



Foundation And Education at The Elementary School Level: Bibliometric Analysis

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Abstract: This study aims to analyze the development of scientific studies on education at the elementary school level using a bibliometric approach. By utilizing data from various reputable academic databases, this study identifies research trends and the most discussed topics in this field. The methods used include citation analysis, co-word analysis, and network visualization using VOSviewer bibliometric software. This study provides a comprehensive picture by describing descriptive parameters of publications and extracting keywords from authors in the field of Foundations and Education in Elementary schools. This study includes a primer for researchers to gain a better understanding of the progress in scholarly publications related to Foundation Education at the elementary school level. A thorough examination of 266 documents found in the Scopus database was conducted from 2008 to 2024. According to the findings, the number of publications fluctuated, with the highest number of publications occurring between 2008 and 2024, totaling 266 documents. Of these publications, the United States and the United Kingdom were the most productive countries. Overall, research on this topic continues to evolve, with new methods and directions being established. The main contribution of this study is to provide a comprehensive insight into the landscape of basic education research, while identifying research gaps that can form the basis for further studies. The findings also have implications for education policy-making, particularly in developing more effective and evidence-based learning strategies. Thus, this research not only provides a historical overview of the development of basic education studies but also serves as a valuable reference for academics, educators, and policymakers in improving the quality of education at the elementary school level.

Keywords: bibliometric; education; elementary school; foundation

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INTRODUCTION

Education at the elementary school level is the primary foundation for shaping students' character, skills, and basic knowledge (Carse, 2015). As the initial level in the formal education system, elementary schools play a crucial role in instilling fundamental values and cognitive skills that will be built upon in the next level of education. In a global context, various studies have been conducted to understand the dynamics of primary education, examining aspects of pedagogy, curriculum, and policy implementation (Stukalo & Lytvyn, 2021). Bibliometric analysis is an effective method for exploring research trends in the field of basic education (Putri et al., 2022). Using this approach, we can identify publication patterns, main authors, leading institutions, and dominant topics in research related to primary education. This study is important to understand the direction of research development and its implications for education policy. The development of basic education faces various challenges, including those related to curriculum, teaching methods, and the use of technology in the learning process (Carse, 2015). Along with the times, traditional learning methods have evolved into more interactive and technology-based approaches. Therefore, it is necessary to map the academic studies conducted in this field to provide a more comprehensive insight into the emerging trends and issues in basic education (Zawacki-Richter et al., 2019). Bibliometric studies enable the analysis of published academic literature to examine how research in the field of primary education has evolved (Gazali et al., 2021). Thus, this article aims to analyze various scientific publications related to primary education using a bibliometric approach, providing a comprehensive picture of research trends and aspects that have been most studied in recent years.

So far, there are not many articles written about the foundation of education at the elementary school level, let alone those published in Scopus. So far, there has been more writing on education in general, even if it accounts for more than 10%. The foundation of education at the elementary school level, or "Foundation and Education at Elementary School" in Indonesian, is an important aspect in the development and academic journey of children (Arifin, 2017). Primary education lays the initial foundation for a child's academic and personal growth (Roesminingsih, 2019). It lays the foundation for future learning, critical thinking, and social development (Rahmah, 2018). The foundation established during elementary school has a significant impact on a child's overall educational pathway and their ability to succeed in higher levels of education (Purwanto & Susanto, 2018). The primary level curriculum plays a crucial role in shaping the educational experience of young students

(Samsudin, 2021). It should be designed to provide a well-rounded education, covering a wide range of subjects, including language arts, math, science, social studies, and the arts (Suherman, 2014). The curriculum should be age-appropriate, engaging, and aligned with national education standards to ensure that students acquire essential knowledge and skills (Sulastini, 2018). Effective teaching methods are essential in creating a conducive learning environment for elementary school students (Lubis, 2019). Educators should use diverse pedagogical approaches to cater to different learning styles and abilities (Abong, 2015). This may include interactive and experiential learning, cooperative group activities, project-based learning, and integration of technology to enhance the learning process (Nugraha, 2015). Assessing student progress and understanding is an integral part of the education process (Miftakhuddin, 2020; Wijayanti, 2017). Assessment methods should be fair, impartial, and designed to provide valuable feedback to students and teachers (Sukendro, 2006).

Teachers are the cornerstone of education at the primary level (Manasikana & Anggraeni, 2018; Kolovelonis et al., 2011). They serve as learning facilitators, mentors, and role models for their students. Effective elementary school teachers not only have strong subject knowledge but also the ability to maintain a supportive and inclusive classroom environment where every student feels valued and encouraged to learn (Abduljabar, 2014). The involvement of parents and the local community is instrumental in supporting the foundation of education at the primary level (Depdiknas, 2003; Rahman et al., 2020). Parents should be actively involved in their children's education, collaborating with teachers to reinforce learning at home and participating in school activities. Additionally, community partnerships can provide valuable resources and support to enhance the overall educational experience for elementary school students (Suryana, 2020).

A positive school culture is crucial for establishing a strong educational foundation at the elementary level (Suryana, 2020). Schools should prioritize creating a safe, inclusive, and supportive environment where students feel motivated to learn and explore their interests (Muhson, 2010; Balga et al., 2015). This includes fostering positive relationships among students, promoting respect and empathy, and celebrating diversity within the school community. Primary education should embrace diversity and promote inclusion to ensure that every student feels represented and valued (Mahat et al., 2019). Educators must be culturally sensitive, accommodate diverse learning needs, and provide resources that reflect the diverse backgrounds and experiences of their students (Fraenkel et al., 2006). Creating an inclusive learning environment fosters a sense of belonging and equality among all learners. Continuous professional development is essential for educators to stay current with best practices and advances in pedagogy in basic education (Fayolle & Gailly, 2008). Teachers should have access to ongoing training, workshops, and collaboration opportunities to improve their teaching skills, classroom management techniques, and understanding of child development (Dwiyoogo & Cholifah, 2016). Based on the explanation above, the author conducted an analysis using bibliometrics regarding Foundation and Education at Elementary School, which begins with the published articles, then examines the authors, citations, and countries that publish articles. This study aims to provide a descriptive analysis of articles on Foundation and Education at Elementary School published in Scopus data journals. This article is likely to employ bibliometric methods to analyze research trends in elementary school education. This approach is relatively rare compared to education research, which is generally qualitative or quantitative and experiment-based (Donthu et al., 2021). The use of the word 'foundation' suggests a focus on the fundamentals of elementary education, in terms of theory, policy, and teaching practice. A bibliometric analysis of this concept could provide new insights into how the foundations of primary education are developed in the scientific literature (van Eck & Waltman, 2014). With bibliometric analysis, this article is likely to reveal research patterns, inter-researcher collaborations, and under-explored areas in basic education. This could help determine the direction of future research in the field. If the article discusses how bibliometric results can be used to improve educational practices at the elementary school level, this adds to its novelty value in applying research results to the real world.

METHODS

This study uses bibliometric methods to analyze trends in scientific publications related to foundations and education at the elementary school level. Bibliometric analysis allows researchers to identify research patterns based on the number of publications, collaboration between authors and institutions, and keywords that frequently appear in scientific literature (Donthu et al., 2021). The primary objective of this study is to examine the development of research in the field of primary education, identify research gaps, and provide insights for academics and policymakers on the direction of future studies. This research focused on the entire process of data collection and data screening for Foundation and Education at Elementary Schools.

An important step in this bibliometric review investigation is to determine and clarify the research purpose (Sofyan et al., 2023). Research data was collected from the Scopus scientific database, including information on article title, abstract, keywords, publication year, number of citations, and author and institution names. Instruments used in the analysis include VOSviewer software for mapping research networks and facilitating collaboration. Data analysis techniques were employed through a descriptive approach to examine publication trends over time, collaboration network analysis to understand the relationships between

researchers, and co-word analysis to identify the main themes in basic education research (Aria & Cuccurullo, 2017). Figure 1 illustrates the Scopus document collection procedure, which was then analyzed (Moher et al., 2009).

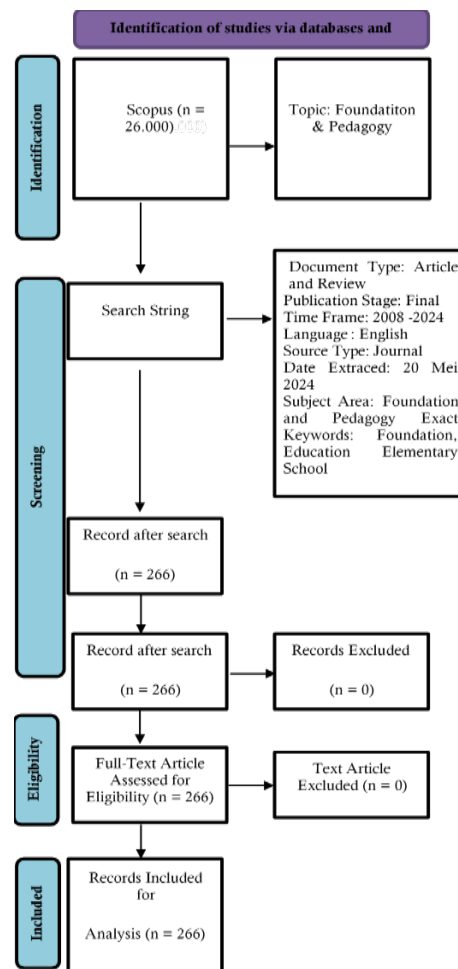


Figure 1. PRISMA Flow Chart of Search and Screening Strategy
(Adapted from Anandh et al. (2021), Gebre et al. (2021),
Faulkner et al. (2022), Moher et al. (2009), Eka et al. (2023))

The primary objective of this bibliometric review was to examine the trends in publications related to foundations and education in elementary schools within the Scopus database. Using a document examination approach in the Scopus database, the investigation was completed in the context of a descriptive analysis, in this descriptive analysis, to obtain the Scopus database, a keyword search was performed TITLE-ABS-KEY (foundation AND education AND elementary AND school) AND PUBYEAR > 2008 AND PUBYEAR < 2024 AND (LIMIT-TO (DOCTYPE, "ar")), to retrieve Scopus data was conducted on May 20, 2024 Scopus database was chosen because it contains more documents than Web of Science and PubMed (Sofyan, 2022) and has been frequently cited in previous research (Mollah et al., 2021). This study utilized data in Comma-separated Values (CSV) and Research Information Systems (RIS) formats, which were exported to Microsoft Excel. The data were then analyzed using Publish or Perish (Moher et al., 2009; Retter, 2009).

The data collected includes author name, document source, year of publication, publication title, scholarly source, subject area, and publication type. The amount of metadata required for analysis varies significantly in bibliometric analysis (Thelwall, 2008; Aria & Cuccurullo, 2017). The number of metadata numbers for bibliometric analysis is not specified, nor are the minimum and maximum metadata standards eligible for analysis. The total number of papers to be retrieved for each document is the same, and each paper should be selected only once. The sample sizes of papers are 20, 50, 100, 200, 500, 1,000, and 2000 for bibliometric analysis; a minimum of 50 documents is required; 50-100 documents; 300 documents (Zawacki-Richter et al., 2019; Donthu et al., 2021); 100-300 documents (van Eck & Waltman, 2010; Sofyan, 2022). This means that no specific number of metadata has been set. Therefore, 133 metadata in this study are considered sufficient to conduct a bibliometric analysis on the topic of foundations and education at the elementary school level worldwide.

RESULT AND DISCUSSION

Between 2008 and 2024, the number of articles on Foundations and Education at Elementary School published was 266 articles. The highest number of publications was in 2023, with 30 publications, while the lowest was in 2010, with five publications. The publication of articles related to the Foundation and Education at Elementary School, as listed in the Scopus database, is displayed in Figure 1.

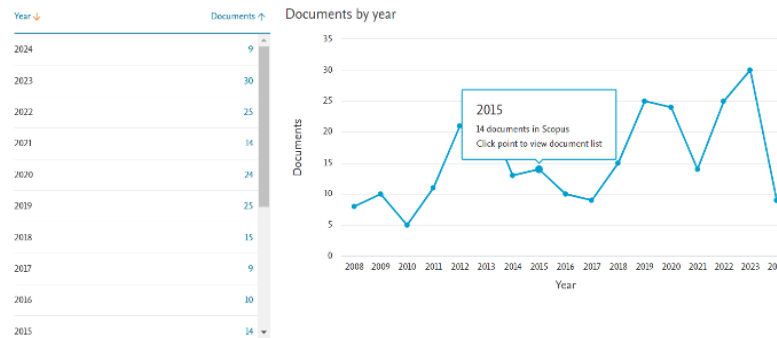


Figure 1. Article Publication of Foundation and Education at Elementary School in Scopus Database by Year

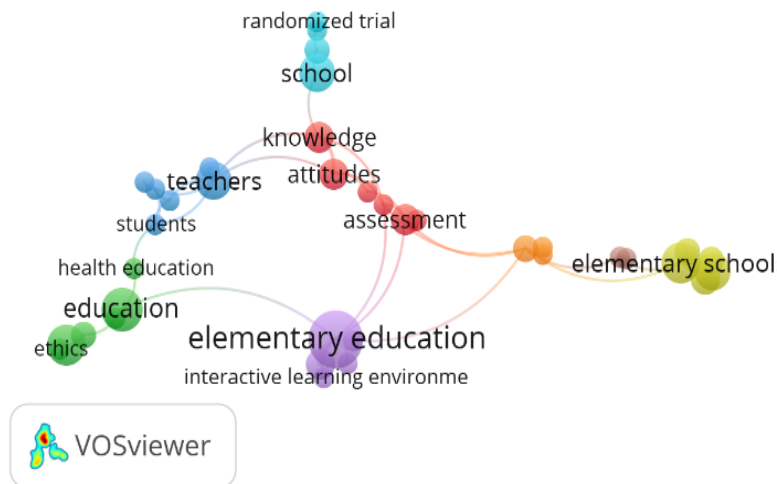
Table 1 displays the top 10 most cited articles. Hallett's article, published in 2010, was cited 528 times, a very high number. Then there is the article by Cohen, Inagami, and Finch in 2008, which has garnered 236 citations. In third place is Capobianco et al., whose publication in 2011 garnered 216 citations. The article by Lehrer and Schauble in 2012 had 189 citations. In 10th place is the Sardenberg article in 2013 with 83 citations. Table 2 displays the top 10 most used keywords.

Table 1. Cited Articles

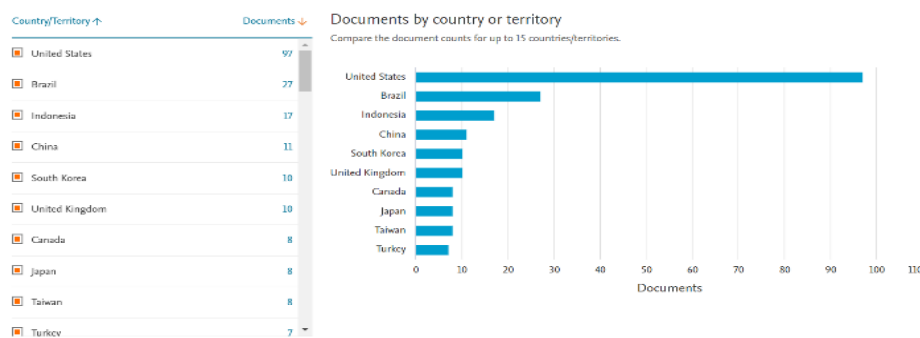
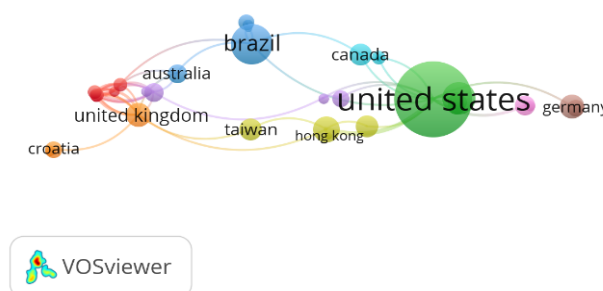
Authors	Title	Year	Cited by
Hallett T.	The myth incarnate: Recoupling processes, turmoil, and inhabited institutions in an urban elementary school	2010	528
Cohen D.A.; Inagami S.; Finch B.	The built environment and collective efficacy	2008	236
Capobianco B.M.; Diefes-Dux H.A.; Mena I.; Weller J.	What is an engineer? Implications of elementary school student conceptions for engineering education	2011	216
Lehrer R.; Schauble L.	Seeding evolutionary thinking by engaging children in modeling its foundations	2012	189
Drever A.I.; Odders-White E.; Kalish C.W.; Else-Quest N.M.; Hoagland E.M.; Nelms E.N.	Foundations of financial well-being: Insights into the role of executive function, financial socialization, and experience-based learning in childhood and youth	2015	142
Plummer J.D.; Krajcik J.	Building a learning progression for celestial motion: Elementary levels from an earth-based perspective	2010	97
Carr J.M.	Does math achievement h'APP'en when iPad and game-based learning are incorporated into fifth-grade mathematics instruction?	2012	97
Lapiz S.M.D.; Miranda M.E.G.; Garcia R.G.; Daguro L.I.; Paman M.D.; Madrinan F.P.; Rances P.A.; Briggs D.J.	Implementation of an Intersectoral Program to Eliminate Human and Canine Rabies: The Bohol Rabies Prevention and Elimination Project	2012	94
de Medeiros A.M.; Barreto S.M.; Assunção A.A.	Voice Disorders (Dysphonia) in Public School Female Teachers Working in Belo Horizonte: Prevalence and Associated Factors	2008	88
Sardenberg F.; Martins M.T.; Bendo C.B.; Pordeus I.A.; Paiva S.M.; Auad S.M.; Vale M.P.	Malocclusion and oral health-related quality of life in Brazilian school children: A population-based study	2013	83

Table 2. Article Publication of Foundation and Education at Elementary School by Keywords

Cluster	Keyword Item
Cluster 1	6 Item
Cluster 2	6 Item
Cluster 3	6 Item
Cluster 4	5 Item
Cluster 5	5 Item
Cluster 6	4 Item
Cluster 7	3 Item
Cluster 8	2 Item

**Figure 2.** The Distribution of Article Publication of Foundation and Education at Elementary School by Keywords

Several countries often publish articles related to Foundation and Education in Elementary School. There are 66 countries recorded, with the United States being the first country to have the most publications, followed by Brazil. After that, there are Indonesia, China, and South Korea. The distribution is displayed in Figure 2.

**Figure 2.** Article Publication of Foundation and Education at Elementary School by Country**Figure 3.** The Distribution of Article Publication of Foundation and Education at Elementary School by Country

Data obtained for authors of articles published in Scopus reveals that nine individuals have published the same number of documents: Almagia, Fatima, Houser, Ivanovic, Jain, Kriellaars, Lumintuarso, Sayers, and Thomas, with each having two publications.

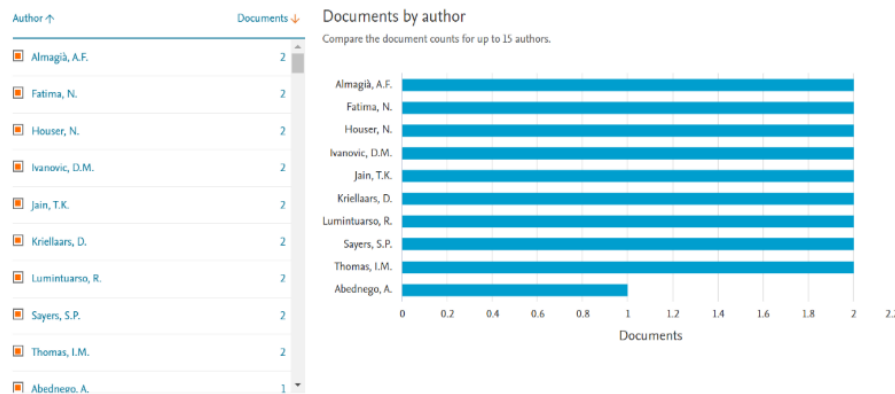


Figure 3. Article Publication of Foundation and Education at Elementary School by Authors

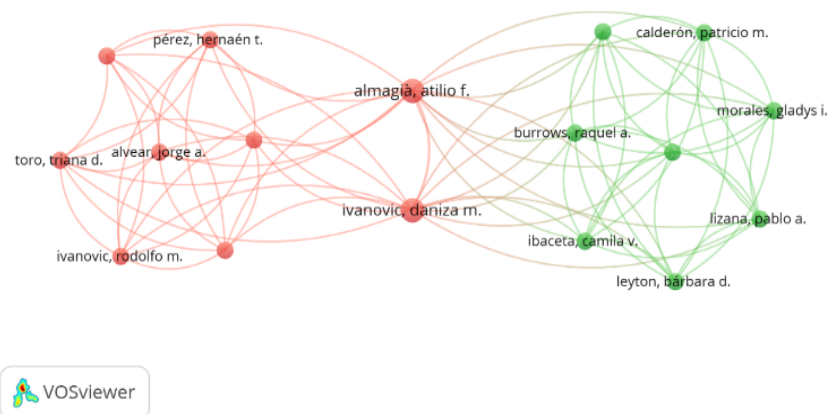


Figure 4. The Distribution of Article Publication of Foundation and Education at Elementary School by Authors

This study provides a robust analysis in identifying research gaps related to foundations and education at the elementary school level. The bibliometric results indicate that, despite an increase in the number of publications in recent years, there are still areas of research that remain under-explored, such as the effectiveness of technology-based learning methods at the primary level, as well as the relationship between educational policies and students' academic achievement. Additionally, analysis of collaboration networks reveals that research is still predominantly conducted by certain countries, with minimal involvement from academics in developing regions. This indicates the need for wider international collaboration to enrich perspectives in basic education. The specification of the findings in this study highlights novelty in several aspects. Firstly, the identification of research trends indicates a shift in focus from traditional approaches towards the use of technology and innovation in learning.

Secondly, keyword and co-word analysis revealed that concepts such as personalized learning and STEM education appear more frequently in recent literature, suggesting a paradigm shift in the way basic education is designed and implemented. Thirdly, the analysis revealed that most research still focuses on academic aspects, while psychosocial aspects and student well-being have not received equal attention. The impact and contribution of this research to science are significant. The findings provide a more precise mapping of trends and gaps in basic education research, which can serve as a foundation for future studies. From an academic perspective, this research helps to direct the focus of research to areas that have not been widely explored, thereby improving understanding of how basic education can be more effective and inclusive. From a policy perspective, the results of this study can serve as recommendations for policymakers in developing more evidence-based education programs, particularly in designing curricula that align with the latest developments in education. Thus, this research not only enriches academic studies but also has practical implications that can improve the quality of basic education in various countries.

CONCLUSION

Bibliometric analysis can reveal trends, collaboration patterns, and gaps in basic education research. The results indicate an increase in the number of publications in recent years, particularly in the areas of technology-based learning innovations and modern pedagogical approaches. However, there are still gaps in the psychosocial aspects of students and the involvement of academics from developing countries. The findings offer valuable insights for academics to develop more in-depth research and for policymakers to design evidence-based education strategies that improve the quality of basic education globally. Aside from the valuable information provided by this paper, some limitations should be highlighted to help readers and future researchers better understand it. This study has several limitations. Although the researchers only used one database, other databases, such as PubMed, Google Scholar, or Web of Science (WoS), may be able to include more documents than Scopus. The researchers preferred the Scopus database because it publishes articles in high-impact journals.

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