
LITERATURE MAPPING AND COLLABORATION ON INCLUSIVE EDUCATION

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SUMMARY

Currently, inclusive education is defined as education for all students regardless of their difficulties or disabilities. Students should be educated together in an educational environment that ensures and facilitates individualized support for each of them, allowing for the maximization of their academic and social development. Inclusive education requires adaptation to the characteristics and needs of students in an environment that ensures and promotes their academic and social development. Through a bibliometric analysis, this study seeks to provide an adequate discussion of the existing research and considers the information published in the Web of Science between 1975 and

2022. The resulting scientometric analyses address the number of publications and citations, authors and main journals, institutions, countries, and the co-occurrence of keywords. One of the main conclusions of this work is the abundance of studies conducted on inclusive education, which is evident in both the number of published articles and citations of these studies. In terms of productivity and influence, the research by Umesh Sharma and Susanne Schwab stands out, as do the countries of England, the United States, and Spain in the analysis. Finally, the limitations of this work are those inherent to a bibliometric analysis and the data used.

Introduction

In recent years, multiple international agreements have promoted the inclusion of students with special educational needs (SEN) in mainstream education systems (UNESCO, 2015). These agreements highlight the benefits of inclusive education (Hernández-Torrano *et al.*, 2022). Inclusive education is now understood as

a system where all students, regardless of their challenges or disabilities, are taught together in an environment that provides personalized support, fostering their academic and social development (Douma *et al.*, 2022; Van Mieghem *et al.*, 2020).

This definition suggests that both students with and without SEN should receive education tailored to their individual needs within a regular educational setting that promotes effective

inclusion (Douma *et al.*, 2022). Licardo (2019) and Van Mieghem *et al.* (2020) highlight that students with SEN often struggle with key competencies throughout their lives, face more challenges during their school years, and are at higher risk of dropping out compared to students without SEN.

Students with special educational needs face difficulties related to cognitive processing, which essential for providing responses and facilitating

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the ability to learn (Van Mieghem *et al.*, 2020). When it comes to "learning how to learn", these difficulties are strongly linked to executive dysfunctions that hinder the organization of learning and disrupt processes such as data collection, self-regulation, cognitive flexibility, task prioritization, and socioemotional development (Van Mieghem *et al.*, 2020). As a result, researchers recommend fostering the learning-to-learn competency as a lifelong skill (Licardo, 2019).

The debate over the benefits of integrating students with special educational needs (SEN) into mainstream education remains ongoing (Ruijs and Peetsma, 2009; Gottfried *et al.*, 2016). Advocates for inclusion argue that it allows SEN students to reach their full potential, while it also helps students without SEN develop social skills (Watkins *et al.*, 2015). However, opponents contend that teachers may devote too much attention to SEN students, leading to distractions for those without special needs (Contreras *et al.*, 2020).

The inconclusive results of studies about the benefits of school inclusion suggest the need for a bibliometric analysis that synthesizes knowledge and adequately discusses the findings published in major scientific journals (Web of Science, WoS) to support further research. The remainder of this manuscript is organized as follows: Section 2 discusses the literature, Section 3 presents the data and methods, Section 4 presents and discusses the results, and finally Section 5 concludes.

Literature Review

International evidence

For most children, schools provide a space to learn, socialize, and build competencies, offering opportunities for interaction that support inclusive education (Kart and Kart, 2021; Schaffer, 1996). Given the current emphasis on inclusion, the Index for Inclusion is being utilized (Booth and Ainscow, 2002), providing a framework to promote effective student integration.

Kart and Kart (2021) and Pijl *et al.*, (2010), argue that "inclusive" education should embrace a wide diversity of students to address both general and individual educational needs. Inclusion in education is defined as creating conditions that support students' learning by considering into account their unique characteristics and circumstances.

Dennis *et al.*, (2016) found that specialized learning programs help students with learning difficulties

improve problem-solving skills and apply strategies to new situations. On the other hand, studies by Gottfried and Kirksey (2019) and Ruijs (2017) showed no significant academic benefits for non-SEN classmates when students with SEN were integrated. Thus, the main argument for inclusion focuses more on enhancing social skills than on academic gains.

Aizer (2008) studied the impact of students with attention deficit hyperactivity disorder (ADHD) on their peers, showing that negative effects on academic performance were mitigated with proper assistance after diagnosis. The findings suggest that students with ADHD do not need to be separated to minimize negative impacts when adequate support is available.

Gottfried (2014) conducted a quasi-experimental study on the effect of inclusion on non-cognitive skills in primary education students, revealing a negative impact overall. The study differentiated between temporary and permanent special educational needs, identifying their distinct effects. It also emphasized that teachers' characteristics and experience play a crucial role in developing non-cognitive skills effectively.

Ruijs (2017) studied the impact of SEN students on their classmates as well; however, the results show that they do not have a statistically significant effect on the academic performance of their classmates without SEN. Despite the importance of this topic, research on inclusive education has been mainly conducted in developed countries, and evidence has shown mixed results regarding integration between students with and without special educational needs (Gottfried *et al.*, 2016).

Methods

A retrospective bibliometric analysis is the method chosen for this study, which refers to the application of statistical methods to determine the qualitative and quantitative evolution of a scientific research topic, the understanding of the publications' profile on the topic, and the identification of trends within a discipline (De Bakker *et al.*, 2005), as well as a scientometric analysis defined by Nalimov and Mulcjenko (1971) as the development of "the quantitative research methods on the progress of science as an informative process". Scientometrics involves ways to measure the quality and impact of research, the comprehension of citation processes, the cartography of scientific fields, and the use of indicators in research policy and management (Mingers and Leydesdorff, 2015).

The search for this study is directed towards an online database within the Web of Science (WoS), which stores scientific papers from various disciplines. The search comprises the oldest records dating back to 1975 up to the most recent ones from 2022, valid until the moment this research was conducted. For a broader range, the eight indexes that compose the core collection of Web of Science have been considered (SSCI, ESCI, SCI-EXPANDED, BKCI-SSH, A&HCI, CPCI-SSH, BKCI-S, CPCI-S).

In this investigation, the most relevant indicators linked to the baseline concept "Inclusive Education" will be analysed in all languages. The search yielded 7,579 findings, which is why it was limited to articles only, excluding other resources such as book chapters and editorial. In the end, 6,627 documents were selected, which have been cited 57,309 times.

The bibliometric indicators used for the analysis are articles, citations, journals, institutions, authors and countries. Furthermore, scientometric analyses were conceived to check co-authorship among authors, institutions, countries and keywords related to "inclusive education". This way it is possible to design a detailed map with key concepts based on frequency data and their corresponding clusters. The results have been analysed using social network analysis techniques based on graph theory, with the aid of VOS viewer software version 1.6.15. The search was conducted in the WoS database, updated on April 15, 2023, using the following query: TS= ("inclusive education") OR ALL= ("special educational needs"). In this context, TS refers to a term search across the title, abstract, and keywords of the author, article or book in the database.

Results

Articles and citations in the study area

A search for articles related to "inclusive education" from 1975 to 2022 yielded 6,627 results published between 1977 and 2022. Regarding the search results, the earliest article was published in 1977 by Kirten and Liverman, which suggests that any concept-related paper published prior to that year may not have appeared in WoS-indexed journals. In total, the articles have garnered 57,309 citations, a number that exhibits exponential growth calculated by the formula $y=1*10^{(-146)} e^{(0.1695 x)}$, with $R^2 = 94.75\%$. Hence, it can be concluded that scientific production has experienced exponential growth, as the increase in the

critical mass of this research topic is evident (see Figure 1).

Figure 1 illustrates a steady linear growth in scientific production on inclusive education until 2008, followed by a significant acceleration until 2022. That year, production peaks with 1,213 articles. Notably, the last 10 years account for 85.0% of the scientific production, and the last 5 years concentrate 58.4%, indicating that the search concept generated significant interest during that period. Table I details the 10 articles, which together comprise 5.4% of the total citations. This suggests a relatively low concentration of references in relation to the overall number of articles related to “inclusive education”.

A notable paper by Simon Baron-Cohen *et al.* (2009) represents 0.99% of all citations on the topic with 568 references, published in the *British Journal of Psychiatry* (Q1). The study investigated the prevalence of autism spectrum disorder (ASD) in UK school-aged children. Surveying over 7,000 children aged 5-9 across the UK, it found ASD prevalence to be around

1%, indicating it is more widespread than previously believed. Additionally, ASD was more common in boys, and most cases were previously undiagnosed. The second most cited research is Roger Slee’s (2011) work, published

by Taylor & Francis, with 388 references (0.68%). It critiques inclusion policies in education, focusing on students who don't fit typical norms. Slee argues that true inclusive education goes beyond integrating disabled students,

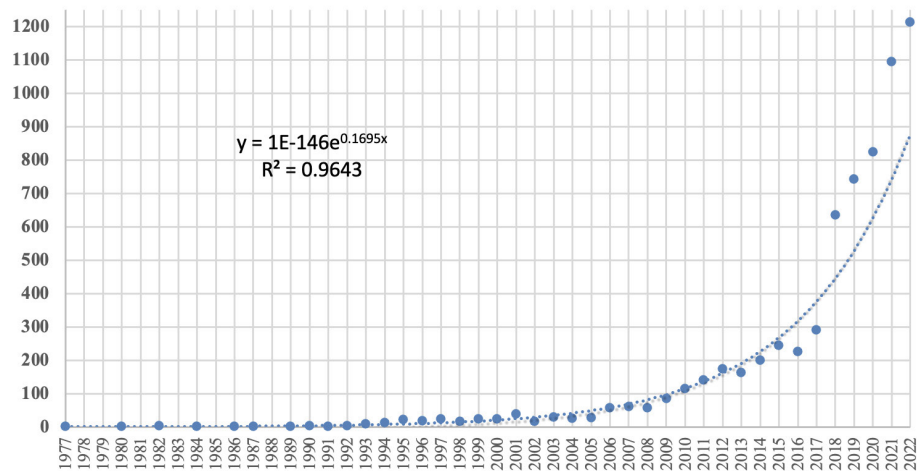


Figure 1. Scientific production growth. Source: Web of Science data (2023).

TABLE I
SCIENTIFIC PRODUCTIONS WITH THE GREATEST NUMBER OF CITATIONS

R	Authors	Year	Title	Journal	TC
1	Baron-Cohen S, Scott FJ, Allison C, Williams J, Bolton P, Matthews FE, Brayne C	2009	Prevalence of autism-spectrum conditions: UK school-based population study.	<i>British Journal of Psychiatry</i>	568
2	Slee R	2011	Irregular School: Exclusion, Schooling, and Inclusive Education	<i>Editorial Taylor & Francis.</i>	388
3	Kroesbergen EH; Van Luit JEH	2003	Mathematics interventions for children with special educational needs - A meta-analysis	<i>Remedial and Special Education</i>	307
4	Humphrey N, Lewis S	2008	'Make me normal': The views and experiences of pupils on the autistic spectrum in mainstream secondary schools	<i>Autism</i>	294
5	Hay DF, Pawlby S, Sharp D, Asten P, Mills A, Kumar R	2001	Intellectual problems shown by 1-year-old children whose mothers had postnatal depression	<i>Journal of Child Psychology and Psychiatry</i>	291
6	Chandler S, Charman T, Baird G, Simonoff E, Loucas T, Meldrum D, Scott M, Pickles A	2007	Validation of the social communication questionnaire in a population cohort of children with autism spectrum disorders	<i>Journal of the American Academy of Child and Adolescent Psychiatry</i>	267
7	Ainscow M, Sandill A	2010	Developing inclusive education systems: the role of organisational cultures and leadership	<i>International Journal of Inclusive Education</i>	265
8	Asbury K, Fox L, Deniz E, Code A, Toseeb U	2021	How is COVID-19 Affecting the Mental Health of Children with Special Educational Needs and Disabilities and Their Families?	<i>Journal of Autism and Developmental Disorders</i>	249
9	Sharma U, Forlin C, Loreman T	2008	Impact of training on pre-service teachers' attitudes and concerns about inclusive education and sentiments about persons with disabilities	<i>Disability & Society</i>	239
10	Johnson S, Hennessy E, Smith R, Trikić R, Wolke D, Marlow N	2009	Academic attainment and special educational needs in extremely preterm children at 11 years of age: the EPICure study	<i>Archives of Disease in Childhood-Fetal and Neonatal Edition</i>	234

R: Ranking; TC: Total citations. Source: Own based on Web of Science data (2023).

challenging practices that perpetuate exclusion (Table I).

Main authors

According to the data displayed in Table II, the most prolific author on inclusive education is Umesh Sharma from Monash University, who has published 47 articles and has been cited 1,163 times, which accounts for 2.03% of the total citations. Moreover, he also has 2 out of 87 of the most influential articles, as measured by the h-index. The second most influential author is Chris Forlin from the University of Notre Dame Australia, with 1,097 citations in 29 articles on “inclusive education,” having 3 of the most influential articles in the field as well. The rest of the most influential

authors in terms of “inclusive education” are detailed in Table II.

Moreover, the number of published articles serves as a metric to determine the contribution of different authors to the development of knowledge related to inclusive education. These authors are not always recognized as the most prolific but are important in terms of their contribution to the topic from different perspectives and scenarios. Consequently, Table III lists authors who have published at least 20 articles on “inclusive education.” It displays the number of published articles on the subject, total and average citations per article, the average number of citations, percentage of total articles, h-index of the author, total publications per author, and citations registered in WoS per author by January 2023.

It can be inferred from Table III that 10 authors have published at least 20 articles on “inclusive education.” Four of these authors are also the most influential in terms of the number of citations: Umesh Sharma, Chris Forlin, Sip Jan Pijl, and Hannu Savolainen hold the first, second, third, and sixth positions in this ranking, respectively.

Main journals

Regarding the primary publication sources, it is observed that the 6,627 articles analyzed have been published in 1,561 WoS-indexed journals, indicating a relatively low concentration. However, 10 journals have collectively published 1,725 articles, which account for 26.03% of the total publications on

TABLE II
THE MOST PROLIFIC AUTHORS ON “INCLUSIVE EDUCATION”

R	Author's name	Institution	TP-IE	TC-IE	(%)	HA	TP-A	TC-A	T87
1	Umesh Sharma	Monash University	47	1.163	2.03	27	99	2.439	2
2	Chris Forlin	University of Notre Dame Australia	29	1.097	1.91	23	69	2.328	3
3	Jan Pijl Sip	University of Groningen	23	1.036	1.81	21	49	1.951	4
4	Florian Lani	University of Edinburgh	16	995	1.74	19	54	1.873	5
5	Tony Charman	King's College London	11	921	1.61	91	589	31.082	4
6	Hannu Savolainen	University of Eastern Finland	21	901	1.57	18	47	1.449	4
7	Emily Simonoff	King's College London	9	893	1.56	65	177	17.486	4
8	Gillian Baird,	Guys & St Thomas NHS Fdn Trust	8	860	1.50	66	171	21.020	4
9	Neil Humphrey	University of Manchester	19	852	1.49	31	124	3.307	3
10	Andrew Pickles	King's College London	8	844	1.47	100	473	45.565	4

R: author ranking; TP-IE: total number of articles by the author in the vector search; TC-IE: total number of citations of the articles' author in the vector search; HA: h-index of the author; TP-A: total number of articles by the author; TC-A: total number of citations per author; T87: number of articles by the author among the 87 most influential articles ever published. Source: Own based on Web of Science data (2023).

TABLE III
THE MOST PROLIFIC AUTHORS ON “INCLUSIVE EDUCATION”

R	Author's name	Institution	TP-IE	TC-IE	(%)	HA	TP-A	TC-A	T87
1	Susanne Schwab	University Vienna	61	695	11.39	0.92	18	110	931
2	Umesh Sharma	Monash University	47	1.163	24.74	0.71	27	99	2.439
3	Chris Forlin	University of Notre Dame Australia	29	1.097	37.83	0.44	23	69	2.328
4	Anabel Moríña	University of Sevilla	27	406	15.04	0.41	15	34	583
5	Brahm Norwich	University of Exeter	26	531	20.42	0.39	12	32	544
6	Jan Pijl Sip	University of Groningen	23	1.036	45.04	0.35	21	49	1.951
7	Sheila Riddell	University of Edinburgh	23	93	4.04	0.35	14	58	877
8	Maxwell Opoku	United Arab Emirates University	21	68	3.24	0.32	12	71	377
9	Hannu Savolainen	University of Eastern Finland	21	901	42.90	0.32	18	47	1.449
10	Suzanne Carrington	Queensland University of Technology	20	184	9.20	0.30	7	8	316
Total			284	5491	19.33	4.29	38		

R: author ranking; TP-IE: total number of articles by the author in the vector search; TC-IE: total number of citations of the articles' author in the vector search; PC-IE: average number of citations per article in the vector search; % Tt: percentage of the total number of articles in the vector search; H-A: h-index of the author; TP-A: total number of articles by the author; TC-A: total number of citations per author. Source: Own based on Web of Science data (2023).

the topic. Additionally, the average number of citations per article is 11.24, resulting in a total of 19,389 citations and an h-index of 53. The 10 journals with at least 60 articles on “inclusive education” are analyzed in Table IV. These are ranked primarily by the number of articles published and, secondarily, by the total citations received.

A detailed analysis of Table IV reveals that the most prolific and influential journal in the field is the International Journal of Inclusive Education from Taylor & Francis Ltd. (United Kingdom), with 711 published articles and 9,481 citations. Although it also boasts a significant h-index, the journal that holds the highest average citations

per article, 32.04, and the most impactful in the last 5 years with 5,112 citations, is the Teaching and Teacher Education journal.

Institutions

Regarding the main affiliations of the authors, a low institutional concentration is evident among the researchers who have developed these 6,627 articles. These authors are affiliated with 3,915 organizations, ten of which have produced at least 67 articles related to the topic. Table V provides a detailed analysis of these institutions, ranked according to their influence on the field, as measured by the number of articles published by

each, the total number of citations, average citations, and the h-index in relation to the “inclusive education” search vector.

Table V shows that the 10 institutions that have published at least 67 articles linked to the search subject concentrate 17.20% of the total number of articles published on the topic, which denotes a low concentration. Furthermore, collectively, the institutions have a significant h-index of 50, with an average of 16.19 citations per article. In total, these institutions garnered 12,901 citations, although it is important to mention that this figure may include duplicate citations due to co-authored articles.

The University of London emerges as the most prolific and

TABLE IV
WEB OF SCIENCE MOST PROLIFIC AND INFLUENTIAL JOURNAL

R	Sources (Journals)	N	Tt (%)	TC-JP	PC-JP	H-JP	FI 5Y	Q
1	<i>International Journal of Inclusive Education</i>	711	10.73	9.481	13.33	42	3.013	Q2
2	<i>European Journal of Special Needs Education</i>	228	3.44	2.924	12.82	25	2.528	Q3
3	<i>Journal of Research in Special Educational Needs</i>	155	2.34	672	4.34	15	1.024	Q1
4	<i>International Journal of Disability Development and Education</i>	135	2.04	1.189	8.81	17	1.704	Q4
5	<i>Disability Society</i>	103	1.55	1.726	16.76	24	2.986	Q2
6	<i>International Perspectives on Inclusive Education</i>	98	1.48	201	2.05	7	-	-
7	<i>Frontiers in Education</i>	83	1.25	260	3.13	8	890	Q2
8	<i>Teaching and Teacher Education</i>	79	1.19	2.531	32.04	27	5.112	Q1
9	<i>Sustainability</i>	73	1.10	404	5.53	10	4.089	Q2
10	<i>Routledge Research in Special Educational Needs</i>	60	0.91	-	-	-	-	-
Total		1.725	26.03	19.389	11.24	53		

R: Ranking; N: total number of articles considering the journal vector search; % Tt: percentage of the total number of articles in the vector search; PC-IE: average number of citations per article in the vector search; H-IE: h-index with vectors search only; TC-IE: total citations using only the search vectors; FI Y5: journal impact factor in the last 5 years; Q: quartile. Source: Own work based on Web of Science data (2023).

TABLE V
INSTITUTIONS ASSOCIATED TO SCIENTIFIC PRODUCTION, ACCORDING TO THE AFFILIATION OF AUTHORS

R	Organizations	Country	NP	Tt (%)	TC-IE	PC-IE	h-IE
1	University of London	England	271	4.09	5.479	20.22	35
2	University College London	England	192	2.90	3.725	19.4	29
3	UCL Institute of Education	England	113	1.71	1.428	12.64	20
4	North West University South Africa	South Africa	94	1.42	1.277	13.59	18
5	Ministry of Education Science of Ukraine	Ukraine	92	1.39	362	3.93	5
6	Monash University	Australia	88	1.33	1.625	18.47	21
7	University of Manchester	England	79	1.19	2.177	31.19	22
8	University of Edinburgh	England	73	1.10	1.130	15.48	15
9	University of Birmingham	England	71	1.07	581	8.18	14
10	University of Jyväskylä	Finland	67	1.01	1.072	16	21
Total			797	17.198	12.901	16.19	50

R: Ranking; N: number of articles on “inclusive education”; % Tt: percentage of the total number of articles on “inclusive education”; TC-IE: total number of citations in the vector search; PC-IE: average number of citations per article in the vector search; h-IE: h-index only considering the vectors search. Source: Web of Science data (2023).

influential institution, as it has 271 published articles that account for 2.28% of the total and 5,479 citations. It also holds the highest h-index, peaking at 35, which means that at least 35 of its articles have been cited 35 times. Next, a scientometric analysis of co-authorship patterns was conducted among the most influential institutions researching inclusive education. To do so, institutions that have published at least 25 articles on the search query were selected.

Then, the VOSviewer software processed these parameters, generating 8 clusters and selecting 56 out of 3,915 organizations that have published on the subject. These clusters are exhibited in Table VI, while the institutions with the highest frequency of co-authorship collaborations per cluster are highlighted in bold and italics.

Figure 2 depicts the connections among the different institutions, with each cluster distinguished by a different color. In the first cluster, visually represented in red, the University of Sevilla has the highest frequency of co-authorship (7); while in the second cluster, depicted in green, the University of Cambridge forms co-authorship collaborations with 13 institutions. In the third

cluster in blue, UCL stands out by engaging in collaborative research with 21 institutions. Similarly, Monash University, situated within the fourth cluster in yellow, exhibits a comparable degree of partnership.

The fifth cluster, colored in purple, is characterized by the prominence of Queensland University of Technology, which boasts 11 co-authorship collaborations. As for the sixth cluster, colored in light blue, it is dominated by North West University, which has co-authorship collaborations with 9 institutions. In the seventh cluster, visually depicted in orange, the University of Manchester emerges as a key collaborator with 13 institutions. Finally, in the last cluster, the University of Nottingham forms partnerships with 15 other institutions.

Countries

In terms of the geographic affiliation of the authors, a significant concentration is observed in the production of these 6,627 articles. Despite being distributed across 139 countries, 66.4% of the articles come from the 10 most productive countries that have

produced at least one article related to the search query. Table VII presents the data of the 10 countries that have developed and published more than 164 articles linked to “inclusive education.” The h-index of these 10 countries collectively is 78, coupled with an average of 9.82 citations per article. Their combined total of 43,218 citations equals 75% of the total citations on this topic.

From the data displayed in Table VII, it can be concluded without a doubt that England is the most prolific country, as it has produced 1,141 articles on “inclusive education.” It is the most influential country as well, since it holds the highest number of citations (17,933), the highest average of citations per article (15.72), and the highest h-index (57). Figure 3 represents the patterns of co-authorship among countries, focusing on the 51 countries (out of the 139 studied) that have contributed at least 5 co-authored articles. These were grouped into 7 clusters, which are outlined in Table VIII. In each of the clusters, the countries that predominate in terms of co-authorship are highlighted in bold and italics.

Figure 3 illustrates each of the clusters, represented in different colors. The relative size of each cluster's

TABLE VI
BIBLIOGRAPHY CLUSTERS FOR SCIENTIFIC PRODUCTION WITH THE HIGHEST DEGREE OF CITING

Cluster 1 (red-13)	Cluster 2 (green-10)	Cluster 3 (blue-8)	Cluster 4 (yellow-7)
Syracuse University	Dublin City Univ	Kings Coll London	Deakin University
Universidad Autónoma de Madrid	Open University	University College London (UCL)	Hong Kong Inst Educ
Universidad de Barcelona	University of Cambridge	UCL Institute of Education	Monash University
Universidad de Córdoba	University of Ghent	University of Bristol	University of Birmingham
Universidad de Granada	University of Gothenburg	University of London	University of Exeter
Queensland University of Technology	University of Groningen	Oxford University	University of Melbourne
Illinois	University of Pretoria	University of Reading	University of New England
University of Jaume	University of Southampton	University of Warwick	
University of Kansas	University of Sydney		
Universidad de Málaga	University of Thessaly		
Universidad de Murcia			
University of North Carolina			
Universidad de Sevilla			
Universitat de València			
Cluster 5 (purple-6)	Cluster 6 (light-blue-4)	Cluster 7 (orange-4)	Cluster 8 (yellow-4)
Beijing Normal University	North West University	Columbia University	University of Nottingham
Education University of Hong Kong	University of Helsinki	University of Edinburgh	University of Queensland
Griffith University	University of Jyväskylä	University of Glasgow	University of South Africa
Macquarie University	University of Vienna	University Manchester	University Witwatersrand
Queensland University of Technology			
University of Hong Kong			

Source: Web of Science data (2023) done with VOSviewer Software.

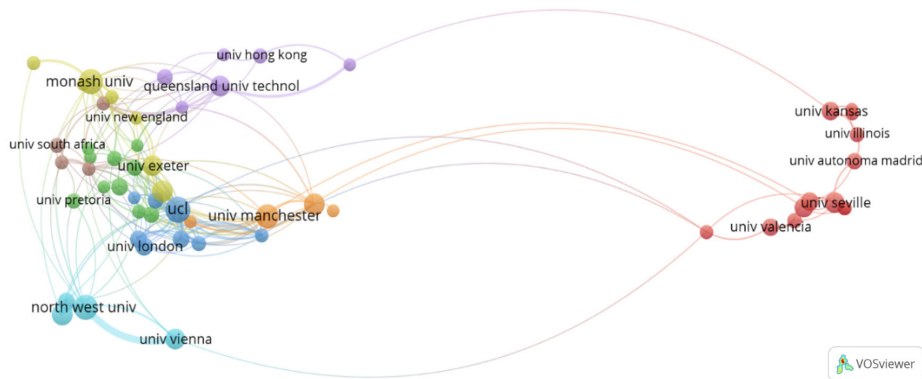


Figure 2. Diagram of the institutions with the highest degree of co-authorship. Source: Own work done with VOSviewer Software (2023).

TABLE VII
COUNTRIES/REGIONS ASSOCIATED TO SCIENTIFIC PRODUCTION
ACCORDING TO THE AUTHORS' AFFILIATION

R	Countries/Regions	NP	Tt (%)	TC-IE	PC-IE	h-IE
1	England	1.141	17.212	17.933	15.72	57
2	USA	845	12.747	9.402	11.13	43
3	Spain	758	11.435	3.182	4.20	24
4	Australia	514	7.754	6.913	13.47	37
5	South Africa	318	4.797	2.898	9.11	27
6	Germany	295	4.450	1.986	6.73	25
7	Brazil	279	4.209	338	1.21	7
8	Canada	228	3.439	3.145	13.79	31
9	Peoples R China	212	3.198	2.528	11.92	22
10	Russia	164	2.474	252	1.54	7
	Total	4.402	66.425	43.218	9.82	78

R: Ranking; NP: total number of articles related to “inclusive education”; % Tt: percentage of the total number of articles in the vector search; TC-IE: total number of citations only using the vector search; PC-IE: average number of citations per article in the vector search; h-IE: h-index on “inclusive education”. Source: Web of Science data (2023).

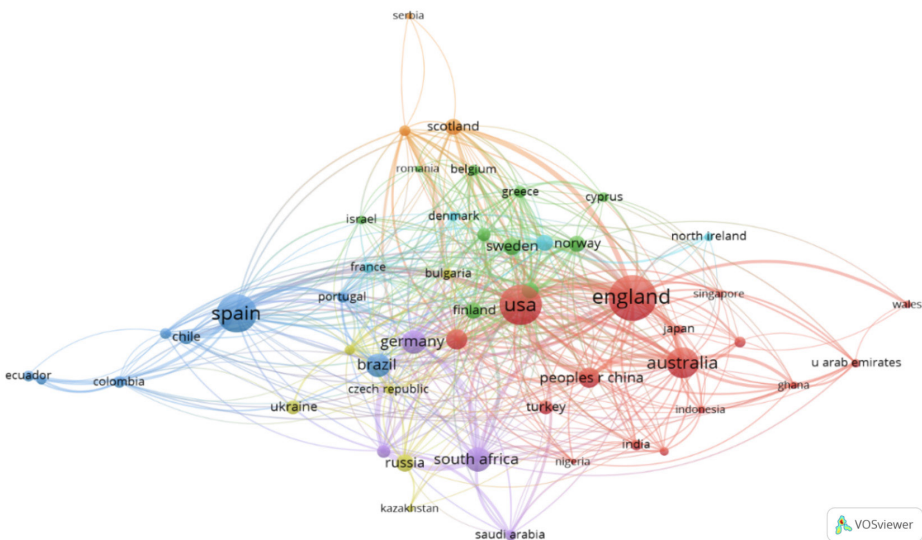


Figure 3. Co-authorship among countries. Source: Own work done with VOSviewer Software (2023).

circumference is determined by the number of co-authorship collaborations involving the countries within that cluster.

An analysis of the red cluster reveals that England has the highest number of co-authorship collaborations (43) and is connected to most of the other clusters. In the green cluster, Finland predominates with 35 co-authorship collaborations; while in the third cluster, visually represented in blue, Spain stands out as the leading country with 32 co-authorship partnerships. In yellow, the fourth cluster is dominated by Poland, which has co-authorship collaborations with 26 countries; whereas within the purple cluster, Germany has engaged in research partnerships with 30 other nations. Ireland is the predominant country in cluster 6, colored in light blue, with 26 co-authorship collaborations. Finally, in the orange cluster, Scotland can be found with 25 collaborative studies.

Scientometric analysis of keywords

Out of the 10,106 keywords employed by authors in Web of Science-indexed articles on inclusive education, 55 are recurring with a frequency of at least 40 mentions each, as shown in Figure 4. Here, these keywords are divided into 7 clusters, whose layout is detailed below in Table IX. The most frequent keyword per cluster has been highlighted in bold and italics.

Table IX groups the keywords into clusters based on the central themes explored in the analyzed articles. Additionally, each cluster is once again assigned a color for easy identification.

It can be concluded from the red cluster that the term “special educational needs” is the most frequently recurring keyword, appearing 51 times; while from the green-colored cluster, the term “inclusive education” is repeated 54 times. As for the third cluster in blue, this is predominated by the word “diversity,” which appears 36 times; whereas “teacher education” dominates the yellow cluster as it appears 40 times. The word “inclusion” predominates in the purple cluster with 54 repetitions, while “disabilities” is the most recurring word from the light-blue cluster, appearing 32 times. Finally, from the orange-colored cluster, “higher education” emerges as the most repeated keyword, appearing 38 times. Table X lists the 10 most frequently recurring keywords, ranked from highest to lowest occurrence.

Analysis of Results for Conclusions

This study conducted a bibliometric and scientometric analysis

TABLE VIII
CO-AUTHORSHIP AMONG COUNTRIES CLUSTER

Cluster 1 (red-16)	Cluster 2 (green-9)	Cluster 3 (blue-8)	Cluster 4 (yellow-6)
Australia	Belgium	Brazil	Bulgaria
Canada	Cyprus	Chile	Czech Republic
England	Finland	Colombia	Kazakhstan
Ghana	Greece	Cuba	Poland
India	Israel	Ecuador	Russia
Indonesia	Italy	Mexico	Ukraine
Japan	Netherlands	Portugal	
Malaysia	Norway	Spain	
New Zealand	Romania		
Nigeria	Sweden		
People's Republic of China			
Singapore			
Turkey			
United Arab Emirates			
USA			
Wales			
Cluster 5 (purple-4)	Cluster 6 (light-blue-4)	Cluster 7 (orange-3)	
Austria	Denmark	Scotland	
Germany	France	Serbia	
Saudi Arabia	Ireland	Switzerland	
South Africa	Northern Ireland		

Source: Own based on VOSviewer (2023).

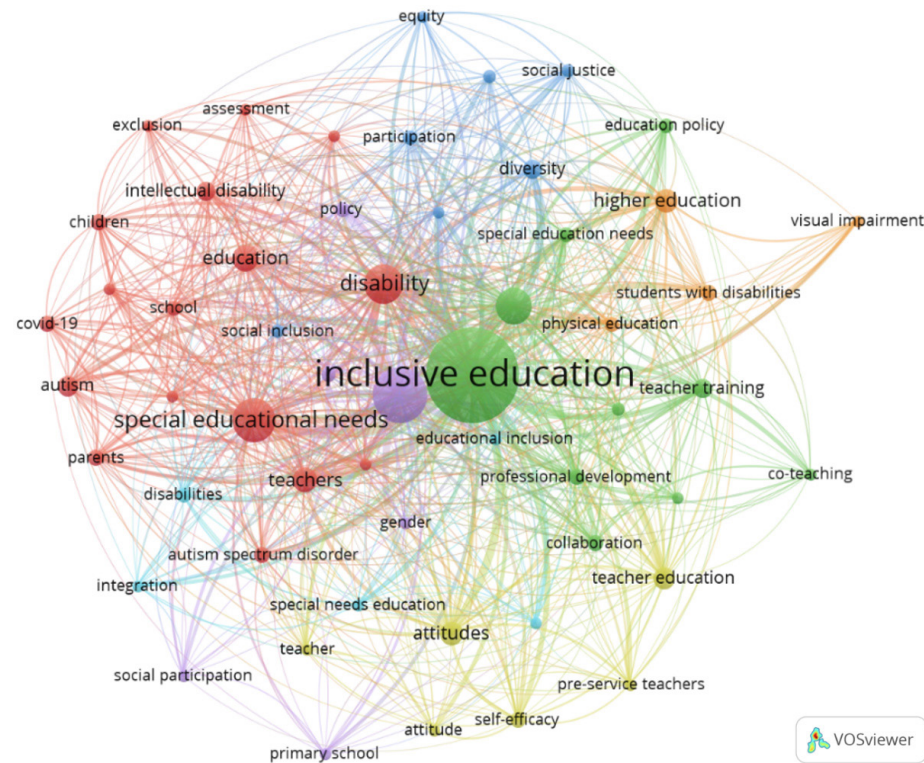


Figure 4. Scientometric map of the research on “inclusive education”. Source: Own work done with VOSviewer Software (2023).

focused on inclusive education. This type of analysis does not aim to establish causal relationships between scientific production and other variables, but provides a foundational framework for studying the development and evolution of academic literature as far as this kind of reports are concerned. As mentioned in the introduction, the objective of this research was to analyse the most relevant aspects of scientific literature on inclusive education.

The most important academics in the field of inclusive education were studied, as well as the countries and institutions where their investigations were conducted, the research networks they are part of, the most influential scientific journals regarding the subject, and the research topics connected with inclusive education. On this matter, this type of analysis is useful to set further research areas derived from the scientific impact and the potential relations among the different aspects of inclusive education information dissemination.

The first conclusion that can be drawn is the extraordinary scientific production in WoS-indexed journals on Inclusive Education, especially since the work of Kirten and Liverman, (1977), which became the starting point

TABLE IX
KEY WORDS CO-OCURRENCE CLUSTERS

Cluster 1 17 items - red	Assessment – Autism - Autism spectrum discord - Children - Covid-19 - Disability – Education – Exclusion - Intellectual disability - Parents - Qualitative research - School - Special Educational needs - Students - Teachers - Transition - University
Cluster 2 10 items - green	Co-teaching - Collaboration – Early Childhood Education - Education Policy - Inclusive Education - Inclusive practices - Professional development - Special education - Special Education Needs - Teacher Training
Cluster 3 7 items - blue	Curriculum - Diversity - Equity - Participation - Primary Education - Social inclusion - Social justice
Cluster 4 6 items - yellow	Attitude - Attitudes - Pre-Service Teachers - Self-Efficacy - Teacher - Teacher Education
Cluster 5 6 items – purple	Gender - Inclusion – Policy - Primary School - Social Participation - Special Needs
Cluster 6 5 items – light-blue	Children with disabilities - Disabilities - Educational Inclusion - Integration - Special needs education
Cluster 7 4 items – Orange	Higher education - Physical education - Students with disabilities - Visual Impairment

Source: Web of Science data (2023).

TABLE X
HIGHEST OCCURRENCE KEY WORDS

Nº	Keyword	Occurrence
1	Inclusive education	2.652
2	Inclusion	902
3	Special educational needs	571
4	Disability	475
5	Special education	419
6	Education	210
7	Teachers	181
8	Attitudes	180
9	Higher education	177
10	Teacher education	155

Source: Web of Science data (2023).

for an incredibly fruitful new research line. This research field is quite recent; however, it has experienced an exponential growth in terms of scholarly contributions in over the past decade. In fact, the studies on inclusive education analysed for this investigation have been cited more than 57,309 times.

For example, the work of Baron-Cohen *et al.*, (2009), published by the British Journal of Psychiatry, concentrates 0.99% of the total citations on the topic, which equals to 568 references. While the work of Slee, Rogers (2011), whose publisher is Taylor & Francis, accounts for 0.68% of the citations, equivalent to 388 references. The first author's research was focused on the prevalence of ASD (Autism Spectrum Disorder) in the British school-age population, estimating a rate

of approximately 1%. This finding implies autism is more prevalent than previously believed. In contrast, the second author analyses the educational policies that promote inclusion critically, and addresses issues related to access, participation, and success in the education of students who are at risk of exclusion or have already been excluded.

Another relevant fact is the low citing concentration per author, either working independently or collaboratively. In that sense, 10 out of the 12,921 most influential authors concentrate 16.68% of the total citations, being Umesh Sharma from the Monash University the most cited one. Likewise, the professor Susanne Schwab from the University of Vienna stands out as the most prolific author with 61 articles to her credit.

Regarding journals, it is concluded 10 journals concentrate 26.03% of publications on this research topic, whose average is 11.24 citations per work and h-index of 53. A considerable geographical concentration was also observed, with England, the United States, and Spain having the highest number of authors and co-authorship collaborations.

Lastly, 10,106 keywords related to inclusive education were identified within the WoS-indexed articles, 55 of which are mentioned at least 40 times each. Additionally, the most recurring and interconnected keywords are “inclusive education”, “Inclusion”, “Special educational needs” y “Disability”. This work is not exempt from limitations that may open new paths for further research lines. First limitation is derived from one of the main characteristics of bibliometric analyses: the sensitivity to the type of database used. This study in particular has resorted to the WoS database, which is why limited-impact articles were not taken into account, although their contribution might have been interesting. The second limitation is a direct consequence of the application of bibliometric analysis, since it must be a complement to a complete analysis. Future research could build on this work by enabling scholars to propose models for evaluating public education policies from an economic perspective, particularly favoring school integration. It also opens opportunities for developing new research lines, given the inconclusive results and the increasing interest from governments in creating a unified school system.

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MAPEO DE LA LITERATURA Y COLABORACIÓN EN EDUCACIÓN INCLUSIVA

Juan Alejandro Gallegos Mardones, Hugo Moraga-Flores, José Navarrete-Oyarce y Luis Araya-Castillo

RESUMEN

Actualmente, la educación inclusiva se define como educación para todos los estudiantes, sin importar sus dificultades o discapacidades. Los estudiantes deben ser educados juntos en un entorno educativo que asegure y facilite el apoyo individualizado para cada uno de ellos, permitiendo la maximización de su desarrollo académico y social. La educación inclusiva requiere adaptaciones a las características y necesidades de los estudiantes en un entorno que asegure y promueva su desarrollo académico y social. A través de un análisis bibliométrico, este estudio busca proporcionar una discusión adecuada sobre la investigación existente y considera la información publicada en la Web of Science entre 1975 y 2022.

Los análisis cuantitativos resultantes abordan el número de publicaciones y citas, autores y principales revistas, instituciones, países y la coocurrencia de palabras clave. Una de las principales conclusiones de este trabajo es la abundancia de estudios realizados sobre educación inclusiva, lo cual es evidente tanto en el número de artículos publicados como en las citas de estos estudios. En términos de productividad e influencia, las investigaciones de Umesh Sharma y Susanne Schwab destacan, al igual que los países de Inglaterra, Estados Unidos y España en el análisis. Finalmente, las limitaciones de este trabajo son las inherentes a un análisis bibliométrico y a los datos utilizados.

MAPEAMENTO DA LITERATURA E COLABORAÇÃO EM EDUCAÇÃO INCLUSIVA

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RESUMO

Atualmente, a educação inclusiva é definida como educação para todos os estudantes, independentemente de suas dificuldades ou deficiências. Os estudantes devem ser educados juntos em um ambiente educacional que assegure e facilite o suporte individualizado para cada um deles, permitindo a maximização de seu desenvolvimento acadêmico e social. A educação inclusiva requer adaptações às características e necessidades dos estudantes em um ambiente que assegure e promova seu desenvolvimento acadêmico e social. Por meio de uma análise bibliométrica, este estudo busca proporcionar uma discussão adequada sobre a pesquisa existente e considera as informações publicadas na

Web of Science entre 1975 e 2022. As análises quantitativas resultantes abordam o número de publicações e citações, autores e principais periódicos, instituições, países e a coocorrência de palavras-chave. Uma das principais conclusões deste trabalho é a abundância de estudos realizados sobre educação inclusiva, que é evidente tanto no número de artigos publicados quanto nas citações desses estudos. Em termos de produtividade e influência, as pesquisas de Umesh Sharma e Susanne Schwab se destacam, assim como os países da Inglaterra, Estados Unidos e Espanha na análise. Finalmente, as limitações deste trabalho são as inerentes a uma análise bibliométrica e aos dados utilizados.