? An experimental study comparing eBooks with paper ABC and storybook controls. *Computers & Education*, *82*, 107–117. https://doi.org/10.1016/j.compedu.2014.11.008

Xiao, Y., & Watson, M. (2019). Guidance on conducting a systematic literature review. *Journal of Planning Education and Research*, *39*(1), 93–112. https://doi.org/10.1177/0739456X17723971

Yin, C., & Hwang, G.-J. (2018). Roles and strategies of learning analytics in the e-publication era. *Knowledge Management and E-Learning*, *10*(4), 455–468.

Zakian, M. (2022). Using mobile applications for teaching English vocabulary to young language learners (YLLs): Investigating the short-and long-term impacts. *Language Related Research*, *13*(5), 541–564. https://doi.org/10.52547/LRR.13.5.19

Zare, J., & Karimpour, S. (2023). Self-concept of ability and parental/teachers' beliefs in reading and dictation. *Language Related Research*, *14*(1), 399–427

Zupic, I., & Čater, T. (2015). Bibliometric methods in management and organization. *Organizational Research Methods*, *18*(3), 429–472. https://doi.org/10.1177/1094428114562629

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[ DOI: 10.29252/LRR.14.3.12 ]