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# Mapping the Landscape of Parental Involvement in Education: A bibliometric review via CiteSpace

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**Abstract**

Parental involvement plays a crucial role in children's development, but a systematic overview remains lacking. This review aimed to identify the global research landscape, hotspots and trends. 1,523 Web of Science articles (2013-2024) in English were extracted from the Web of Science core collection using CiteSpace for co-citation and co-occurrence network analyses. The results highlight PI's role in boosting academic achievement, fostering home-school collaboration, and supporting children's cognitive, emotional, and social development. These findings offer valuable implications for future research directions and evidence-based educational policies to enhance parental engagement and school-family partnerships across diverse contexts.

Keywords: CiteSpace; Parental Involvement; Bibliometric Analysis; Citation Analysis


DOI:

## 1.0 Introduction

This study, based on the parent involvement (PI) in education literature in the Web of Science (WoS) Core Collection from 2013 to 2024, employed CiteSpace for bibliometric visualization. It systematically revealed the research hotspots, evolution trends, global cooperation patterns, and future research directions in this field.

## 2.0 Literature Review

A plethora of research on PI points to its positive effects on children's academic performance and literacy development, thereby affecting the realisation of the educational goal at the basic education stage (Zhang, 2022). Existing research further indicates that parents play a significant role in supporting children's reading development, and collaboration between parents and teachers can provide ongoing support for children's literacy development (Bava Harji et al., 2026; Menon et al., 2025). The broad concept of PI encompasses parents' lifestyle, expectations, regulations, and guidance at home, attendance in school activities, contact with school staff, and interactions with their children concerning education (Caridade et al., 2020; Curtis et al., 2021).

There is a lack of comprehensive, systematic analysis of the research status on PI in education, making it difficult to identify research hotspots, trends and contributions across countries in this field. To fill these gaps, this study intends to explore three research questions:

RQ1: What are the research hotspots in the field of parental involvement in education?


DOI:

RQ2: What are the annual publication trends and emerging trends on parental involvement between 2013-2023, and what potential areas for future research can be identified based on these trends?
RQ3: What is the global landscape of contributions by countries in the field of parental involvement in education?

## 3.0 Methodology

The WoS is essential for systematic reviews due to its extensive coverage of high-quality, peer-reviewed journals across multiple disciplines and a longer time span, which facilitates comprehensive literature retrieval and accurate citation analysis (Shadiev et al., 2019).
The eligibility criteria (see Table 1) were carefully defined to ensure the relevance and quality of the dataset.

Table 1. Eligibility Criteria

| | Inclusion Criteria | Exclusion Criteria |
|---|---|---|
| Study Characteristics | ● Must be in the educational context | ● Papers beyond the educational context |
| | ● Must be explicitly related to the keywords parental involvement (PI), family involvement, home-school relationship (HSR), home-school connection (HSC), parental engagement, parental participation or home-school involvement | ● Articles that did not directly address parental involvement or its closely related topics |
| | ● Must be peer-reviewed journal articles and review papers | ● Documents such as editorials, book chapters, letters, or conference abstracts not meeting peer-review standards |
| | ● Must be published in English language | ● Papers published in other languages |
| Report Characteristics | ● Must have been indexed in the Web of Science (WOS) database | ● Papers have been indexed in other databases |
| | ● Must be published from 2013 - 2024 | ● Papers before 2013 and after 2024 |
| | | ● Records with missing values, duplicate entries, or incomplete metadata that could compromise the analysis |

As shown in Table 1, the search terms “parental involvement”, “family involvement”, “home-school relationship” and “home-school connection” in various combinations were used to identify relevant work in the listed sources. These terms were next combined or excluded using the Boolean operator “OR,” which explore “TS,” i.e., “title,” “abstract,” “author keywords,” and “keywords plus” in every published document in WOS. The search strategy is as follows:
TS=(“parental involvement” OR “family involvement” OR “home-school relationship” OR “home-school connection” OR “parental engagement” OR “parental participation” OR “home-school involvement”). Only peer-reviewed journal articles and review papers in English are considered. The studies must be indexed in the WOS database, published between 2013 and 2024, and conducted in an educational context. Records with missing values, duplicate entries, incomplete metadata, or other issues that could compromise the analysis are also excluded from the review.
Created by a group of 29 academics in the medical field, the 2009 Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement is widely used in fields beyond social science (Moher et al., 2009; Tricco et al., 2018). The four-phase PRISMA 2020 flow diagram (Figure 1) makes it easier to prepare and submit thorough systematic reviews.

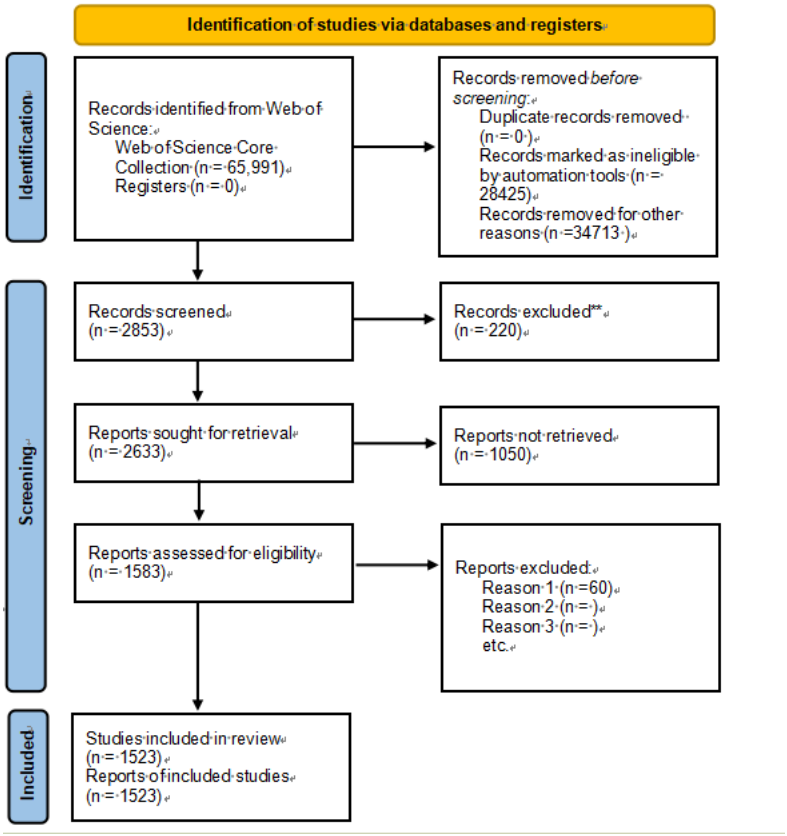


Fig. 1: PRISMA Flow Diagram for This Study

*(Source: From the 2020 PRISMA Statement, by PRISMA Group, 2020, PRISMA https://www.prisma-statement.org/prisma-2020-flow-diagram. Copyright 2024 by PRISMA Group. Reprinted with permission.)*

As seen in Figure 1, the meticulous process of identifying and incorporating studies into a review is facilitated through the utilization of databases and registers. The data were next analysed using CiteSpace version 6.2.R6 software for visual analysis.

## 4.0 Findings

### *4.1 Hotspots*

A keyword co-occurrence network map was generated using CiteSpace. This map reveals multiple closely related concepts across the fields of PI, HSR, and HSC, highlighting correlations among concepts and the evolution of research focus. High-frequency keywords reflect research hotspots in the field, and a visualization atlas analysis of these keywords can provide an overview of research and trends in a given field.

The keyword co-occurrence map generated by CiteSpace is presented in Figure 2. The lines on the map indicate the degree of correlation among the keywords, and the font and node sizes indicate the keywords' research popularity. The dataset was imported into CiteSpace, the node types were configured as keywords, the year per slice was set to 1, and the threshold (by frequency) was adjusted to 50. In other words, only keywords with a co-occurrence frequency exceeding 50 were displayed to obtain the keyword co-occurrence network. This facilitated an enhanced comprehension of research hotspots in PI applied within the education context.

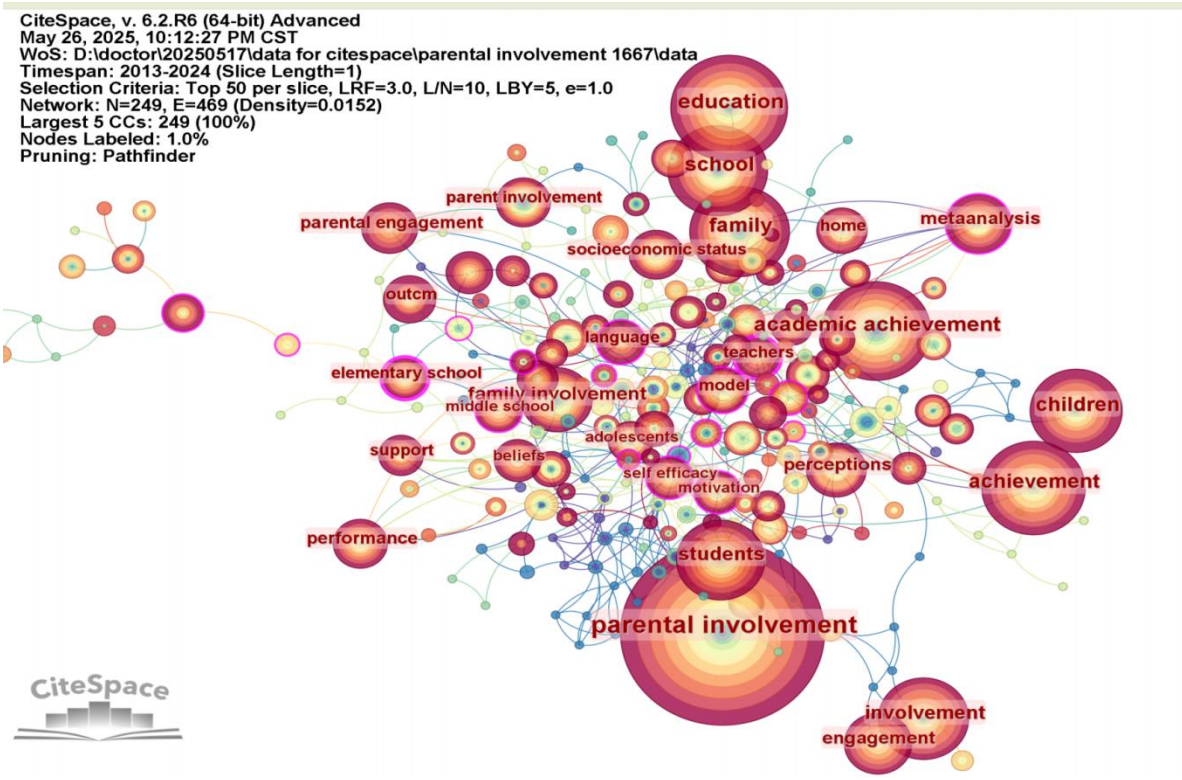


Fig. 2:Map of Keyword Co-occurrence

As seen in Figure 2, for the network, there are 249 nodes (N=249) and 469 links (E=469), and the network density is 0.0152 (D=0.0152), which indicates that the keywords in PI research are highly correlated, and the research has diversified in features. The cluster analysis revealed that the module value of the cluster map is 0.7028 (>0.3), and the average profile value is 0.8712 (>0.7), indicating a reasonable clustering result (Chen et al., 2015).

To better understand the research hotspot more directly, the frequency and intermediate centrality of all nodes were derived from the keyword co-occurrence (Table 2 & Table 3). The greater the intermediary centrality, the more important the keyword is.

Tables 2 and 3 mainly list the top 20 keywords by frequency and intermediation centrality. Table 2 lists the top 20 keywords in PI research by frequency, centrality, and year, highlighting key focus areas such as “parental involvement,” “education,” and “academic achievement”.

Table 2. Top 20 Keywords

| Frequency | Centrality | Year | Keyword |
|---|---|---|---|
| 797 | 0.17 | 2013 | parental involvement |
| 288 | 0.09 | 2013 | education |
| 248 | 0.48 | 2013 | academic achievement |
| 237 | 0.27 | 2013 | achievement |
| 212 | 0.07 | 2013 | family |
| 210 | 0.08 | 2013 | school |
| 197 | 0.12 | 2013 | children |
| 181 | 0.18 | 2013 | involvement |
| 180 | 0.03 | 2013 | students |
| 116 | 0.18 | 2013 | family involvement |
| 105 | 0.08 | 2014 | engagement |
| 103 | 0.27 | 2014 | metaanalysis |
| 90 | 0.09 | 2014 | perceptions |
| 73 | 0.07 | 2014 | performance |
| 66 | 0.07 | 2014 | parental engagement |
| 57 | 0.1 | 2014 | home |
| 55 | 0.03 | 2014 | socioeconomic status |
| 49 | 0 | 2015 | teachers |
| 48 | 0.1 | 2014 | beliefs |
| 47 | 0.16 | 2015 | outcome |

The visualisation map in Figure 2 (Signature, Network: N = 249, E = 469, Density = 0.0152) reveals that "PI" occupies the largest portion alongside the retrieval term "education" (Centrality = 0.09). This suggests that much of the research has focused on the relationship between PI and student achievement. Keywords 'PI' (with a frequency of 797 and centrality of 0.17) and 'education' (with a frequency of 288 and centrality of 0.09) are the most frequently occurring terms, followed by 'academic achievement' (frequency 248, centrality 0.48) and 'achievement' (frequency 237, centrality 0.27). This indicates that much of the research focused on the relationship between PI and education, particularly regarding academic achievement and student performance.

The strong link between “parental involvement” and “education” underscores the importance of family engagement in educational settings. The link between "academic achievement" and "achievement" indicates a focus on student outcomes. The co-occurrence of "family" and "school" suggests research interest in the home-school relationship. Additionally, the pairing of "children" and "students" reflects the target population of much of the research. The presence of "involvement" alongside "engagement" points to a focus on participatory aspects in education. The co-occurrence of "meta-analysis" and "perceptions" suggests a trend toward analytical studies on educational perspectives, and the link between "performance" and "parental engagement" implies that parental participation is seen as a factor in student performance. The combination of "home" and "socioeconomic status" highlights the influence of family background on education. The co-occurrence of "teachers" and "beliefs" might indicate research into teachers' attitudes and their impact on education. Finally, the appearance of "early childhood education" alongside "kindergarten" emphasizes the foundational role of early education.

The keyword co-occurrence network map reveals the complex links between different concepts in the field of education. These links not only demonstrate the breadth of educational research, but also point to the interdependencies between specific research topics. These co-occurrences collectively paint a picture of a research landscape deeply interested in the interconnected roles of family, school, and community in shaping educational outcomes, with a particular emphasis on the early years and the socioeconomic dimensions that influence these dynamics.

Table 3. Top 20 Centrality Keywords

| | Count | Centrality | Year | keywords |
|---|---|---|---|---|
| 1 | 32 | 0.18 | 2013 | high school |
| 2 | 41 | 0.16 | 2013 | urban education |
| 3 | 61 | 0.15 | 2013 | model |
| 4 | 10 | 0.15 | 2013 | attainment |
| 5 | 61 | 0.14 | 2013 | teachers |
| 6 | 52 | 0.14 | 2015 | self efficacy |
| 7 | 36 | 0.14 | 2013 | children’s education |
| 8 | 11 | 0.14 | 2014 | professional development |
| 9 | 28 | 0.13 | 2013 | family literacy |
| 10 | 20 | 0.12 | 2013 | emergent literacy |
| 11 | 18 | 0.12 | 2013 | autism spectrum disorder |
| 12 | 14 | 0.12 | 2018 | childhood |
| 13 | 7 | 0.12 | 2013 | and materials |
| 14 | 2 | 0.12 | 2019 | peer |
| 15 | 23 | 0.11 | 2017 | efficacy |
| 16 | 17 | 0.11 | 2016 | communication |
| 17 | 43 | 0.1 | 2013 | young children |
| 18 | 25 | 0.1 | 2013 | aspirations |
| 19 | 17 | 0.1 | 2013 | adjustment |
| 20 | 6 | 0.1 | 2017 | school improvement |

As seen in Table 3, the top centrality keywords are "high school" and "urban," which are the most important keywords in terms of centrality. The top frequency keywords (except the keywords used in searching WoS) are education, academic achievement, achievement, school and family. Clearly, the data in Table 2 and Table 3 reveal an inconsistent relationship between the frequency of keywords and the intermediary centrality of keywords, suggesting a fragmented research direction in PI on education.

Keywords citation bursts, which refer to keywords that suddenly increase or are used more frequently in a certain period of time, also reflect research hotspots. The keywords with the strongest citation bursts (Figure 3) reflect research topics that were more prominent during the different periods/year in the field of PI. Among them, the top three keywords with the strongest citation bursts from strongest to weakest are kindergarten, PI, and children’s education. Three stages can be roughly divided according to the time when the keyword bursts begin and end.

| Keywords | Year | Strength | Begin | End | 2013 - 2024 |
|---|---|---|---|---|---|
| kindergarten | 2013 | 11.07 | 2013 | 2017 | |
| parent involvement | 2013 | 8.24 | 2013 | 2018 | |
| childrens education | 2013 | 6.66 | 2013 | 2019 | |
| mothers | 2013 | 5.53 | 2013 | 2019 | |
| urban | 2013 | 4.35 | 2013 | 2018 | |
| elementary school | 2014 | 4.34 | 2014 | 2018 | |
| urban education | 2015 | 5.41 | 2015 | 2020 | |
| parent participation | 2015 | 5.13 | 2015 | 2019 | |
| adolescents | 2015 | 4.18 | 2015 | 2020 | |
| partnerships | 2016 | 7.59 | 2016 | 2017 | |
| behavior | 2017 | 5.28 | 2017 | 2019 | |
| student achievement | 2017 | 5.19 | 2017 | 2019 | |
| social class | 2013 | 4.56 | 2018 | 2019 | |
| middle school | 2014 | 8.5 | 2019 | 2022 | |
| mathematics | 2017 | 6.35 | 2019 | 2021 | |
| choice | 2019 | 5.84 | 2019 | 2020 | |
| expectations | 2015 | 4.81 | 2019 | 2020 | |
| early childhood education | 2020 | 5.04 | 2020 | 2024 | |
| parental engagement | 2014 | 6.32 | 2021 | 2024 | |
| parents | 2016 | 5.77 | 2021 | 2022 | |

Fig. 3:Top 20 Keywords with the Strongest Citation Bursts

As shown in Figure 3, the top 20 keywords with the strongest citation bursts in PI research between 2013 and 2024 highlight temporal trends and varying intensities of scholarly attention. Keywords such as “kindergarten”, “parent involvement”, “children education”, “mother” and “urban” demonstrate early and sustained prominence starting in 2013, while terms like "early childhood education" and "parental engagement" gained significant traction more recently, peaking from 2020 or 2021 to 2024. The red bars indicate periods of citation bursts, reflecting heightened academic interest in these topics in the field of PI research. This visualization illustrates the evolving research priorities and emerging areas of focus within the field.

*4.2 Trends and Future Directions in Parental Involvement Research (2013-2024)*

Figure 4 illustrates the annual publication trends in the field of PI from 2013 to 2024.

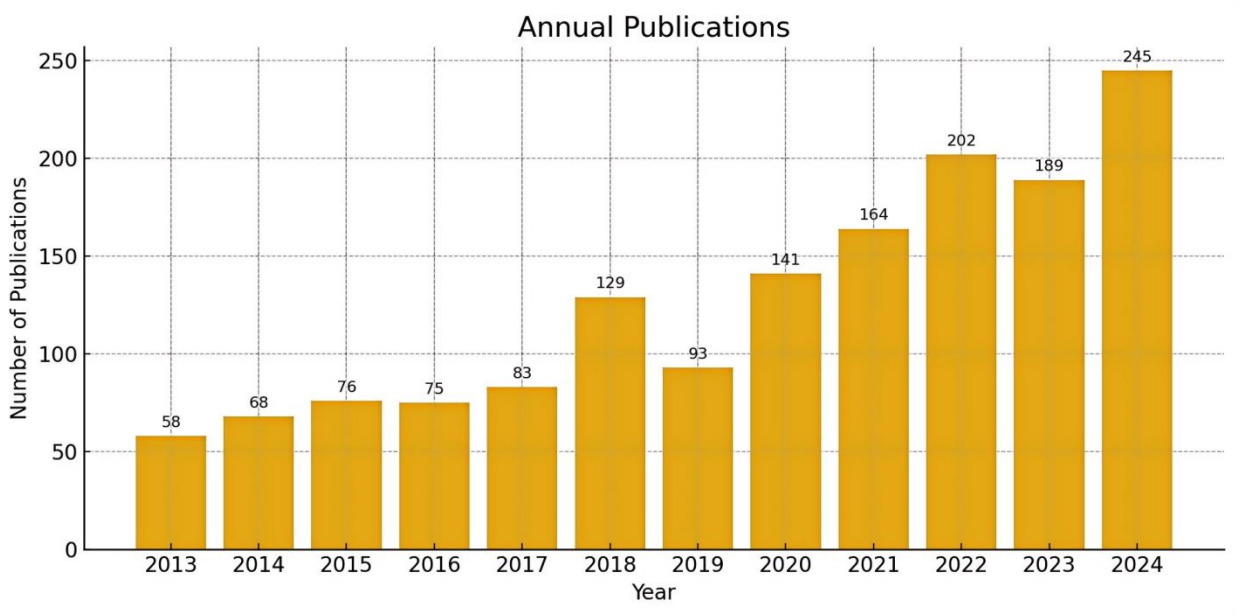


Fig.4:Publication 2013-2024

As shown in Figure 4, there is an upward trend in the number of PI articles over the past 11 years. The annual number of publications steadily increased from 58 in 2013 to 245 in 2024, reflecting growing research interest in the field of PI throughout this period. Although there was a slight dip in the number of publications between 2018-2019 and again between 2020-2021, the overall trend has been upward. There appear to be three phases in the research trend, i.e. fewer than 100 articles between 2013 and 2017, more than 100 articles between 2018 and 2022, except for 2019 (93) and more than 200 articles between 2022 and 2024, except for 2023 (189).

Figure 5 was generated using CiteSpace to present the frequency and pattern of keywords in the field from 2013 to 2024. By analyzing the temporal distribution of keywords, the evolution of academic discussion and the emergence of new research topics can be tracked. This upward trend in annual publications on PI, especially in the post-COVID era from 2022 to 2024, shows that PI for investigation in children's education continues to gain interest.

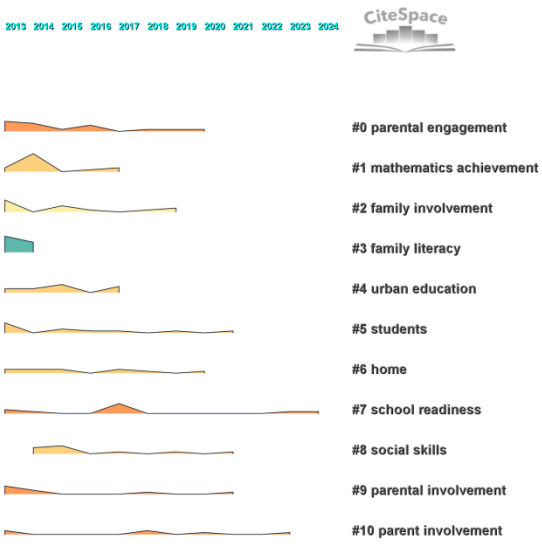


Fig.5:Frequency and Pattern of Keywords in Different Years from 2013 to 2024

As seen in Figure 5, the following keywords occupy a prominent position in research on PI during this period:

1. Parental Engagement (#0): Since 2013, research on PI have received continuous attention, which indicates that the role of parents in school education is a long-term and important research topic.
2.Mathematics Achievement (#1): Peaking in 2017, this keyword reflects a period of heightened interest in how PI impacts mathematics achievement.
3. Family Involvement (#2): With a noticeable surge in 2019, this keyword underscores a growing research interest in the family's educational involvement.
4.Family Literacy (#3): The keyword family literacy peaked in 2013, indicating a significant research interest that year. However, it abruptly “disappeared” by mid-2014, suggesting a shift in research focus or a decline in its prominence within the field..
5.Urban Education (#4): A rise in frequency of research on urban education beginning in 2015 suggests an increased focus on the challenges and dynamics of parental involvement in urban settings.
Other keywords, such as students (#5), home (#6), school readiness (#7), social skills (#8), parental involvement (#9) and parent involvement (#10), also show the focus trend in a particular year, reflecting the diversity and breadth of educational research over the years.
Other key words, such as “home” (#6), “parental involvement” (#9), and “parent involvement” (#10), peaked in 2013. “School readiness” (#7) and “social skills” (#8), also indicate trends of focus in 2017 and 2015, respectively reflects the diversity and breadth of educational research.
The keyword timelines reveal the shift in research interest and the emergence of evolving focus in the field of education. The continued focus on keywords such as PI and "School Readiness" suggests that familial factors and academic performance play central roles in children’s educational success. The increased focus on "Urban Education" and "School Readiness" indicates a focus on responding to policy reforms and initiatives aimed at improving early childhood education in urban areas.

*4.3 Global Landscape of Contributions*

The analysis of the 1,523 bibliometric records should that PI has been an area of interest in 97 different countries across the globe. Figure 6 presents the analysis and research priorities on PI in different countries and regions from 2013 to 2024.

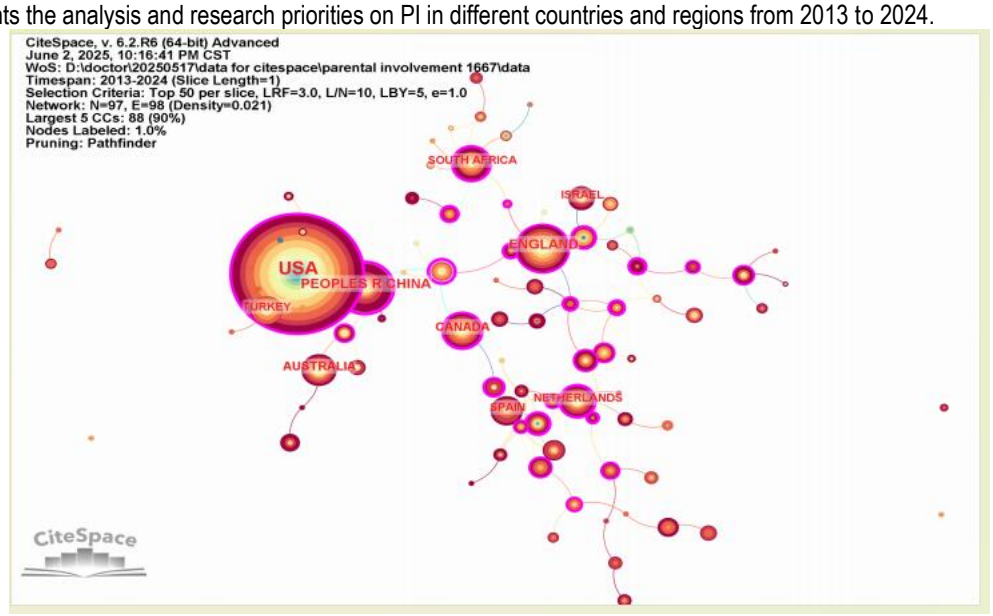


Fig. 6: Top Contributing Country Analysis

The visualization present in Figure 6 was generated with parameters including a time span of 2013-2024, slice length of 1, selection criteria based on top 50 per slice with g-index, LRF=3.0, L/N=10, LBY=5, and e=1.0. The network consists of 97 nodes and 98 edges, with a density of 0.021, suggesting a relatively sparse network of connections among the countries. The largest 5 co-citation clusters (5 CCs) contain 88 nodes, representing 90% of the network, indicating a concentration of prominent countries in this research area. The network was pruned using the Pathfinder algorithm to enhance the clarity and interpretability of the clusters. The modularity Q value of the network is 0.7028, reflecting a significant community structure, and the weighted mean silhouette S value is 0.8712, indicating a reasonable clustering result with good cluster consistency. This analysis highlights the collaborative efforts of scholars across different global regions to advance research in the field of education.
The countries featured in Figure 6 include the United States (USA), England, the People’s Republic of China, South Africa, Canada, Australia, Spain, etc. illustrating the spread of global interest in PI across Eastern and Western countries and the significance of international collaboration on a shared research interest. The prominence of the United States in this network underscores its leading role in PI research.
Details of the number of articles published by the top 10 countries are listed in Table 4. As seen in visualization map in the United States, England, China, Australia, and Canada emerged as the top five countries in terms of research output (see Table 4).

Table 4. Top 10 High Production Countries

| No. | Number of Publications | Centrality | Year | Country |
|---|---|---|---|---|
| 1 | 621 | 0.3 | 2013 | USA |
| 2 | 115 | 0.17 | 2013 | England |
| 3 | 113 | 0.49 | 2014 | Peoples R China |
| 4 | 67 | 0.07 | 2013 | Australia |
| 5 | 56 | 0.35 | 2013 | Canada |
| 6 | 53 | 0 | 2015 | Spain |
| 7 | 52 | 0.23 | 2014 | Netherlands |
| 8 | 49 | 0.31 | 2014 | South Africa |
| 9 | 46 | 0.04 | 2013 | Turkey |
| 10 | 44 | 0 | 2013 | Israel |

Table 4 presents the top 10 countries, the number of research publications in PI, the cenctrality values, and years of prominence. The centrality of the publications appears to be not aligned with the number of publications. China recorded the highest centrality value but in third place (113) in terms of the number of publications. Conversely, the USA records a low centrality value of 0.3 in comparison to its highest number of publications. Spain and Isreal recorded zero centrality, equally low centrality are Turkey and Australia.

## 5.0 Discussion

RQ1: Research Hotspots

The research PI hotspots identified in education primarily focused on the interrelationships between key concepts such as “parental involvement,” “achievement,” “family,” and “education”. The findings imply that educational policies and programs should not only focus on increasing PI in school activities but also on fostering a supportive family environment and strengthening the home-school link, as these aspects are closely related to students’ achievement. The high centrality of the keywords “high school” “urban education” model and attainment reflect their prominent very much earlier in 2013 but not in recent years. The centralities of keywords, albeit, much lower in later years in 2017-2019 shows a shift in focus and prominent that future researchers could consider in developing trends in PI research in the 2020s.

RQ2: Annual Publication Trends in Parental Involvement Research (2013-2023) and Emerging Trends and Potential Areas

The annual publication trends indicate a growing scholarly interest in PI research. From 2013, there was a gradual ascent in the number of publications, culminating in a peak in 2024 with the highest number of publications within the eleven-year span. This surge reflects an increased recognition of the importance of PI in educational outcomes. Despite a slight decline between 2020 and 2021, the overall trajectory suggests a field that is dynamic and expanding, with consistent contributions being made each year.

Emerging trends signal a shift towards examining the home literacy environment, social capital, and the educational needs of children with autism spectrum disorder (ASD) (Westerveld & van Bysterveldt, 2017). There is also a notable increase in research on family-school partnerships.

Emerging trends indicate a continued focus on the home literacy environment and family involvement in education, as well as an increased interest in urban education and school readiness (Romero-González et al., 2023). There has been a noticeable surge in research on family involvement in the early years setting and the supporting role of parents in educational change (Boyle & Benner, 2020; Jill & Kelly, 2017).

RQ3: Global Landscape of Contributions by Countrie

The global landscape is diverse, with 97 countries contributing to the field, which indicates a widespread interest in the topic. The United States, China, England, Australia, and Canada are identified as leading contributors, suggesting a concentration of research output from these regions. This international engagement underscores the global relevance of PI in educational strategies and policies (Organization for Economic Co-operation and Development, 2024; Sakamoto, 2020). The diverse participation from various countries, including South Africa, Spain, and the Netherlands, further illustrates the global significance and reach of PI research, indicating that it is a topic of interest and importance across multiple educational systems and cultural contexts.

## 6.0 Conclusion& Recommendations

The findings reveal the research hotspots in this field focus on topics such as family literacy, home-school partnership, and digital participation. The number of published papers has been continuously increasing, and the empowerment of PI through digital technology has become an emerging trend. The United States holds a dominant position in this field, and the contributions of Asian countries such as China have significantly increased. A few highly cited institutions have formed the core nodes for knowledge dissemination. The limitations of this study lie in the fact that only the literature from the Web of Science Core Collection was included, which may have missed some regional research results.

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## Paper Contribution to Related Field of Study

This study contributes to parental involvement (PI) research in three ways. Methodologically, it employs CiteSpace bibliometric analysis to map the intellectual structure of 1,523 publications, offering an objective, evidence-based overview beyond traditional

narrative reviews. Empirically, it identifies critical hotspots—home literacy, school-family collaboration, and digital participation—and traces emerging interdisciplinary trends. Practically, by revealing the global contribution landscape, it provides researchers and policymakers with a strategic reference for collaboration opportunities and evidence-based interventions to enhance parental engagement and student quality of life across diverse settings.

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