

Stories in Preschool Education: A Bibliometric Analysis

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The article "Stories in Preschool Education: A Bibliometric Analysis" explores how children's stories benefit the cognitive, linguistic and socio-emotional development of preschool children, with the Objective: Analyzing the conceptual contribution according to the categories under study of the scientific articles; Identify the evolution of reference spectroscopy, annual production, citations per year, the most relevant and cited sources; Identify the evolution of reference spectroscopy, annual production, citations per year, the most relevant and cited sources; Identify the annual scientific production and academic impact through the average number of citations per year, the most relevant and cited sources, the application of Bradford's Law; describe the influence and international distribution of the authors, highlighting major contributions by country and affiliations; analyze the influence and international distribution of authors, highlighting the main contributions by country and affiliations, word dynamics, visualization of word clouds, in addition to building a co-occurrence network to decode the intellectual structure and thematic relationships underlying the research. Methodology: Involves a systematic review of studies published between 2013 and 2023, selecting those that are empirically relevant and applying bibliometric analysis tools such as Biblioshiny. Conclusion: The importance of adjusting children's stories to the abilities and cultural environment of preschool children is highlighted, since they are fundamental for their comprehensive development. The effective use of children's stories as educational tools depends on their adaptation to the specific needs of each child.

Keywords: Preschool education, cognitive development, children's literature, bibliometric analysis.

1. Introduction

This systematic review will conduct a comprehensive search across a range of scientific databases with aim of identifying relevant studies on the application of children's stories in preschool educational contexts. This is an area of growing interest in educational research. The act of storytelling enables young children to explore new worlds, develop their linguistic abilities, and acquire socioemotional competencies that are essential for their comprehensive

growth and development. However, as the literature in this field continues to grow, there is a need to synthesize and critically evaluate the existing body of knowledge (Araújo et al., 2022; Ripalda et al., 2020). The practice of storytelling has long been acknowledged as a crucial aspect of child development. It serves as a conduit for children to forge emotional connections, engage more profoundly, and derive augmented literacy abilities when compared to alternative learning modalities (Alonso et al., 2020; Alsina et al., 2021). Mercado and Borda (2021) have underscored the significance of stories for children's psychological and moral development, while contemporary researchers have investigated their relevance in contemporary educational context. This review builds on the substantial theoretical foundation established by previous studies and offers an updated analysis that takes into account the rapid evolution of early childhood education and literature. In so doing, we seek to make a substantial contribution to body of knowledge on the didactics of stories, providing a valuable tool for educators, researchers, and practitioners in the field of early childhood education. As Iruri and Villafuerte (2022) and Mateos (2020) have demonstrated, stories are a versatile didactic resource with applications in multiple areas of learning. The moral principles that can be instilled through stories are of great value. Additionally, stories serve as an effective tool for teaching narrative techniques, such as first-person descriptions and delineation of the physical and psychological qualities of characters (Guanoluisa et al., 2021; Lázaro et al., 2020). Stories have the ability to convey messages in a subtle manner. Furthermore, stories can convey teachings in a subtle manner, reaching listeners or readers almost imperceptibly. This makes them an effective tool for introducing concepts or ideas without appearing to be directly imposing a lesson. (Bautista, 2022; Farkas, 2021) also notes that stories for children offer multiple advantages, as they not only provide entertainment but also act as a means of learning. In accordance with the theory put forth by Jean Piaget, it is crucial that children's stories align with their stage of cognitive development. This implies intricacy of the narratives and the themes they encompass should correspond to the child's capacity to comprehend and integrate new information, as well as their ability to grasp abstract concepts (Farkas, 2021).

It must be acknowledged there is a paucity of comprehensive research examining the long-term efficacy of using stories in the development of oral expression in preschoolers. It is common for studies to concentrate on the short-term advantages of this approach, but further research is required to ascertain how these advantages are maintained over time and how they affect the capacity to express oneself verbally. It is crucial to ascertain whether the beneficial effects on oral expression are maintained as children advance through their formal education, with the use of stories as a means to reinforce this skill. Furthermore, it is crucial to comprehend how stories can be effectively tailored to align with the unique needs of children and how factors such as cultural, social, and cognitive diversity may impact their efficacy as a tool for fostering oral expression. The following categories are included in this study: The following categories of study are relevant to this field of enquiry: Language Development and Storytelling; Using Stories in Education and Therapy; Cultural Inclusion and Diversity Studies in Storytelling; Study Skills in Childhood and Family Environment; Technology and Storytelling.

The central questions posed in this study concern the relationship between academic production on stories and the development of oral expression. The aim of this study is twofold: firstly, to examine the conceptual evolution of scientific articles in relation to the categories of

study between years 2013 to 2023; and secondly, to investigate the panoramic evolution of the production of scientific articles between years 2013 to 2023. The following objectives are proposed: The objective is to analyze the conceptual contribution according to the categories under study of scientific articles. In addition, the evolution of spectroscopy of references, annual production, citations per year, the most relevant and cited sources, and the evolution of spectroscopy of references, annual production, citations per year, the most relevant and cited sources, will be identified. Furthermore, the annual scientific production and the academic impact will be determined through the average number of citations per year, the most relevant and cited sources, and the application of Bradford's Law. The objective is to describe the influence and international distribution of authors, highlighting the main contributions by countries and affiliations. This will be achieved by analysing the influence and international distribution of authors, highlighting the main contributions by countries and affiliations, word dynamics, visualization of word clouds, and constructing a co-occurrence network to decode the intellectual structure and underlying thematic relationships in the research.

2. Methodology

The study presented is characterized as a systematic review of bibliometric analysis, facilitating the synthesis and evaluation of both numerical and descriptive information obtained from academic sources. Emphasis was placed on the application of methodologies for literature tracking, examination and quantification. Likewise, it is recognized as a bibliometric study for having incorporated documentary techniques in its development (Diaz-Arevalo et al., 2021). For the collection of articles relevant to the topic of study, searches were conducted in the Scopus 30 Web of Science 27 databases using specific keywords such as “children's stories ‘, ’ and Boolean operators such as AND and OR were applied to refine the results. The search was circumscribed to English language papers between 2018 and 2023.

Eligibility criteria.

The articles selected for review focused on topics of “Application of children's stories ‘, ’Children's literature” that were published after 2018. Materials such as conference proceedings, books, reviews, and other publication formats that did not fit the established criteria were excluded.

Inclusion and exclusion criteria.

An exhaustive literature search was carried out in the areas of social sciences and education, selecting terms from the Unesco Thesaurus to refine the search in English languages.

Inclusion criteria

- Be published empirical research.
- Be available without access restrictions.
- Have been published in the time period from January 2018 to October 2023.

Exclusion Criteria

- Be written in English

- On the other hand, clear limits were established to discard certain papers:
- Theoretical review and systematic analysis articles were omitted.
- Studies focused on the application of children's stories of children with disabilities were discarded.
- Articles in languages other than English and Spanish were excluded.
- Articles published outside the 2018–2023-time range were not considered.
- Duplicate records in the different databases consulted were eliminated.

Bibliometric analysis with Bibliometrix:

The Bibliometrix tool in the R statistical programming environment was used to perform the bibliometric analysis. The functionalities provided by the Bibliometrix package were used to calculate basic bibliometric indicators such as distribution of publications over time, citation analysis, co-authorship networks and frequency of key terms (Vicente-Nicolás. & Sánchez-Marroquí, 2024).

Detailed analysis:

More detailed analyses were carried out, including co-citation analysis to identify the relationship between the most frequently cited papers, as well as keyword analysis to determine the predominant trends and thematic areas in the literature reviewed.

3. Results

Identification and Selection

After consulting the database and using the PRISMA methodology for selection, 57 documents were initially identified. After an initial suitability assessment, 7 texts did not meet the preliminary criteria were discarded, leaving a preliminary total of 50 studies. Subsequently, a detailed review was carried out, during which additional criteria were applied, such as type of study and the relevance of the sample with respect to the educational stage of the participants. This process resulted in final selection of 17 articles that met all required standards.

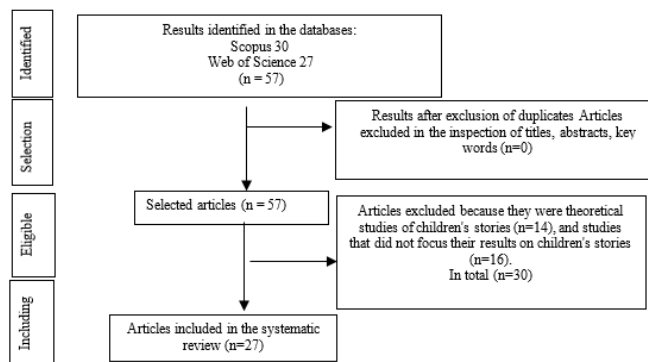


Figure 1. Flow diagram according to PRISMA.

Table 1. Study analysis

Category: Language and Narrative Development	
AUTHOR/YEAR	CONCLUSIONS
(Barboza et al., 2022)	The study suggests that the use of video clips in small groups can be an effective tool for improving students' speaking skills and balancing fluency and accuracy in English teacher training in Chile.
(Brown et al., 2018)	The study reveals that, although all children show narrative coherence when recounting maltreatment, younger children include less detail, affecting accuracy and resistance to suggestion in their testimonies. It highlights the need for special support for children to relate traumatic experiences with clarity, especially in judicial contexts.
(Mäkinen et al., 2018)	Finnish children demonstrate the importance of fostering diverse narrative skills for language development and reading improvement. Retelling relates to reading comprehension, while story creation also influences word recognition. These skills, when developed together, not only improve different aspects of reading, but also enrich children's creative expression and critical thinking. Therefore, it is essential to incorporate a variety of narrative practices in education to comprehensively strengthen both language and narrative skills.
(Joffe et al., 2019)	This study highlights those activities such as story reading, block building, and dramatic play are key to language and narrative development in preschool children. Although they did not improve significantly in vocabulary, they did advance in narrative skills, demonstrating that language development goes beyond learning words, focusing also on using words to construct and tell stories effectively.
(Carlsson et al., 2020)	It highlights the importance of a holistic approach to the development of language and narrative skills in children. Although nonverbal temporal sequencing is an important predictor, there are multiple factors that influence narrative. Therefore, it is crucial that practitioners adopt holistic and personalized strategies that consider all skills that affect narrative performance. This approach allows for a more effective intervention, promoting full narrative and linguistic development in children.
(Hessling & Schuele, 2020)	The 'Story Champs' intervention shows promise for improving narrative language in children, highlighting its relevance to narrative and linguistic development. This tool not only enhances communication, but also contributes to cognitive and social development, emphasizing the importance of innovative approaches in language education and therapy.
(Noble et al., 2020)	Interactive shared reading, although common among caregivers from diverse socioeconomic backgrounds, has not been shown to be as effective in improving children's language skills as expected. This finding underscores the need for further research on the methodologies and contexts of this practice to optimize its impact on children's language and narrative development, especially considering the variety of socioeconomic backgrounds.
(O'fallon et al., 2020)	The research highlights the efficacy in word learning during shared reading when using novel words from categories less familiar to children, such as gardening. This approach suggests that denser and more varied semantic networks are beneficial for language development, highlighting the importance of exposing children to a diverse and enriching vocabulary.
(Zuanetti et al., 2021)	The study shows that an intervention program based on shared reading is effective for children with reading comprehension difficulties. It highlights how the use of information technology can improve the communication of biblical and spiritual content to preschoolers, taking advantage of their interest in stories, cartoons and games. It proposes an approach that integrates interactive narration, animation and educational games to teach these contents to preschoolers.
(Nicolopoulou et al., 2022)	The method studied is effective in enhancing narrative development and other language skills in children. Although the context of the study is not completely representative, its contribution to language and narrative development is crucial, as these skills are fundamental for communication, critical thinking and socioemotional development. Therefore, it is important to implement pedagogical and therapeutic strategies that foster these skills for children's well-being and educational success.
(Saxby, 2022)	The use of stories in teaching enriches students' skills and understanding, preparing them for an evolving society and highlighting the importance of integrating these skills in education.
(Castillo et al., 2023)	The research highlights the importance of imitating multimodal cues in social contexts for the development of linguistic and sociocommunicative skills, which is more significant than imitating actions with objects. This finding emphasizes the relevance of social interactions

	in language and narrative development, suggesting that activities that promote imitation of social gestures and behaviors can effectively enhance these skills, contributing to children's socioemotional and cognitive growth.
(Myrberg & Lundeberg Hammarström, 2023)	The study suggests that an intervention with caregivers leading reading under speech therapy supervision improves reading and reduces screen time in children, positively impacting language and narrative development. This methodology strengthens reading comprehension and caregiver-child interaction, fostering deep linguistic and narrative learning, while offering an educational alternative to the use of screens, contributing to children's cognitive and emotional development.
(Petrie et al., 2023)	The study highlights that lexical diversity and grammatical complexity in parental language varies by book type, with textbooks providing richer vocabulary and wordless books stimulating more interaction. This variation is key to the development of children's language and narrative skills, suggesting the importance of using a variety of books for comprehensive language and narrative development.
Category: Using Stories in Education and Therapy	
(Wood et al., 2018)	The Use of Stories in Education and Therapy has been greatly enhanced by the incorporation of technological strategies, particularly through the use of e-books. This study has shown that intensive vocabulary instruction through these digital media, especially when reinforced with references to the students' native language, significantly improves their vocabulary proficiency. This improvement is even more evident in children who already possess prior knowledge of the target language.
(Adler et al., 2019)	The study highlights the effectiveness of focus groups with parents and children in education and therapy using stories, contrasting them with more rigid methods such as questionnaires. It emphasizes the need to develop updated guidelines for these groups, proposing recommendations for their planning and analysis, and highlighting the importance of adapting them to the specific context of the participants.
(Brondani & Rubim, 2019)	The use of stories in nursing is a valuable tool in education and therapy, as it helps to reduce children's anxiety, increases their participation in self-care, and strengthens relationships between children, families and medical staff. In addition, it personalizes and humanizes care and facilitates health education in an understandable and engaging way. This methodology demonstrates the effectiveness of storytelling in combining educational, therapeutic and emotional aspects in pediatric care.
(Sawyer & Goldstein, 2019)	Storytelling in preschool education stimulates the integral development of children, fostering imagination, empathy, critical thinking and creativity, being adaptable and customizable to maximize its educational and therapeutic impact.
(Pulimeno et al., 2020)	Children's literature and storytelling benefit the holistic development and well-being of students, enriching learning and fostering imagination, understanding, values and language skills, and are also useful in therapy to address emotions.
(Haden et al., 2023)	The article emphasizes the effectiveness of stories for science learning in children, highlighting the importance of integrating narrative practices of Latino families, which enriches and contextualizes science education.
(Martinez-Caballero et al., 2023)	The reading of stories with emotional and educational support facilitates the grieving process in children, creating a supportive environment for expressing emotions and developing healthy coping strategies.
Category: Cultural Inclusion and Diversity in the Narrative	
(Brown et al., 2020)	Participatory visual methods are effective for immigrant children to express emotions and experiences. These approaches foster cultural inclusion, enhance empathy and challenge stereotypes, empowering children in the construction of their own stories.
(Mohd et al., 2023)	The inclusion of Malay literary heritage in children's stories promotes cultural diversity and the visibility of non-Western narratives in children's education and media.
Category: "Study Techniques in Childhood and Family Environment".	
(Van der Merwe, 2020)	The article highlights the effective use of technologies to teach biblical content to preschoolers through interactive storytelling, animations and educational games, emphasizing adaptation to diverse cultures and learning needs.
(Guiberson & Ferris, 2023)	Including research methods with Native American children and families is essential to understand the impact of shared reading techniques on language and literacy development, adapting them to their specific cultural contexts and needs.
Category: Technology and Narrative	
(Greenhoot et al., 2014)	The article highlights that illustrations in stories improve preschoolers' memory during interactive reading, increasing interaction and attention. It also highlights the relevance of

	integrating technology and storytelling in this process to enrich the reading experience and foster language development and early literacy.
(Fosch-Villaronga et al., 2023)	The integration of technology and storytelling in education and therapy not only enhances children's learning and creativity, but also ensures the protection of their privacy and safety, creating richer and more interactive educational and entertainment experiences that foster their cognitive and creative development, while maintaining an ethical and protective approach.

Analysis:

Language and narrative development studies highlight the importance of adaptive and personalized methodologies in development of language and narrative skills in children, focusing on strategies such as shared reading, use of technology, and consideration of cultural and social contexts. They highlight the need for holistic and context-sensitive approaches to more effective language education and therapy.

The use of stories in education and therapy highlights the effectiveness of integrating context-specific narratives, including technology and cultural aspects, to foster more interactive and personalized emotional, cognitive, and linguistic development in children.

Studies on Cultural Inclusion and Diversity in Narrative highlight effectiveness of incorporating diverse cultural perspectives in children's stories as a tool for immigrant children and children from different cultural backgrounds to express their emotions, foster empathy and challenge stereotypes, thus enriching their educational experience and their respect for diversity.

Studies emphasize the adaptation of teaching methods to specific cultural and family contexts, highlighting the usefulness of information technologies in teaching biblical content to preschoolers and the importance of culturally sensitive approaches to language development and early literacy.

Integrating technology into children's storytelling enhances educational experience, fostering language development and protecting children's privacy and safety.

Bibliometric analysis:

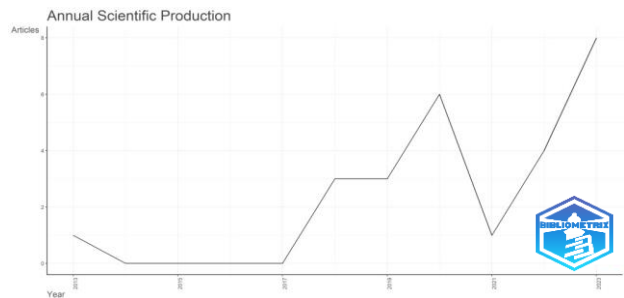


Figure 2: Annual scientific output.

Source: Own elaboration based on bibliometrix data.

The graph entitled "Annual Scientific Production" illustrates the number of scientific articles produced on an annual basis from 2013 to 2023. A general upward trend is evident, though notable fluctuations are also observed. There is a notable decline in production in 2014,

followed by an increase to a peak in 2017. This is then followed by a further decline in 2018, before reaching a new peak in 2019. There is a subsequent sharp decline in 2020, followed by a recovery in 2023.

This pattern suggests a high degree of volatility in scientific output, which could be attributed to a number of external factors affecting research, including changes in funding, government policies, global events such as pandemics, or shifts in research priorities.

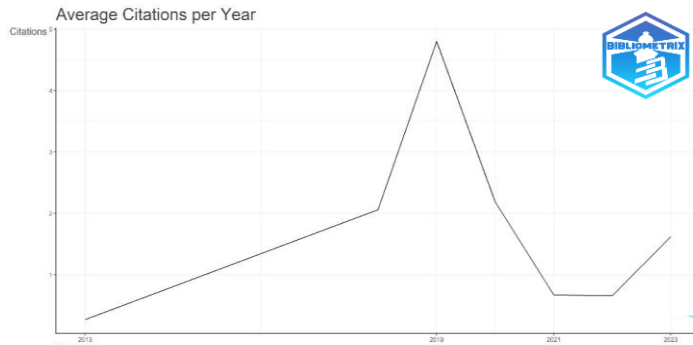


Figure 3: Average citations per year

Source: Own elaboration based on bibliometrix data.

The provided graph depicts a timeline representing the mean number of citations per year. A review of the graph reveals several noteworthy observations.

The data indicates a general upward trend. The data indicates a general upward trend in average citations from 2013 to 2019. This could indicate a growing interest or relevance in the topic of study during this period. Peak in 2019: There is a significant peak in 2019 where average number of citations per paper reaches its highest point. This could be attributed to a significant event in field of study, the publication of an influential article, or a change in citation methodology that increased the visibility of certain papers. The decline observed in 2020 and 2021: Following peak observed in 2019, there is a notable decline in the average number of citations in both 2020 and 2021. This may be attributed to various factors, including shifts in research trends, the impact of external events such as Coronavirus disease 2019 (Covid-19) pandemic, or the possibility that recent publications have not yet been cited as frequently. Recovery in 2023: While there is a discernible recovery in average citations in 2023, the levels remain below those observed prior to the peak in 2019. This may indicate a gradual recovery of interest in field of study or a normalization of impact of temporary events that affected citations in previous years.

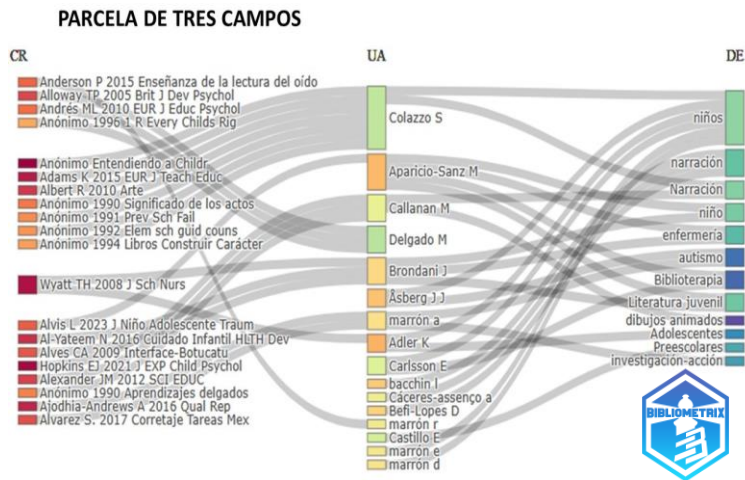


Figure 4: Three-field plot

Source: Own elaboration based on bibliometrix data.

The Three-Field Plot is a type of visualization employed in bibliometric analysis to illustrate interconnections between authors, documents, and keywords or descriptors. Cited References (CR): The references cited in analyzed studies are displayed on the left side. Such works may be considered fundamental or influential within the field of study. UA (Authors): In the center, the authors of current studies are represented, indicating their participation and contribution to research field.

DE (Descriptors): The keywords or descriptors utilized in the present studies are displayed on the right side, offering insight into the prevailing themes and topics, as well as the networks of connections and collaborations. The lines connecting the three fields indicate the citations made by authors and descriptors associated with them. For instance, an author who has numerous connections to disparate references and descriptors may be regarded as a pivotal figure in the field.

The most prevalent themes are as follows: The most connected descriptors indicate the most prevalent or trending topics in the field. It can be seen that the terms "children," "narrative," "child," "autism," and "bibliotherapy" are particularly prevalent, indicating a focus on narrative and its application in educational and therapeutic contexts for children.

Seminal Literature: The most highly cited studies, especially those with numerous connections to different authors, may be regarded as seminal or highly influential works within the research domain.

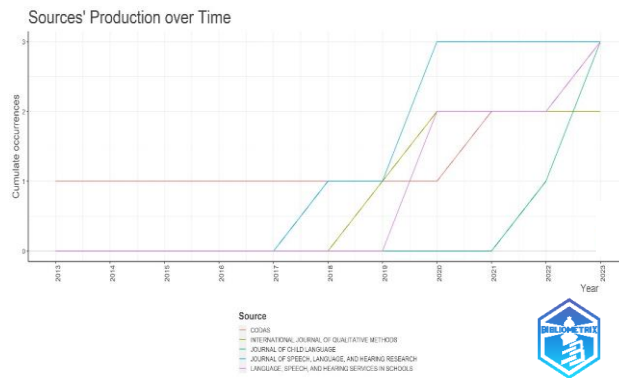


Figure 5: Production of sources over time.

Source: Own elaboration based on bibliometrix data.

The Sources' Production over Time graph illustrates the cumulative production of disparate scientific sources or journals over time, spanning period from 2015 to 2022. Each line represents a distinct source, and vertical axis depicts the cumulative number of publications.

The data indicate that all sources demonstrate an increase in number of publications over time. As a cumulative line, it is not anticipated there will be a decline in this trend.

A comparison of the sources is presented below: It is observed source represented by purple line (which could be "JOURNAL OF SPEECH, LANGUAGE, AND HEARING RESEARCH") exhibits the most pronounced and sustained growth over time, indicating a higher relative output compared to the other sources.

The following section will examine the publication patterns observed in the data set. Each source exhibits a distinct publication pattern. To illustrate, the dark blue line demonstrates a consistent, linear growth trajectory, whereas other sources, such as the red line, exhibit a more irregular growth pattern.

Notable alterations or occurrences: Notable increases are evident in certain years for specific sources, which may signify occurrences such as special issues, alterations in editorial policies, or an enhanced relevance of the subject matter.

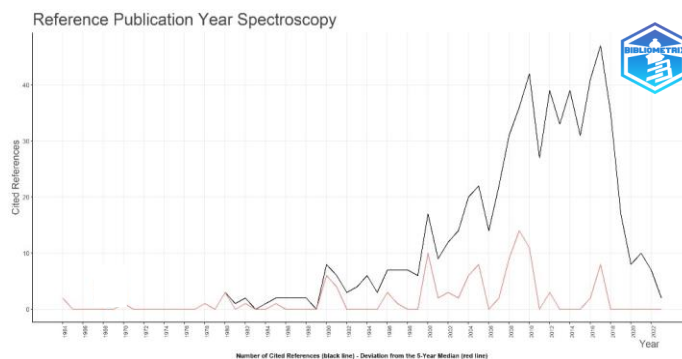


Figure 6: Reference year of publication spectroscopy.

Source: Own elaboration based on bibliometrix data.

The graph entitled "Reference Publication Year Spectroscopy" depicts two data series over time.

The number of references cited is represented by the black line. The line depicts the number of references cited on an annual basis. A notable increase in the number of cited references is observed beginning around the year 2000, reaching a peak around 2010 and 2011, and subsequently exhibiting a precipitous decline after 2012.

The red line represents the deviation from the five-year median. The red line represents the deviation of the number of cited references from median over a five-year period. A positive deviation from zero signifies number of citations in a specific year exceeds the median value observed over a five-year period. Conversely, a negative deviation indicates number of citations is below the five-year median.

The following section presents the citation trend. The overall trend in the number of cited references demonstrates growth during the initial decade of the 2000s. This could indicate an increase in research output or a heightened interest in specific topics during that period.

The peak in citations occurred at following time point: The peak observed around 2010-2011 may be attributed to publication of one or more highly influential articles, the development of new technologies or research methods, or global events that generated a considerable amount of scholarly interest.

Subsequent to the peak, a decline was observed. The subsequent decline may be attributed to a waning relevance of specific topics, impact of literature consolidation (where older studies are no longer frequently cited), or alterations in publication policies.

The data demonstrate considerable variability over time. The fluctuations in the deviation from median indicate there have been variations in the number of citations per year in comparison to the 5-year median, which suggests alterations in citation patterns over time.

REVISTAS	Rango	Frecuencia	cumFreq
JOURNAL OF CHILD LANGUAGE	3	3	3
JOURNAL OF SPEECH, LANGUAGE, AND HEARING RESEARCH	2	3	6
LANGUAGE, SPEECH, AND HEARING SERVICES IN SCHOOLS	3	3	9
CODAS	4	2	11
INTERNATIONAL JOURNAL OF QUALITATIVE METHODS	5	2	13
ACTA PSYCHOLOGICA	6	1	14
AI AND SOCIETY	7	1	15
APPLIED COGNITIVE PSYCHOLOGY	8	1	16
AUSTRALIAN JOURNAL OF LANGUAGE AND LITERACY	9	1	17
CHILD LANGUAGE TEACHING AND THERAPY	10	1	18
EMPIRICAL STUDIES OF THE ARTS	11	1	19
FRONTIERS IN PSYCHOLOGY	12	1	20
HEALTH PROMOTION PERSPECTIVES	13	1	21
HTS THEOLOGISSE STUDIES / THEOLOGICAL STUDIES	14	1	22
INTERNATIONAL JOURNAL OF LANGUAGE AND COMMUNICATION DISORDERS	15	1	23
INTERNATIONAL JOURNAL OF SPEECH-LANGUAGE PATHOLOGY	16	1	24
JOURNAL OF PEDIATRIC NURSING-NURSING CARE OF CHILDREN & FAMILIES	17	1	25
JOURNAL OF PSYCHOLINGUISTIC RESEARCH	18	1	26
JOURNAL OF RELIGIOUS EDUCATION	19	1	27
PAGINAS DE EDUCACION	20	1	28
REVISTA BRASILEIRA DE ENFERMAGEM	21	1	29



Figure 7: Bradford's Law

By combining the information in the table with the radial graph related to Bradford's Law, we can perform a parallel analysis of how scientific literature is distributed in a specific field,

based on the frequency of publication of articles in various journals.

Table Analysis:

Journals are sorted by their “Rank”, with the lowest ranked journals at the top, suggesting that these are the most central to the field of study.

“Frequency” indicates how many articles each journal has published. We see that the top three journals have published 3 articles each, indicating a higher concentration of articles in these journals.

“Cumulative Frequency” (cumFreq) shows the cumulative total of articles as more journals are added, reflecting cumulative productivity across the spectrum of journals.

Radial Graph Analysis:

The “Rank” line (Blue) likely shows how the number of journals expands as we move outward from the center of the graph, which represents the Bradford core, the “Frequency” line (Magenta) highlights the specific frequency of each journal, with points closer to the center indicating higher frequency, the “Cumulative Frequency” line (Green) represents how the articles accumulate. In the graph, it expands outward with each layer, showing the increase in total article count as more journals are considered.

Parallel between Table and Graph:

The concentration of articles in the low-ranking journals in the table is reflected in the proximity of the magenta frequency points to the center of the radial plot. This visually confirms the idea that a small core of journals contributes most of the literature in this specific field.

As the rank increases (and we move down the chart), the frequency of articles per journal decreases to 1, which corresponds to the magenta points moving away from the center in the radial plot. This pattern is consistent with Bradford's Law, which suggests an exponential decrease in journal productivity as we move away from the core.

The linear growth in the cumulative frequency column in the table parallels the progressive growth of the green line in the graph. Both show how the total number of articles accumulates and how, after a certain point, each additional journal contributes less to the cumulative total.

The combined analysis of the table and graph provides a clear representation of Bradford's Law in action. We can conclude that a small group of journals is essential for research in this field, as evidenced by both the high frequency of publication at the top of the table and the concentration of high frequency points near the center of the radial plot. Journals outside this central cluster have a marginal contribution, which is characteristic of the Bradford distribution and may guide researchers and librarians in managing and searching for resources.

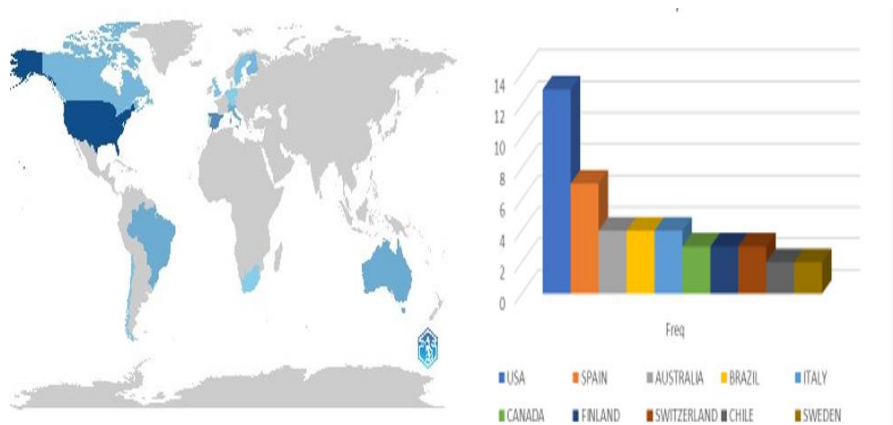


Figure 8: Country Scientific Production.

The set of images shows two representations of scientific production by country.

World heat map: The first image is a world map that uses shades of color to represent the scientific output of each country. Darker colors indicate higher scientific output. According to this map, the United States appears to have highest output, followed by Canada and then countries in South America, Europe and Australia with lower output.

Histogram: The second image is a histogram showing frequency (presumably number of publications or citations) for a select group of countries. The United States tops the list with the highest frequency, followed by Spain, Canada, Australia, Brazil, Italy, Finland, Switzerland, Chile and Sweden.

U.S. leadership: Both visualizations highlight the United States as a leader in scientific output, suggesting it has a robust and active research ecosystem.

Distribution of scientific output: There is a varied distribution of scientific output across countries. Some European countries such as Spain, Finland, Switzerland and Italy have a notable output, as do countries in other continents such as Australia, Brazil and Chile.

Comparison between countries: The difference in the histogram bars indicates significant differences in scientific production between the countries listed.

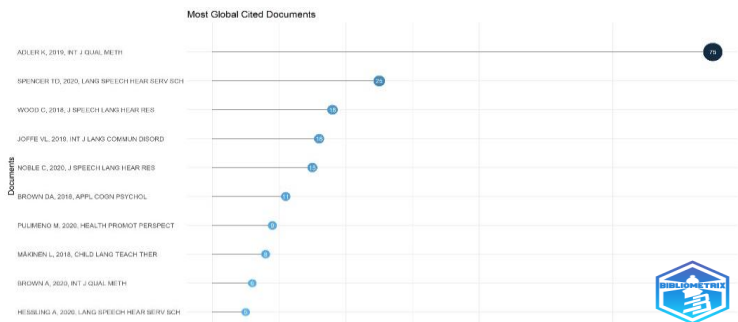


Figure 9: Most cited documents worldwide.

Source: Own elaboration based on bibliometrix data.

The graph entitled “Most Globally Cited Documents” shows a set of scientific papers ordered vertically by name and year of publication, together with number of global citations each has received, represented horizontally.

Citation Distribution: The distribution of citations shows a clear difference between papers. Some papers have a much higher number of citations, indicating their possible relevance or influence in field of study.

Notable papers: The paper with the highest number of citations stands out significantly from others, suggesting it may be a pioneering or particularly important study within field.

Time Trend: There does not appear to be a clear time trend in relationship between year of publication and number of citations, as both recent and older papers are present throughout citation range.

Citations by Publication: Some journals seem to be repeated in the graph, such as “J SPEECH LANG HEAR RES” and “INT J QUAL METH”, which could indicate that these publications have a significant influence on the field.

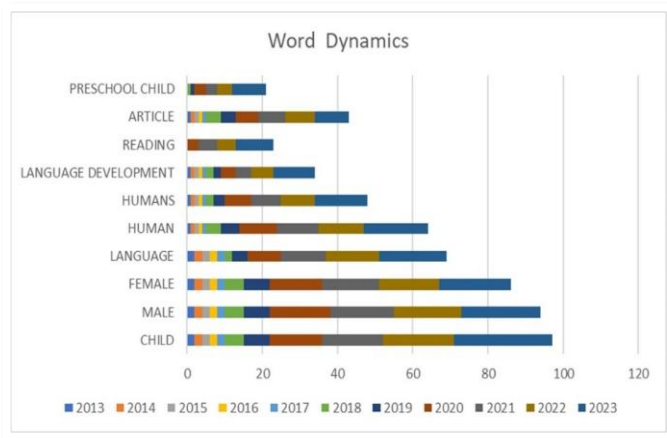


Figure 10: Word dynamics.

Source: Own elaboration based on bibliometrix data.

The graph titled “Word Dynamics” is a stacked histogram showing frequency of specific keywords in academic documents or databases over the years from 2013 to 2023.

Trends over time: each horizontal bar represents a keyword and different colors in each bar represent the frequency of the keyword corresponding to a specific year. This shows how prevalence of specific terms in academic literature has changed over time.

Most frequent keywords: The keywords with the longest bars, such as “LANGUAGE” and “HUMANS”, have been mentioned most frequently in the papers, suggesting that they are central terms or terms of great interest in field of study.

Year-to-year comparison: It can be observed that certain terms, such as “PRESCHOOL CHILD”, have had a noticeable increase in recent years, which could indicate a growing

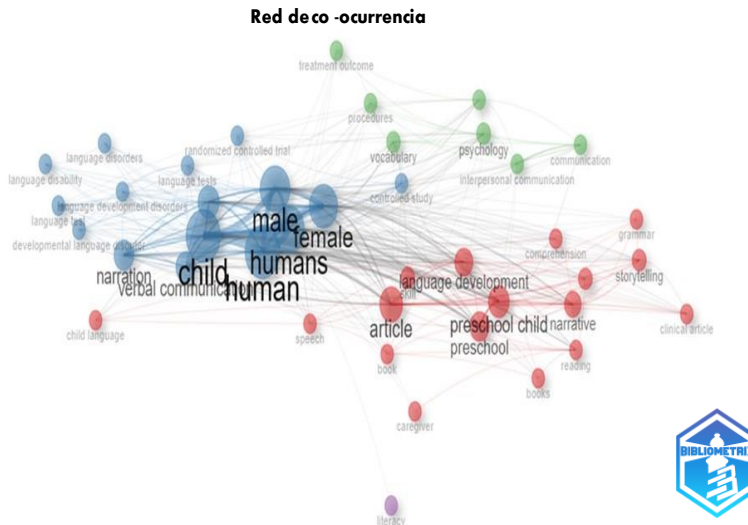


Figure 12: Co-occurrence network.

Source: Own elaboration based on bibliometrix data.

The graph shows a co-occurrence network, which is a visual tool used in data analysis to represent how different terms appear together in a dataset, such as scientific publications or research databases.

Nodes and Central Terms: The terms “child”, “human”, “male”, “female”, and “language development” are the largest and in the center, indicating they are the most frequent and possibly the most central terms in the network. This suggests that they are major themes within the analyzed dataset.

Connectivity: The lines between nodes represent the co-occurrence of terms in the same documents or datasets. Thicker or more numerous lines indicate a stronger relationship or more frequent co-occurrence.

Term Clusters: Clusters of related terms, such as “language disorders”, “language tests”, and “language development disorders” can be observed close to each other, suggesting that these terms tend to appear together and may represent a specific subfield of study.

Interdisciplinary Relationships: The network shows connections between terms from different disciplines such as “psychology”, “communication”, and “literacy”, indicating that the field of study is interdisciplinary.

Sub-network Analysis: Some nodes act as linking points between different areas of study, such as “article” which connects with “preschool”, “child”, “narrative”, and “preschool child”. This may indicate that these terms are important in disseminating research across subfields.

4. Discussion

The present systematic review has collated and analysed a comprehensive range of studies on *Nanotechnology Perceptions* Vol. 20 No. S14 (2024)

utilisation of children's stories in preschool educational contexts. This synthesis of the literature reveals several significant implications for educational practice and future research.

The review underscores the efficacy of children's stories as a pedagogical instrument for preschoolers' cognitive, linguistic, and socioemotional growth. The studies reviewed indicate that stories not only promote early literacy, but also improve skills such as reading comprehension and vocabulary in children (Befi-Lopes et al., 2013; Zuanetti et al., 2021).

This review underscores the necessity of adapting stories and narrative activities to align with the developmental needs and abilities of preschoolers. In alignment with Jean Piaget's theory, the alignment of stories with the child's stage of cognitive development is of paramount importance (Brown et al., 2018; Wood et al., 2018).

The included studies employ a range of methodologies and approaches, indicating there is no singular, universal approach to using stories in preschool education. Nevertheless, the findings indicate the efficacy of interventions that incorporate stories and tales in an interactive and participatory framework, emphasizing the significance of children's active involvement in learning process (Brondani & Rubim, 2019; Pulimeno et al.). Another crucial finding is the necessity for further research and the advancement of educational programs that utilize storytelling for a diverse demographic population, including children from various cultural backgrounds and with differing language abilities (Guiberson & Ferris, 2023).

This review suggests opportunities for future research, particularly regarding longitudinal studies examining the long-term effects of exposure to stories on child development. It also highlights the need for further research on story implementation in multilingual and multicultural settings, to effectively address the diverse needs of preschool populations. (Fosch-Villaronga et al., 2023).

5. Conclusions

There has been a notable advancement in comprehension of the impact of narratives on linguistic and narrative processes. Research has concentrated on pioneering methodologies and adaptation of narrative techniques to diverse cultural and technological contexts.

The number of published articles in this field has increased, reflecting a growing interest among scholars in this area of research. The most frequently cited sources indicate that the key studies have formed the basis of current research.

The international distribution and influence of authors indicates a growing trend of worldwide collaboration, with notable contributions emerging from a multitude of regions and cultures.

The importance of incorporating a diverse array of culturally pertinent narratives has been underscored in academic studies, as this is vital for an exhaustive and inclusive pedagogical approach.

The incorporation of technology into storytelling has created new opportunities for education and therapy, enabling the use of interactive and engaging learning methods.

The application of keyword analysis and data visualization has facilitated a more nuanced comprehension of the thematic interconnections and intellectual structure define this field of

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study.

The analysis of articles in this domain reveals a discernible trend towards an evolving and growing interest in the study of storytelling in preschool education, with an emphasis on diversity, technology, and international collaborations. The findings of the research underscore the necessity of adapting stories to align with the prevailing cultural and technological contexts.

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