

Bibliometric Analysis: Inclusive Mathematics Education Research

Edi Supriyadi¹(⊠), Indah Puspita Sari², Ahmad Lutfi Fauzi³, Mahmudin³, Jarnawi Afgani Dahlan³, Didi Suryadi³, Elah Nurlaelah³, Tatang Herman³, Rani Sugiarni³, and Dadang Juandi³

¹ Bandung College of Technology, Bandung, Indonesia edipmatematika@gmail.com ² IKIP Siliwangi, Bandung, Indonesia ³ Indonesia University of Education, Bandung, Indonesia {ahmadlutfifauzi,algarutimahmudin,jarnawi,tatangherman, ranisugiarni,dadang.juandi}@upi.edu

Abstract. Regarding the topic of how inclusive mathematics educations can be implemented in schools, there has been a scarcity of published research. They have investigated inclusive education promotion and strategy in mathematics class-rooms. On the basis of information extracted from 136 Scopus online database documents, inclusive mathematics education research was analyzed using bibliometric methodologies. The results indicate that: 1) Mathematics education research has received the attention of many researchers and authors initially presented with an average annual growth of 10.07% of publications; 2) The main research institution in inclusive mathematics education and faculty of education.; 3) International Journal of Disability Development And Education and Sustainability Switzerland are the main journals that publish articles on inclusive mathematics education", "mathematics", "child", "human", and "teaching" is very high, which is the focus of research in the field of inclusive mathematics education.

Keywords: inclusive educations \cdot mathematics educations \cdot bibliometric analysis

1 Introduction

There has been a paucity of research that has been published in relation to the subject of how inclusive mathematics educations may be implemented in schools [1, 2]. They have explored about how to promote and strategize inclusive education in mathematics classrooms [3, 4].

This study intends to conduct a bibliometric analysis to answer the following research questions: How is the growth.

of inclusive mathematics education research publications every year?; Who is the most prolific writer of inclusive mathematics education research?; which institution has

the most inclusive mathematics education research publications?; What keywords often appear in inclusive mathematics education research?

2 Method

In the initial part of our process, we conducted a search in the Scopus online database based on the topic, and then downloaded 136 bibliographic publications that contained the textual keywords "inclusive education" and "mathematics." The RStudio package software application version 4.1.3 is the one that we are utilizing. Second, in order to analyze and visualize the bibliographic data, we have the R environment equipped with the bibliometric package. After that, we developed a descriptive network from the datasets that we had previously gathered with the use of the bibliometric feature. At the end of the day, the biblio-analysis function is responsible for generating descriptive data from the bibliographic data. Displaying the results can be accomplished through the use of the generic function R (plot) [5, 6].

3 Result and Discussion

The Scopus platform served as the foundation for this research report. When looking for useful content, "inclusive education" and "mathematics" are good search terms to use. The retrieval performed on the 30th of July, 2022 resulted in the discovery of a total of 136 documents.

Table 1 displays the many research articles that are published each year on the topic of inclusive mathematics education. According to Table 1., the amount of published research on inclusive mathematics education throughout the course of the first eight years was extremely low, averaging only 0.2 articles per year. The number of publications doubled in 2015, reaching a total of 6. Between the years 2019 and 2021, the number remained consistent at about 20 articles per year. This research on inclusive mathematics education has a rating of 10.07 percent research increase in Annual Scientific Production. This demonstrates that researchers are paying attention to this field, which indicates



Fig. 1. Annual Publication Inclusive Mathematics Education Research

that its growth will continue. Figure 1 presents a line chart with each year represented individually.

According to the statistics, there are a total of 431 authors across all 136 documents, and the degree of joint effort is 3.4. The authors with the most publications are Miriam Godoy Penteado and Ole Skovsmose Both of them have authored four different documents that have been published. Following them in the rankings are Knigge, Marcobe, Padilla, and Tan, all of whom have authored three different works. Table 2 contains a list of authors who have had at least two publications published each.

Taking into account that it is only the first institution for each article, the Universidade Estadual Paulista Jlio de Mesquita Filho is the number one institution that has the most publications in the field of inclusive mathematics education research with a total of 9 articles. This is due to the fact that it is the first institution for each article. The University of Hawaii at Manoa, the University of Monash, the Universitat Potsdam, and the University of Aalborg are the following educational establishments, and each of them publishes four publications. The organizations that publish three or more articles are listed in Table 3, which may be found here. The information presented in Table 4 demonstrates that the core research institutions are, for the most part, professional institutions that house faculties of education as well as professionals in the field of education.

Statistics show that 111 articles were published in 90 journals, which shows that inclusive mathematics education research has received attention from many journals. The International Journal of Disability Development And Education has the most publications (6 articles), followed by Sustainability Switzerland (4 articles), and the ACM International Conference Proceeding Series, Bolema Mathematics Education Bulletin,

Year	Document	Year	Document
2022	10	2009	0
2021	24	2008	0
2020	20	2007	4
2019	28	2006	1
2018	10	2005	0
2017	7	2004	2
2016	7	2003	0
2015	6	2002	0
2014	3	2001	0
2013	2	2000	0
2012	6	1999	0
2011	2	1998	1
2010	3		

Table 1. Annual publication inclusive mathematics education research

Author	f	Ref.	Author	f	Ref.
Penteado	4	[7–10]	Esparza	2	[11, 12]
Skovsmose	4	[8, 10, 13, 14]	Ferres	2	[15, 16]
Knigge	3	[8, 10, 17]	Kollosche	2	[8, 10]
Marcone	3	[8–10]	Lendák-Kabók	2	[18, 19]
Padilla	3	[20-22]	Miesenberger	2	[23, 24]
Tan	3	[20-22]	Mihnev	2	[25, 26]
Arteaga	2	[11, 12]	Moura	2	[7, 14]
Batusic	2	[23, 24]	Scherer	2	[27, 28]
Boytchev	2	[25, 26]	Shin	2	[29, 30]
Canul-Reich	2	[11, 12]	Stefanov	2	[25, 26]
Demo	2	[31, 32]	Stefanova	2	[25, 26]
Deppeler	2	[33, 34]	Zafirova- Malcheva	2	[25, 26]

 Table 2. Relevant author from inclusive mathematics education research

Table 3. Relevant affiliation from inclusive mathematics education research

Affiliation	Freq.
Universidade Estadual Paulista Júlio de Mesquita Filho	9
University of Hawai'i at Mānoa	4
Monash University	4
Universität Potsdam	4
Aalborg University	4
Universidade de São Paulo	3
Universidade Federal de São Paulo	3
Université du Québec à Montréal	3
The University of New Mexico	3
University of Novi Sad	3

European Journal Of Special Needs Education, Mathematics Education Research Journal, Zdm Mathematics Education with 3 articles each. Journals that published 2 or more articles are shown in Table 4.

According to the statistics, there were 111 articles published in 90 different publications, which demonstrates that research on inclusive mathematics education has gotten attention from a large number of journals. The most articles have been published in the International Journal of Disability Development and Education with six, followed

Source	Freq.
International Journal Of Disability Development And Education	6
Sustainability Switzerland	4
ACM International Conference Proceeding Series	3
Bolema Mathematics Education Bulletin	3
European Journal Of Special Needs Education	3
Mathematics Education Research Journal	3
Zdm Mathematics Education	3
Advances In Intelligent Systems And Computing	2
Aip Conference Proceedings	2
British Journal Of Visual Impairment	2
Education Inquiry	2
Education Sciences	2
Eurasia Journal Of Mathematics Science And Technology Education	2
International Journal Of Inclusive Education	2
Investigations In Mathematics Learning	2
Journal Of Intellectual Disability Research	2
Journal Of Research In Special Educational Needs	2
Plos One	2

 Table 4. Relevant Source from Inclusive Mathematics Education Research

by Sustainability Switzerland with four articles, and then the ACM International Conference Proceeding Series, the Bolema Mathematics Education Bulletin, the European Journal of Special Needs Education, the Mathematics Education Research Journal, and Zdm Mathematics Education with three articles each. Table 5 contains a list of periodicals that have published two or more articles each.

Words	Freq.	Words	Freq.
Inclusive education	19	Education	12
Mathematics	19	Student	11
Child	16	Humans	10
Human	16	Learning	9
Teaching	16	Adolescent	7
Female	15	Controlled Study	6
Male	15	Academic Achievement	5
Students	15	Curricula	5
Educational Status	13	Language	5
Article	12	School child	5

 Table 5. Frequency Keywords from Inclusive Mathematics Education Research

4 Conclusion

Through a bibliometric analysis of the Scopus database in inclusive mathematics education research, the following characteristics can be found in the study of this field:

- 1) Mathematics education research has received the attention of many researchers and authors initially presented with an average annual growth of 10.07% of publications.
- 2) The main research institution in inclusive mathematics education is a professional institution that has professional experts in the field of education and faculty of education.
- 3) International Journal of Disability Development And Education and Sustainability Switzerland are the main journals that publish articles on inclusive mathematics education research.
- 4) The frequency of keywords "inclusive education", "mathematics", "child", "human", and "teaching" is very high, which is the focus of research in the field of inclusive mathematics education.

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