

Trends in Research of Storytelling in Early Childhood Education: A Bibliometrics Study from Scopus Database between 1970-2022

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Abstract

Storytelling, which emerged as an educational and therapeutic approach in the 1970s, has gained increasing attention in early childhood education. However, a comprehensive overview of how storytelling research has evolved in this field remains limited. This study employs a combination of bibliometric and content analysis to examine 397 publications on storytelling in early childhood education indexed in the Scopus database between 1970 and 2022. Bibliometric methods were used to analyze publication trends, document types, contributing countries, journals, authorship networks, and collaboration patterns, while content analysis was conducted on highly cited studies to identify major research themes. The results reveal a significant growth in storytelling research since 2010, with strong contributions from a small number of leading countries and journals. Thematic analysis indicates that storytelling research in early childhood education primarily focuses on language and literacy development, socio-emotional development and socialization, storytelling for children with special needs, therapeutic applications, technology-enhanced storytelling, and sustainability-related values education. These findings provide a comprehensive understanding of the intellectual structure, thematic evolution, and emerging directions of storytelling research in early childhood education, offering valuable implications for researchers, educators, and policymakers. Despite limitations related to database coverage, this study contributes to a clearer understanding of the intellectual structure and evolution of storytelling research in early childhood education.

Keywords : *Storytelling, early childhood, kindergarten, bibliometric analysis*

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Introduction & Literature review

Storytelling, originating in the 1970s, was initially applied as a therapeutic technique for children experiencing psychological trauma (Gardner, 1970). Over time, it evolved into a widely recognized educational practice and attracted increasing attention from researchers and practitioners, particularly within early childhood education (Cremin et al., 2016; Davis & Lange, 1973; Mahyuddin, 2020; Phillips, 1999; Yanti et al., 2023). Although initially rooted in therapeutic contexts, storytelling gradually became embedded in educational discourse as a multidimensional developmental process.

Beyond its narrative function, storytelling represents a complex mechanism through which young children construct meaning, regulate emotions, and engage in social interaction (Bruner, 1990; Holmes et al., 2019; Miller et al., 1990; Nicolopoulou et al., 2015). Through listening, retelling, and co-constructing stories, children develop linguistic competence, cognitive flexibility, imagination, and socio-emotional understanding (Holmes et al., 2019; Miller et al., 1990; Nicolopoulou et al., 2015). Consequently, storytelling has increasingly been regarded as a foundational process supporting holistic development in early childhood education.

Storytelling has been examined across diverse cultural contexts, including Western and Asia-Pacific regions such as China, Japan, Malaysia, Indonesia, Sri Lanka, and Vietnam. Studies highlight its contributions to language development, cultural transmission, socialization, and sustainable education within early childhood settings (Miller et al., 1997; Doan & Wang, 2010; Kaga, 2007; Mahyuddin, 2020; Lankadari & Rodrigo, 2022; Mahyuddin, 2020; Miller et al., 1997; Yanti et al., 2023). These findings suggest that storytelling practices are shaped by social norms, family communication patterns, and broader cultural values.

Conceptually, storytelling in education encompasses multiple dimensions. Culturally, storytelling functions as an intergenerational practice that preserves heritage, transmits social knowledge, and reflects collective identity (Bietti et al., 2019). As an interactive artistic practice, storytelling combines language, gesture, and imagination, enabling co-construction of meaning between storyteller and audience (Marlar Lwin, 2010). Within educational settings, storytelling integrates cognitive, emotional, and social processes, thereby bridging communicative interaction with structured learning experiences.

A substantial body of research has explored storytelling in preschool classrooms using various modalities, including traditional folktales, illustrated books, interactive sessions, and digital narratives. These approaches have been shown to enhance vocabulary development, narrative competence, emotional expression, social interaction, creativity, and critical thinking skills (Roselló, 2017; Holmes et al., 2019; Maureen et al., 2020, 2021). Storytelling also serves as a therapeutic and supportive tool for children facing language or learning challenges, while encouraging parental and community involvement in early educational contexts.

Several review studies have examined storytelling within educational frameworks. Lucarevski (2016) synthesized research on storytelling and language learning, highlighting vocabulary growth and narrative competence. Du (2021) conducted a systematic literature review focusing on storytelling modalities and pedagogical strategies in early childhood classrooms. Lugmayr et al. (2017) offered a conceptual analysis of serious storytelling and its broader educational applications. Recent empirical studies further emphasize storytelling's role in supporting socio-emotional competence, creativity, identity formation, and inclusive education contexts (Hoffmann & Russ, 2012; Kokina & Kern, 2010; Lever & Sénéchal, 2011; Nicolopoulou et al., 2015). More recently, research has increasingly addressed technology-enhanced storytelling and interdisciplinary applications in early childhood settings (Fridin, 2014; Maureen et al., 2020).

Despite these valuable contributions, existing studies and reviews often remain fragmented across disciplines, methodologies, and educational contexts. In particular, few investigations have adopted a large-scale, database-driven bibliometric approach to systematically examine long-term publication trends, geographical distribution, collaboration patterns, and thematic evolution in storytelling research within early childhood education. As research output continues to expand, a comprehensive synthesis is necessary to clarify the intellectual structure and developmental trajectory of this field.

Therefore, this study aims to synthesize prior scholarship through a mixed-methods review combining bibliometric and content analysis of publications indexed in the Scopus database between 1970 and 2022. Specifically, the study addresses the following research questions:

1. What is the number of research works on storytelling in early childhood education and how has it evolved over time?
2. How are these studies geographically distributed?

3. What are the main publication types and outlets in this field?
4. Which authors and research groups have made significant contributions?
5. What are the principal thematic orientations characterizing storytelling research in early childhood education?

By integrating structural mapping with interpretive analysis, this study seeks to provide a coherent and comprehensive overview of storytelling research in early childhood education, contributing to a clearer understanding of both established domains and emerging directions within the field.

Method

Research Design

This study employed a mixed-methods review design combining bibliometric and content analysis to systematically examine research trends and thematic developments in storytelling in early childhood education (ECE). Bibliometric analysis was used to map publication patterns, citation structures, collaboration networks, and research clusters, while content analysis was conducted to interpret the intellectual focus and conceptual contributions of highly cited studies. For the bibliometric analysis, we filtered out key terms such as “storytelling,” “early childhood,” “preschool” and “kindergarten” from the Scopus database, aiming to identify all related research works irrespective of educational level or type of document (including articles, conference proceedings, book chapters and books). The Scopus database was chosen because it is one of the largest and most reliable academic databases, offering a vast range of scientific research materials, thus ensuring the comprehensiveness and diversity of the collected data (Burnham, 2006). To complement the bibliometric findings, content analysis was applied to a subset of highly cited publications. This qualitative analysis focused on identifying recurring research themes, methodological approaches, and conceptual contributions related to storytelling in early childhood education. Prior research indicates that bibliometric methods alone might not yield deep insights as bibliometric data

do not reflect the content of individual articles in detail (Donthu et al., 2021); therefore, integrating content analysis methods allows for a more comprehensive and detailed picture of the studied topic (Prashar, 2020; Ranjbari et al., 2021). The integration of bibliometric and content analyses allowed for a deeper interpretation of both the structural and thematic characteristics of the research field.

The Scopus database was selected as the primary data source due to its broad coverage of peer-reviewed journals, conference proceedings, books, and book chapters across social sciences and education (Burnham, 2006). The search was limited to publications written in English and published between 1970 and 2022 to ensure consistency and relevance. Document types included journal articles, conference papers, books, and book chapters.

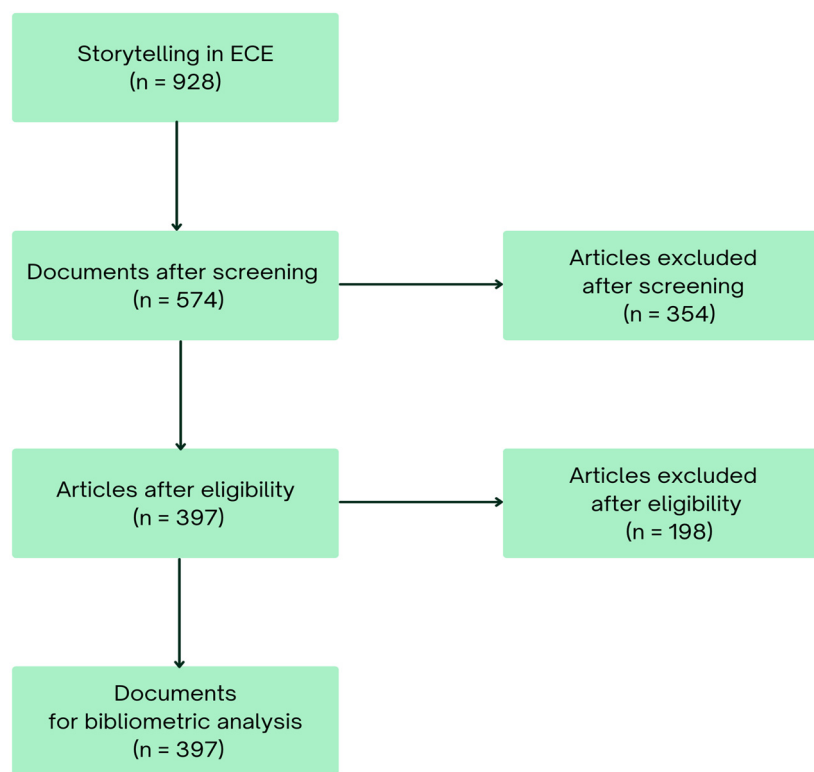


Figure 1. Data collection following PRISMA guidelines

The search commands and filtering steps were conducted according to PRISMA guidelines, detailed as follows:

Step 1 Initial search:

An initial search using TITLE-ABS-KEY (storytelling AND (“early childhood” OR preschool OR kindergarten)) yielded 928 records.

Step 2 Refinement:

Filtering criteria were applied to the initial dataset, including publication stage (final), document type (article, conference paper, book chapter, and book), subject area (social sciences, psychology, and arts), language (English), and exclusion of publications from 2023. After applying these criteria, the dataset was reduced to 574 records.

Step 3: Data Screening and Selection:

The data screening process followed PRISMA guidelines. An initial search yielded 928 records. After applying filtering criteria (publication stage, document type, subject area, language, and year), 574 records remained.

These 574 records were then manually screened to assess relevance. A total of 198 documents were excluded for not meeting the inclusion criteria. Specifically, studies unrelated to storytelling in educational contexts ($n = 146$) and studies focusing on educational levels other than early childhood education, such as elementary or secondary education ($n = 52$), were removed.

Ultimately, 397 publications were retained for bibliometric and content analysis.

Step 4. We use Microsoft Excel and VOSviewer to analyze the final dataset.

content analysis on prominent publications (based on citation indices) to provide a comprehensive summary of the content and characteristics of storytelling in early childhood education. Some studies have indicated that solely relying on bibliometric methods might not yield deep insights as bibliometric data do not reflect the content of individual articles in detail (Donthu et al., 2021). Therefore, some research has combined bibliometrics with content analysis methods to provide a deeper, more comprehensive, and detailed picture of the studied topic (Prashar, 2020; Ranjbari et al., 2021). In addition to visual cluster mapping, cluster strength was interpreted using quantitative indicators provided by VOSviewer, including the number of nodes, total link strength, and citation-based measures. These indicators were used to assess the relative influence, connectivity, and maturity of each identified cluster.

The Scopus database was selected due to its broad coverage of peer-reviewed journals and interdisciplinary indexing. While no single database can fully capture all global publications, Scopus provides a structured and widely recognized source for bibliometric analysis.

Results and Discussion

This section presents and discusses the bibliometric and content analysis results together in order to allow immediate interpretation of publication patterns, collaboration structures, and thematic trends in relation to existing research on storytelling in early childhood education. Quantitative indicators are integrated with conceptual insights derived from highly cited studies to provide a coherent understanding of how the field has evolved over time.

Publishing trends over time

As shown in Figure 2, the first publication on storytelling in general education appeared in 1970 (Gardner, 1970), followed three years later by the first study specifically addressing storytelling in early childhood education, focusing on mother–child interactions (Davis & Lange, 1973). Research output remained limited for several decades, with fewer than five publications per year between 1970 and 2003. From 2004 to 2015, output increased gradually but fluctuated, averaging 5–25 documents annually, before rising more substantially after 2016, exceeding 30 publications per year.

The year 1985 marked an important milestone, as storytelling was formally examined within school settings. McNamee et al. (1985) investigated the impact of preschool storytelling and role-playing on reading and writing development, highlighting its intellectual and emotional significance. Since then, publication trends indicate sustained and accelerating growth, particularly after 2010, suggesting expanding scholarly attention to storytelling across educational and related disciplines.

This trend aligns with the expansion of research on language development, socio-emotional learning, and inclusive education, which increasingly emphasizes narrative-based practices. In addition, the emergence of digital media and interdisciplinary methodologies

has further contributed to the sustained growth of storytelling research, as reflected in the increasing diversity of thematic clusters identified in this study.

This increase may also reflect innovations in research methodology and interdisciplinary studies, where storytelling is used as a method to study and interpret social and psychological phenomena. This also suggests that the research community may be expanding its approach to include storytelling as a part of the scientific process.

The growing volume of publications reflects the broader recognition of storytelling as a pedagogical and developmental tool in early childhood education, as consistently reported in previous empirical and review studies included in this analysis (e.g., Miller et al., 1990; Nicolopoulou et al., 2015; Cremin et al., 2016).

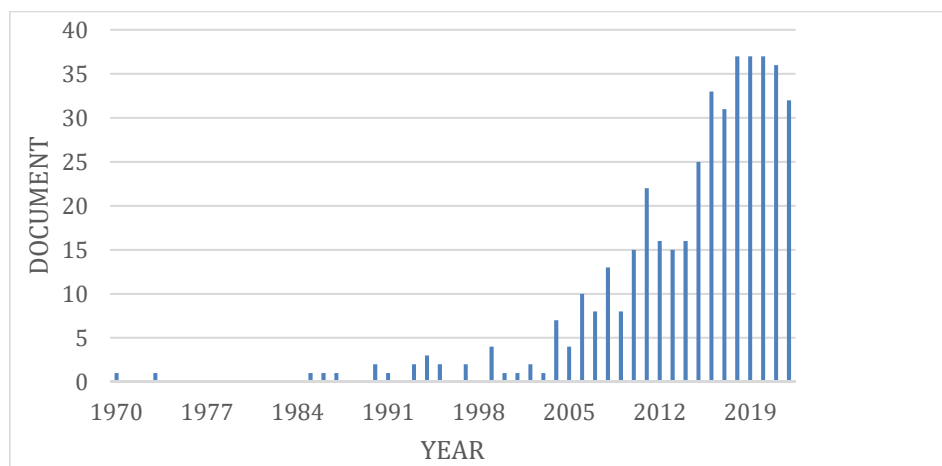


Figure 2. Publications on Storytelling in General Education and in Early Childhood Education Over Time

This expansion may be linked to UNESCO's statements that sustainable education development should begin with early childhood education. Specifically, in the document Hofman-Bergholm (2022), *"Storytelling is a method and means for developing sustainable education, making sustainability more accessible. Storytelling as a pedagogical tool for sustainable learning remains underexplored, yet the idea of sustainability can trace its roots back to ancient indigenous cultures, where storytelling was used to transfer traditional knowledge from one generation to the next"*.

Beyond pedagogical factors, structural developments within academia-such as greater

emphasis on interdisciplinary research, international collaboration, and the visibility of early childhood education within global educational agendas-have also shaped publication trends. These factors help explain not only the overall growth in research output, but also the diversification of storytelling applications observed in more recent decades.

Leading Countries in research on storytelling in Early Childhood Education

Table 1 presents that the geographical distribution of research on storytelling in early childhood education reveals both concentration and diversity across countries.

Table 1. *Top 10 countries in research on storytelling in Early Childhood Education from 1970 to 2022, sorted by documents and citations*

Top countries in terms of documents			Top countries in terms of citations		
Rank	Country	Documents	Rank	Country	Citations
1	The United States	161	1	Canada	812
2	The United Kingdom	31	2	Australia	290
3	Canada	28	3	Japan	261
4	Australia	26	4	The United States	202
5	Turkey	17	5	Poland	191
6	Italy	16	6	Kazakhstan	138
7	Greece	13	7	Hong Kong	127
8	Indonesia	12	8	Brazil	114
9	Israel	11	9	Turkey	110
10	Sweden	11	10	Belgium	107

Analysis of publication output across countries reveals both concentration and diversification across regions. In total, 62 countries have contributed at least one publication to the field. However, research output remains unevenly distributed, with a small group of countries accounting for a substantial proportion of publications and citations. The United States leads in publication volume, while Canada, Australia, and several European countries demonstrate strong citation impact relative to output.

Rather than interpreting citation counts as direct indicators research quality, these citation patterns may reflect variations in disciplinary traditions, collaboration intensity, publication language, and database coverage. For example, countries with broader international

collaboration networks tend to achieve higher visibility, while others may exhibit selective but influential research contributions. The presence of both established research systems (e.g., the United States, Canada, the United Kingdom, and Australia) and emerging contributors from Asia-Pacific and other regions (e.g., China, Vietnam, Indonesia) suggests that storytelling research has expanded beyond its traditional Western academic centers.

Overall, the geographical distribution indicates a structurally concentrated yet gradually diversifying global research landscape, in which productivity, citation impact, and collaboration patterns do not always align.

Research Clusters and Emerging Contributors in Storytelling Studies

Among 62 countries involved in storytelling research, 47 national clusters exhibit numerous interconnections. Several countries have recently emerged as participants in publishing on this topic, including Indonesia, Malaysia, Denmark, France, Chile, and Norway. Notably, Indonesia, while new to the field, has quickly ascended into the top ten countries with the most publications, contributing 12 articles. This indicates a growing interest and investment in storytelling research within these regions, reflecting their commitment to exploring and integrating storytelling into educational frameworks.

Beyond publication volume, Table 2 provides insight into the structural position of countries within the international collaboration network. Total link strength reflects the intensity of collaborative connections, while the number of links indicates the breadth of partnerships. The United States not only has the highest publication count (as shown in Table 1), but also exhibits the highest total link strength and number of collaborative links, underscoring its central and highly connected position in the global research network. In contrast, countries such as Canada demonstrate high citation per document despite fewer publications and more limited collaboration breadth, suggesting that research influence does not necessarily correspond to network centrality or output volume. Notably, some European countries (e.g., Germany, France, Spain) show moderate link strength despite lower publication volume, indicating selective but strategic international collaboration patterns.

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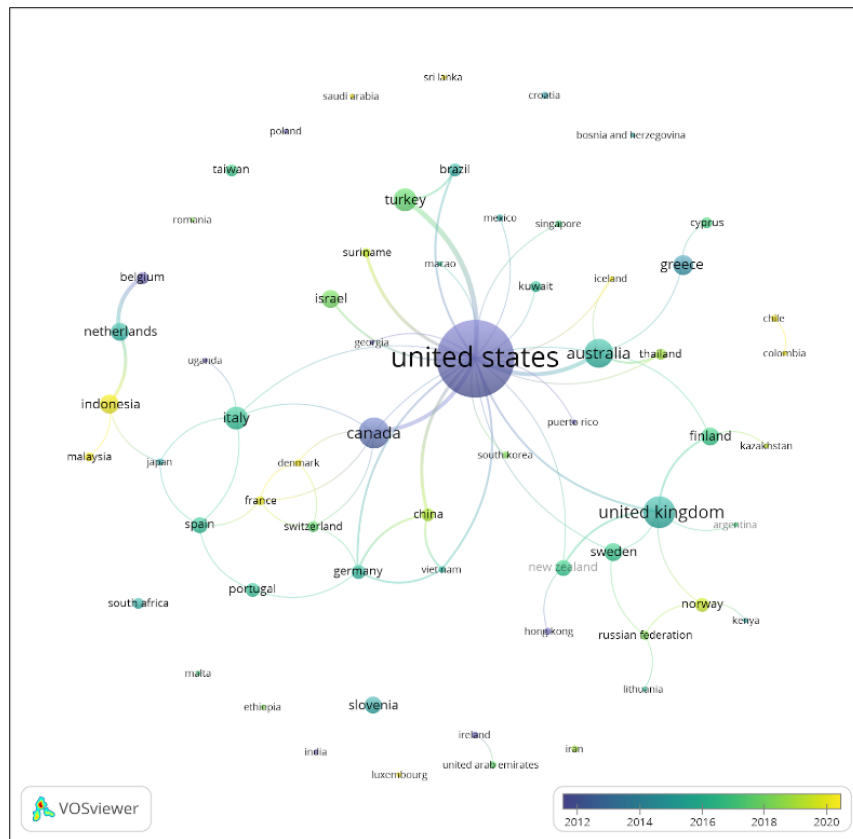


Figure 3. Country collaborations between 1970 and 2022

Table 2. Top 10 countries in research on storytelling in Early Childhood Education from 1970 to 2022, sorted by link index

Ranking	Country	Link	Total link strength	Citation per document
1	United States	23	42	24.82
2	Australia	6	10	11.15
3	Canada	6	9	29.00
4	United Kingdom	6	9	12.39
5	Germany	5	8	12.57
6	Italy	5	5	8.63
7	France	4	4	16.33
8	Spain	4	4	10.13
9	Switzerland	4	4	8.75
10	China	3	7	10.67

Leading publishing outlets on Storytelling in Early Childhood Education

The database on storytelling in early childhood education spans six decades and is concentrated within a limited number of journals, particularly early childhood-focused outlets such as *Early Child Development and Care* and *Early Childhood Education Journal* (see Table 3). Publication volume varies substantially across journals, partly due to differences in founding dates and annual output.

In terms of total publications, practitioner-oriented journals such as *Early Child Development and Care* and *Early Childhood Education Journal* account for the highest publication output in storytelling research within early childhood education. When ranked by total citations, influential outlets include *Early Child Development and Care*, *Early Childhood Education Journal*, *The Reading Teacher*, *Research in Developmental Disabilities*, and *Journal of Speech, Language, and Hearing Research*. However, citation per article reveals a different pattern, with *Child Development*, *Journal of Speech, Language, and Hearing Research*, *Journal of Autism and Developmental Disorders*, *Early Childhood Education Journal*, and *Psychology of Aesthetics, Creativity, and the Arts* emerging as particularly impactful (as shown in Table 3).

Furthermore, the quality and impact of research are not solely measured by the quantity of publications. The number of citations indicates that some papers, possibly those providing innovative insights or robust evidence, may significantly influence the field. This is corroborated by the citation rankings of journals, where established journals such as “Child Development” and “Journal of Speech, Language, and Hearing Research” stand out, showing that high-quality, established research continues to shape discussions in the field.

In the case of the United States, the large number of publications without leading in citation count may imply that their research output is varied but the quality varies or may focus on emerging areas within the topic that have yet to receive widespread academic attention. This analysis could serve as a basis for further discussion on the dissemination and impact of research on storytelling in early childhood education in various global contexts.

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Table 3. *Top 10 sources sort by documents and citations*

Ranking	Source	Scope and Quartile	Documents	Ranking	Source	Citations
1	Early Child Development and Care	Psychology:Developmental and Educational Psychology (Q2) Social Sciences: Education (Q1)	17	1	Child Development	507
2	Early Childhood Education Journal	Psychology:Developmental and Educational Psychology (Q2) Social Sciences: Education (Q1)	11	2	Journal of Speech, Language, and Hearing Research	443
3	Reading Teacher	Medicine: Pharmacology (medical) (Q3) Pharmacology, Toxicology and Pharmaceutics Pharmacology (Q3) Social SciencesLinguistics and Language (Q1)	8	3	Journal of Autism and Developmental Disorders	262
4	Research in Developmental Disabilities	Clinical Psychology (Q2) Developmental and Educational Psychology (Q2)	7	4	Journal of Experimental Child Psychology	251
5	Journal of Speech, Language, And Hearing Research	Health Professions- Speech and Hearing(Q1) MedicineMedicine (miscellaneous)(Q2) Social Sciences-Linguistics and Language (Q1)	7	5	Early Childhood Education Journal	218
6	Early Education and Development	Psychology-Developmental and Educational Psychology (Q1) Social Sciences-Education (Q1)	6	6	Psychology of Aesthetics, Creativity, and the Arts	212
7	Journal of Research in Childhood Education	Psychology-Developmental and Educational Psychology(Q2) Social Sciences-Education(Q2)	6	7	Early Childhood Research Quarterly	188
8	European Early Childhood Education Research Journal	Psychology Developmental and Educational Psychology (Q2) Social Sciences-Education (Q1)	5	8	Developmental Psychology	187
9	Journal of Experimental Child Psychology	Psychology-Developmental and Educational Psychology (Q1) Experimental and Cognitive Psychology (Q1)	5	9	Early Education and Development	183
10	Contemporary Issues in Early Childhood	Psychology-Developmental and Educational Psychology(Q3) Social Sciences education (Q2)	5	10	Early Child Development and Care	180

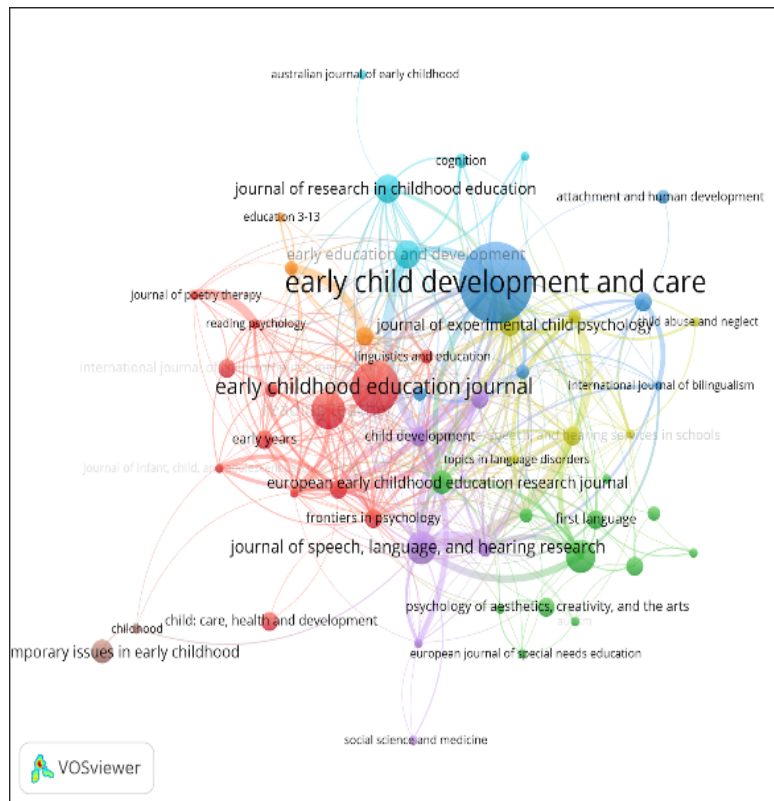


Figure 4. The relationship between the journals in SECE between 1970 and 2022 (53 journals, each source has at least one citation)

Figure 4 illustrates the thematic structure of journals publishing research on storytelling in early childhood education, identifying eight research clusters based on citation and co-citation patterns (see Table 4). The largest cluster positions storytelling as a core pedagogical approach, particularly in relation to language development, literacy, and classroom interaction (Cremin et al., 2016; Holmes et al., 2019; Nicolopoulou et al., 2015; Holmes et al., 2019). A second cluster emphasizes storytelling as an inclusive and supportive intervention for children with special educational needs, especially autism spectrum disorders (Kokina & Kern, 2010; Hanrahan et al., 2020).

Additional clusters focus on socio-emotional development and identity construction (Miller et al., 1990, 1997; Hoffmann & Russ, 2012), dialogic interactions between teachers, parents, and children (Lever & Sénéchal, 2011; Doan & Wang, 2010), and therapeutic

applications related to trauma and emotional well-being (Gardner, 1970; Roselló, 2017). Other themes address cultural values and sustainability (Miller et al., 1997; Hofman-Bergholm, 2022), narrative-based learning in mathematics and science (Casey et al., 2008), and technology-enhanced storytelling, including robotics and digital tools (Fridin, 2014; Maureen et al., 2020).

Overall, core pedagogical and socio-emotional themes appear most established, while interdisciplinary and technology-driven directions remain comparatively emergent.

Table 4. *Journals Specializing in SECE between 1970 and 2022 sorted by number of source*

Ranking	Theme	Number of source	Number of document	Number of citation
1	Storytelling as a core pedagogical approach	13	53	747
2	Storytelling as a supportive method for children with special educational needs	12	40	962
3	The relationship between storytelling, emotional development, creativity, and identity construction in young children	6	32	416
4	Interactions among teachers, parents, and children in storytelling activities	6	18	453
5	Storytelling as a therapeutic and psychological intervention	6	22	1284
6	The role of storytelling	5	19	406
7	Integrates storytelling into mathematical and scientific learning contexts	3	9	74
8	Emerging research on technology-enhanced and digital storytelling	2	7	51

Journals Specializing in Storytelling Research in Early Childhood Education

Between 1970 and 2022, storytelling research in early childhood education was published across 53 journals, reflecting the field's interdisciplinary scope. Although a relatively small group of education- and development-oriented journals accounts for a substantial share of publications, citation patterns show that scholarly influence extends beyond early childhood-specific outlets to broader journals in developmental psychology, language studies, special education, and communication. This distribution indicates that storytelling research operates

at the intersection of multiple academic domains.

Co-citation analysis identifies eight interconnected thematic clusters that define the intellectual structure of the field (see Figure 4 and Table 4). The largest and most densely connected cluster frames storytelling as a core pedagogical approach, particularly in relation to language development and literacy. A second prominent cluster emphasizes storytelling as an intervention tool for children with special educational needs, especially within autism-related research. Additional clusters address socio-emotional development and identity construction, dialogic interactions among teachers, parents, and children, and storytelling as a therapeutic practice.

Smaller but expanding clusters focus on interdisciplinary applications, including narrative-based approaches in mathematics and science learning, as well as technology-enhanced and digital storytelling. Compared to the core pedagogical and developmental clusters, these emerging areas display weaker interconnections and lower citation density, suggesting exploratory yet growing research directions. Overall, journal and cluster analyses reveal a field characterized by both structural consolidation and thematic diversification.

Leading Authors and Scholarly Influence

A total of 92 researchers have contributed to storytelling research in early childhood education. Table 5 highlights leading authors by publication volume and citation impact, revealing a distinction between productivity and scholarly influence. While authors such as Nicolopoulou A. and Flynn E.E. are among the most productive contributors, particularly in language and literacy studies, Miller P.J. demonstrates the strongest citation impact. Her influential work in the 1990s on narrative practices and cultural socialization continues to shape theoretical discussions in the field. This pattern suggests that citation impact reflects foundational and theoretically significant contributions rather than output volume alone.

Collaboration patterns further indicate that authors integrated within research networks tend to achieve higher citation visibility. Together, these findings show that the field is shaped by a relatively concentrated group of influential scholars who define its theoretical and empirical core while enabling continued thematic expansion.

Table 5. *List of Leading Authors on Storytelling in Early Childhood Education by Total Publications and Total Citations*

Ranking	Author	Affiliation	Document	Ranking	Author	Affiliation	Citation
1	Nicolopoulou, A.	Lehigh University, the United States	6	1	Miller P.J.	University of Illinois Urbana-Champaign, United States	552
2	Flynn E.E.	Portland State University, United States	5	2	Fung H.	University of Chicago, United States	500
3	Wang Q.	Cornell University, United States	4	3	Nicolo Polo A.	Lehigh University, United States	246
4	Ilgaz H.	Bilkent University, Turkey	4	4	Wang Q.	Cornell University, United States	187
5	Cooper P.M.	Queens College at the City University of New York, United States	4	5	Casey B.	Boston College, United States	143
6	Nicolas E.	University of Alberta, Canada	4	6	Young J.M.	Boston College, United States	143
7	Bateman A.	University of Otago, New Zealand	4	7	Gillam R.B.	Utah State University, United States	132
8	Dent V.F.	Hunter College, United States	4	8	Ukraine Tz T.A.	University of Wyoming, United States	132
9	Goodman G.	Long Island University, United States	4	9	Ilgaz H.	Bilkent University, Turkey	113
10	Miller P.J.	University of Illinois Urbana-Champaign, United States	3	10	Cates C.B.	New York University, United States	109

Research Community

The research community on storytelling in early childhood education is experiencing notable expansion, driven by the emergence of new research groups. Approximately one-quarter of the yellow nodes, corresponding to new research groups among over 100 total groups, have emerged from 2010 to 2022, indicating a significant expansion in the number of scientists contributing to this field.

Several research groups have emerged as central contributors, typically consisting of 4-5 individuals, include the team led by Nicolopoulou A., Ilgaz H., Shiro M., and Hsin L.B., specializing in storytelling in early childhood education; the team of Ten Brug A., Van der Putten A., Penne A., Maes B., and Vlaskamp C., who research multisensory storytelling to support children with special needs; the group comprising Nguyen K., Stanley N., Rank A., Stanley L., and Wang Y., focusing on storytelling and personal values; and the team of Umek L.M., Fekonja U., and Hacin K., investigating storytelling and pre-literacy development in preschool children.

Among the top 10 authors in terms of publication volume, only four are members of a research group, including Nicolopoulou A. (Group 4), Bateman A. (Group 3), Dent V.F., Goodman G., and the collaboration between Miller P.J. and Fung H. Most of them operate independently. However, among the top 10 most cited scholars, 6 out of 10 are members of research groups, suggesting that participation in a research group may enhance the likelihood of being cited.

Figure 5 was visually enhanced to improve readability by increasing resolution, node size, and label clarity.

This observation reflects growth in numbers within the research community and underscores the importance of teamwork. Collaboration can foster various unique ideas and influential research, leading to an increase in citation frequency. This also mirrors the trend of collaboration in modern scientific research, where connections and knowledge sharing among experts from diverse backgrounds can optimize both the process and outcomes of research.

Overall, cluster strength analysis indicates an imbalance between mature and emerging research areas. While language development, socialization, and special education clusters exhibit strong connectivity and citation impact, technology-enhanced and interdisciplinary storytelling clusters remain relatively fragmented. This pattern suggests that, although core pedagogical and developmental aspects of storytelling are well established, newer interdisciplinary applications still represent promising directions for future research.

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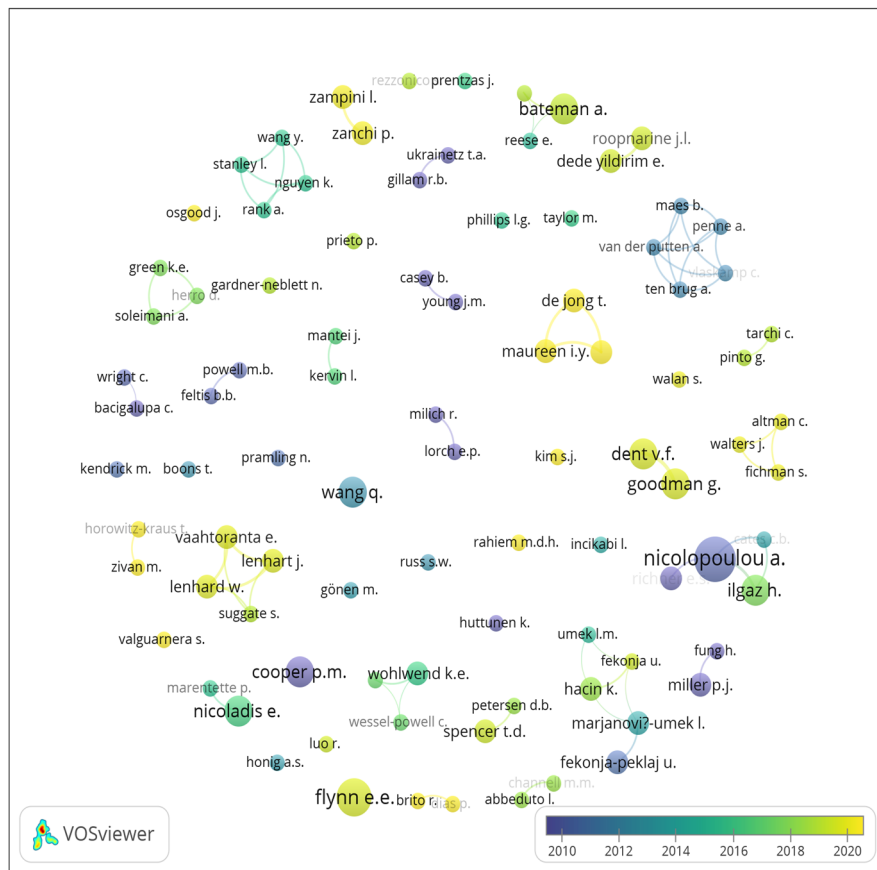


Figure 5. Authors collaborations overtime between 1970 and 2022

Summary of the Core Content in Research on Storytelling in Early Childhood Education

Table 6 displays a list of the most cited research works, demonstrating that influential contributions are journal articles rather than essays or conference papers. Among these works, Miller et al., (1997) emerged as the most cited study, with Miller represented twice. Miller is distinguished in the academic community for having two of her works among the top 10 most cited, published at different times, in 1990 and 1997 (Miller et al., 1990, 1997). This highlights the significant and enduring impact of her contributions to the field of storytelling in early childhood education.

Table 6. *List of Leading Research Studies on Storytelling in Early Childhood Education by Total Citations*

TT	Documents	Titles	Document Type	Sources	Citations
1	Miller et al. (1997)	Personal Storytelling as a Medium of Socialization in Chinese and American Families	Article	Child Development	282
2	Miller et al., (1990)	Narrative practices and the social construction of self in childhood	Article	American Ethnologist	218
3	Lever & Sénéchal, (2011)	Discussing stories: On how a dialogic reading intervention improves kindergartners' oral narrative construction	Article	Journal of Experimental Child Psychology	184
4	Fridin (2014)	Storytelling by a kindergarten social assistive robot: A tool for constructive learning in preschool education	Article	Computers and Education	172
5	Kokina & Kern, (2010)	Social story™ interventions for students with autism spectrum disorders: A meta-analysis	Article	Journal of Autism and Developmental Disorders	154
6	Hoffmann & Russ (2012)	Pretend play, creativity, and emotion regulation in children	Article	Psychology of Aesthetics, Creativity, and the Arts	128
7	Doan & Wang, (2010)	Maternal discussions of mental states and behaviors: Relations to emotional situation knowledge in European American and immigrant Chinese children	Article	Child Development	118
8	Nicolopoulou et al., (2015)	Using a narrative- and play-based activity to promote low-income preschoolers' oral language, emergent literacy, and social competence	Article	Journal of Intellectual Disability Research	93
9	Casey et al., (2008)	Use of a storytelling context to improve girls' and boys' geometry skills in kindergarten	Article	Journal of Applied Developmental Psychology	88
10	Hale et al., (2011)	A Longitudinal Study of Preschoolers' Language-Based Bedtime Routines, Sleep Duration, and Well-Being	Article	Journal of Family Psychology	86

Table 6 presents the most cited studies in storytelling research within early childhood education, demonstrating that highly influential contributions are predominantly journal articles rather than conference papers or essays. Among them, the most cited work is Miller et al. (1997). Notably, Miller is represented twice within the top ten most cited studies, with publications in 1990 and 1997 (Miller et al., 1990, 1997), highlighting the sustained impact of her contributions on narrative practices and cultural socialization in childhood. By

summarizing citation results in Table 6, readers are able to compare influential works, publication venues, and thematic orientations more clearly.

Across these highly cited studies, strong thematic convergence is evident. Rather than isolated contributions, they collectively establish storytelling as a central mechanism for language and literacy development, socio-emotional regulation, cultural socialization, and inclusive education. The most influential works emphasize the interactive and relational nature of storytelling, particularly its role in meaning-making, identity construction, and communication between children and caregivers or educators. Together, these themes reflect a shared conceptual foundation underlying storytelling research across diverse methodological and cultural contexts.

First, storytelling is framed as a culturally embedded psychological practice. Miller et al. (1990, 1997) emphasize that reciprocal storytelling interactions emerge from everyday experiences in which children and caregivers construct perspectives on lived events. Personal storytelling functions differently across cultural contexts. In Confucian-influenced Chinese families, narratives are frequently used to transmit moral and social norms, whereas in Euro-American families, stories about past experiences are more commonly framed as entertainment and self-expression, with greater emphasis on thoughts and feelings rather than actions (Miller et al., 1997; Doan & Wang, 2010). These findings position storytelling as both a communicative practice and a vehicle of cultural socialization.

Second, storytelling is widely recognized as a milestone in language development. The ability to construct and discuss narratives supports children's oral narrative competence and conversational skills (Lever & Sénéchal, 2011). From a broader developmental perspective, engaging in storytelling conversations may serve as a driver for language acquisition and abstract thinking (Donald, 1993). Narrating real or imagined events allows children to share social information and interpret their experiences (Nelson, 2010). Story construction requires temporal sequencing, causal coherence, and attention to characters' goals and motivations—features that characterize narrative modes of thought (Bruner, 1986).

Third, storytelling functions as a pedagogical tool for holistic development. Through listening and retelling, children expand vocabulary, refine grammatical structures, and strengthen literacy skills. Storytelling also supports socio-emotional growth, school readiness, and communication competence. Empirical research further indicates that narrative contexts can enhance mathematical reasoning and geometric understanding (Casey et al., 2008; Doan

& Wang, 2010; Hale et al., 2011; Miller et al., 1990, 1997; Nicolopoulou et al., 2015). Beyond cognitive outcomes, storytelling contributes to imagination, empathy, and creative thinking, forming a foundation for long-term personal development (Miller et al., 1990, 1997; Nicolopoulou et al., 2015). In inclusive contexts, it serves as an effective early intervention approach for children with developmental disorders, providing structured opportunities for language practice and social interaction (Kokina & Kern, 2010).

Additionally, storytelling serves as a developmental assessment tool. Narrative production enables children to display cognitive organization, emotional expression, and behavioral regulation, supporting holistic evaluation of development (Hoffmann & Russ, 2012). Recent studies also highlight a growing integration of storytelling with digital technologies, signaling expanding interdisciplinary directions within early childhood education (Fridin, 2014).

Overall, the most cited literature converges on a shared understanding of storytelling as a culturally grounded, linguistically foundational, pedagogically versatile, and developmentally integrative practice in early childhood education.

Conclusion

The findings suggest that storytelling research in early childhood education has developed a stable and coherent intellectual core. Language development, socio-emotional competence, and inclusive education constitute the most interconnected and influential research domains. The density of these clusters suggests theoretical consolidation and sustained scholarly engagement over several decades. Storytelling is therefore positioned not as a peripheral classroom activity, but as a central pedagogical and developmental framework within early childhood education research.

At the same time, the geographical and collaboration analyses reveal an uneven distribution of research activity. A relatively small number of countries and institutions occupy central positions within international collaboration networks, shaping research visibility and citation flows, while emerging contributions from other regions indicate gradual diversification. These patterns highlight how collaboration intensity, network centrality, and publication infrastructure influence scholarly prominence beyond simple productivity measures.

Although core pedagogical themes are well established, interdisciplinary applications—particularly digital storytelling, technology-enhanced learning, and sustainability-related narratives—remain comparatively fragmented. These areas exhibit weaker interconnections and lower citation density, suggesting exploratory but expanding research directions. The evolving educational landscape, including technological integration and global value-oriented education, may continue to shape these emerging clusters.

Together, these findings underscore storytelling's enduring relevance as a multidimensional pedagogical practice supporting language, identity formation, and social development, offering implications for research and practice. For researchers, the analysis highlights the importance of cross-regional collaboration and interdisciplinary integration to reduce structural imbalances and strengthen emerging research areas. For practitioners, the consolidation of core clusters reinforces storytelling's role as a versatile and adaptable framework capable of bridging traditional literacy practices with evolving digital and inclusive educational contexts.

This study also has limitations. Our data collection process focused on the Scopus database and was limited to publications in English. Therefore, future research could expand the scope of data searches to include various other sources (e.g., Web of Science, CNKI) and publications in other languages (e.g., Chinese, French, Spanish).

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