

# Bibliometric Analysis of Research on Educational Equity: A 30-Year Perspective

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## Abstract

Education equity is essential for achieving sustainability of educational effectiveness. To gain insight into the current direction of change in this area, comprehensive research on EE is required. The bibliometric analysis, performed by VOSviewer, analyzes 3216 documents harvested from the Scopus database within the period set from 1991 to 2020, aiming to identify the development trajectory, country contributions and collaborations, the most productive authors and journals, the research foci and intellectual structure in this regard. The review identified the features of relevant publications on the performance of development trajectories, international contributions and collaborations, prolific authors and productive journals, topical foci as well as intellectual structure pertaining to educational equity. Based on the findings, the author further summarized: 1) international efforts have facilitated educational equity studies greatly since the past two decades, 2) the disproportionate representation of educational equity studies exists in global context, 3) research foci imply broad and multi-faceted themes, 4) educational equity research involves interdisciplinary perspectives. The study, which presents a holistic lens into the research status in this domain, can contribute to the burgeoning literature and orient new entrants to identify the research priorities for future studies.

## Keywords

Educational Equity, Bibliometric Analysis, VOSviewer, Scopus Database

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## Introduction

A major issue of concern on the international agenda today is educational equity, which is seen as "an important dimension in any human rights assessment" (Fry, 1983, p.200). Equity is also one of the indispensable parts of sustainability education (Higg & McMillan, 2006). Posited as the key theme at the onset of the 21st century (Jacob & Holsinger, 2008), an equitable delivery of education is crucial to alleviating poverty and income disparity across the world (OECD, 2008; Motala et al., 2009). In view of the key role educational equity plays in maintaining social justice and in order to orient new entrants and provide guidance for them to identify the research priorities for future studies, it is of great significance to present a holistic lens into the research status in this domain.

Academically, bibliometric analysis is considered an effective approach to give out panoramic view of the research area and in-depth understanding of progressive evolution occurring in the discipline (Merigó et al., 2016). However, there is limited information available on outlining the overall research status of equity aspects in education by applying bibliometric approach. Therefore, this insufficiency into educational equity research justifies the need for the study.

### Debates on the Definition of Equity

The definition of educational equity is much contested in the academic world (Scheurich et al., 2017). According to OECD (2008), educational equity entails two aspects-fairness for "achieving the educational potential" and inclusion for "ensuring a basic minimum standard of education for all" (p.2). Equity, in some sense, means to ensure that fairness is given due attention. As claimed, it is closely intertwined with fairness and justice (Shaeffer, 2019; Panthi et al., 2018). According to Klenowski (2009), educational equity does not refer to let all students get the same treatment or achieve the equality of outcomes. It describes the situation where all students, regardless of their diverse identity markers, can have the equal educational opportunities to learn and to develop (McLaughlin, 2010). These discussions attempt to clarify the underlying concepts of educational equity and propose new definitional framework for future scholarship.

Noticeably, the connotation of educational equity has changed with the centuries and are often mixed with that of educational equality. Both terms are considered as the core elements for sustainable development in global education context (Lockheed & Cueto, 2006). Espinoza (2007) states that equity and equality, though overlapped in implications, are distinct concepts in terms of educational goals and outcomes. It is widely contended that "equality" connotes quantitative sameness while "equity" involves both objective assessment and subjective moral (Gaile, 1977). Though the terms "equity", "equality", "fairness" and "justice" are often associated or used interchangeably (Rasooli et al., 2019), in this study, the term "educational equity" which contains richer implications is adopted.

### Related Research on Educational Equity

Since last century, studies on equity in education have been carried out by a mounting number of scholars (Brookover & Lezotte, 1981; Coleman et al., 1966; Murphy, 1988). Within the scope of education studies, equity is a popular topic covering numerous fields, being studied by employing interdisciplinary or integrative methodologies. Over the years, the research focus has been shifted from discussing the educational reforms based on marco-perspective to minimize the gaps caused by disparities in socioeconomic status among groups or subgroups in a microperspective way (Hoang, 2019).

The type of analytic research review is emerging. Through systematic review centering on educational equity manifested in educational leadership and professional learning, practical implications are given for educational leaders and teachers to ensure equitable learning experiences for marginalized and disadvantaged students (Poekert et al.; 2020). In view of examining studies on educational equity in certain countries or areas, Zhang (2016) presents the progressive evolution of Chinese equity research during different phases in China's education development, revealing the fact that the reseach discourses can be deeply influenced by the historic, political and enonomic contexts of that certain period.

Besides, there are several well-renowned journals that particularly specialize in issues of equity,

excellence, and inclusion in education, such as *Equity & Excellence in Education*, *Equity, Equality, Diversity and Inclusion*, *International Journal of Inclusive Education* and *Race Ethnicity and Education*, which have obtained scholars' sustained commitment and expanded the research scope of this given field.

## Research Focus of the Study

The exploratory study aims to secure a more insightful understanding of the trends and foci in the research on educational equity by following bibliometric procedures of science mapping analysis, such as cross-country collaborations, co-occurrence of key words analysis and co-citation analysis between 1991 and 2020. It is expected to inform the new entrants sufficient knowledge of this field and to offer researchers effective recommendations for further research to enrich this domain. Five main research questions are addressed explicitly:

1. What development trajectories can be identified in research of educational equity during the 30-year period?
2. What are the international contributions and collaborations in the area of educational equity?
3. What are the most productive authors and journals on educational equity?
4. What topical foci in this domain have attracted the greatest attention?
5. What is the intellectual structure of educational equity knowledge base?

## Methods

This section mainly discusses the methods used in this study. It covers the rationale for adopting bibliometric analysis and for choosing the database, criteria for data collection and data analysis tools.

### Rationale for Adopting Bibliometric Analysis

The study adopts bibliometric analysis to look into the historical research development and performance on educational equity. In the wake of computerized age, bibliometric analytical technique has been increasingly used to present quantitative measures and features of scientific and applied studies (Ellegaard & Wallin, 2015). Studies have reported that bibliometric analysis can serve as an effective tool to statistically evaluate the research output performance derived from massive published literature in a given domain (Li et al., 2017; Mao et al., 2018).

### Rationale for Choosing the Database

Scopus database is chosen to statistically analyze the body of literature with regard to educational equity. The commonly used authoritative databases for most bibliometric analyses are Web of Science (WoS) and Scopus (Alryalat et al., 2019; Liu, 2020). Scopus database, created by Elsevier Co., is currently the world's largest abstract and indexing database that provides full-text scientific journals, reviews, books, book chapters and conference proceedings to its users (Montoya et al., 2018). Its function of exporting the bibliometric data in a free and speedy way can facilitate the bibliometric analysis. Compared with WoS, Scopus database has wider coverage, more indexed journals as well as faster update (Burnham, 2006; Falagas et al., 2008). Also, it has been commonly hailed as high-quality data source by the scientific academia (Baas et al., 2020; Montoya et al., 2018) and is frequently employed in academic research and research evaluation practices (Zhu & Liu, 2020). By using Scopus database for bibliometrics, it is much easier and more efficient for researchers to get a quick grasp of a general view of the regarding area.

### Criteria for Data Extraction and Collection

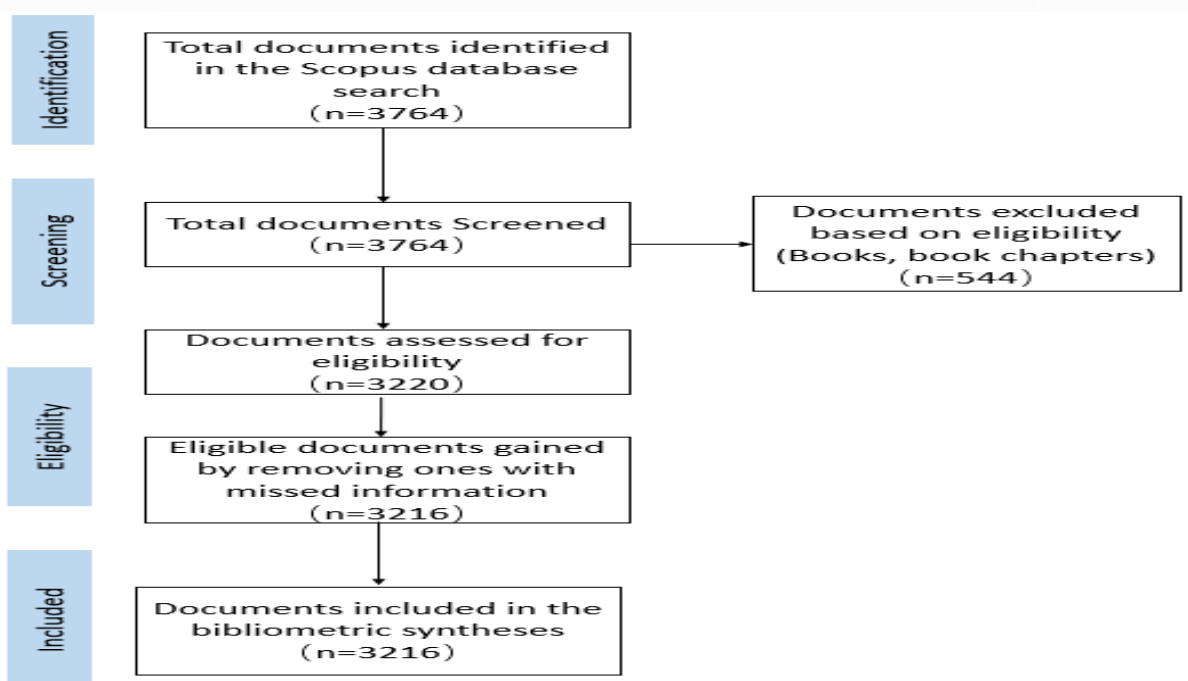
PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines was employed in this study. Four steps, namely, identification, screening, eligibility and inclusion are specified to refine the research results (Moher et al., 2009).

As stated above, the notions of "equity", "equality", "fairness" and "justice" are with distinct implications, but they are, in many cases, interchangeably used (Rasooli et al., 2019). The word

"equity" is considered to be associated with "fairness" or "justice" (Allen, 1990; Espinoza, 2007). Though equity cannot be simply equated with equality, both are recognized as the crucial aspects to achieve social justice (Harmon et al., 2010). Therefore, in this study, the search terms are identified as "education equity", "education equality", "education fairness" and "education justice", and the logical operator 'OR' was used to include the entries as much as possible. Meanwhile, to gain a variety of search that contains noun or adjective, singular or plural, positive or negative spelling, the wildcard character "\*" was used. Therefore, the final search terms were identified as ("education\* \*equit\*" OR "education\* \*equalit\*" OR "education\* \*fairness" OR "education\* \*justice"). The search was conducted by setting parameters as follows:

- Inclusion: Dates: 1991 to 2020
- Inclusion: language: English
- Inclusion: Document Type: articles, reviews and conference papers
- Exclusion: Document Type: books and book chapters

The PRISMA flowchart was presented in the Fig.1. The initial total number of documents written in English yielded between 1991-2020 was 3764, filtered by the article title, abstract, and keywords to guarantee that any relevant study was included. Since this bibliometric analysis focused only on peer-reviewed articles, reviews and conferences papers, books and book chapters were excluded by using the Scopus filters. Next, the article titles and abstract were scanned to confirm the relevance. Finally, after manually removing 4 documents with missed information, a total of 3216 samples were exported for the further analysis.



**Fig 1.** PRISMA flowchart of documents identification on educational equity. Adapted from (Moher et al., 2009)

## Data Analysis Tools

In this review, the bibliometric information of Scopus-indexed documents analyzed includes: 1) development trajectories of publications, 2) international contributions and collaborations, 3) the most productive authors and journals, 4) topical foci, 5) intellectual structure. Figures and tables are provided to visualize the findings.

To be specific, co-authorship of country collaborations, co-occurrence of keyword and co-citation analysis of authors were analyzed by VOSviewer, a computer software for bibliometric mapping. It can help researchers to construct mapping and provide visualization of bibliometric networks based on a co-occurrence matrix (van Eck & Waltman, 2017). As a visualization tool, VOSviewer analysis is widely recognized and adopted to examine the progress of research fields

of diverse disciplines.

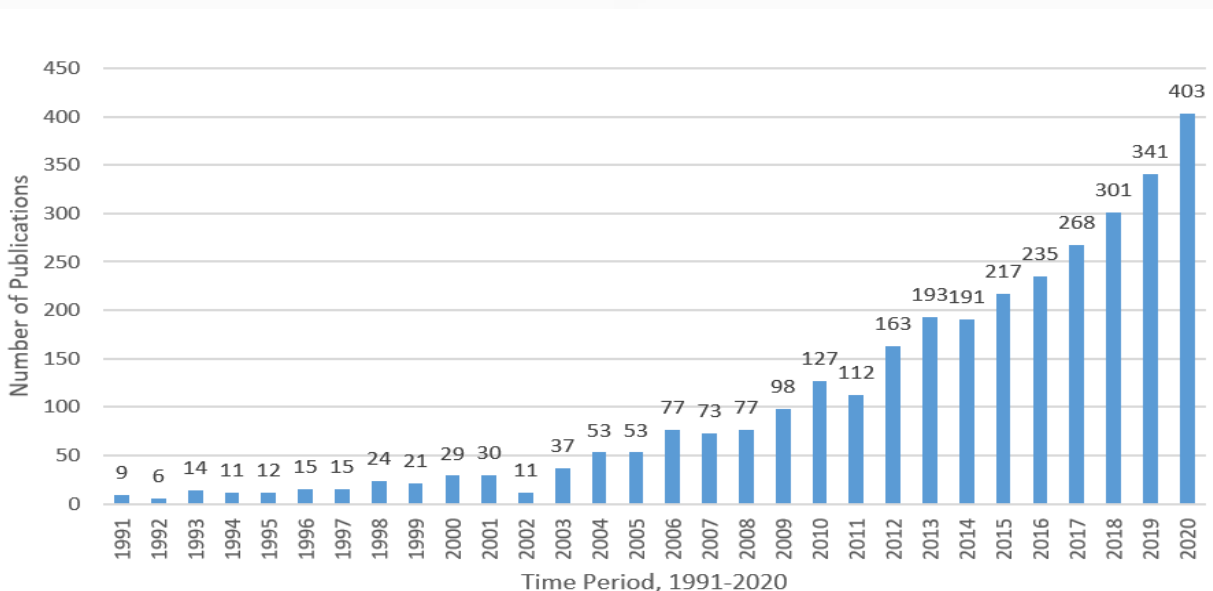
Besides, graphs indicating the development trajectories of the publications, the productive authors and journals were generated in Microsoft Excel 2019 and geographical distribution of the publications was formed in Tableau 2021.1.2.

## Results

This part illustrates the results of the bibliometric analysis of the 3216 published documents. The discussions on the five research questions are presented in order.

### Development Trajectories of Publications on Educational Equity

The first research question aims at presenting the development trajectories of documents published on educational equity starting from the year of 1991 to the year of 2020. Fig.2 outlines the trends of publications over the years. Based on the graph below, the number of publications remained scarce (no more than 30 per year) until 2002. Though a few fluctuations can be seen in the year of 2001, 2010 and 2013, the general trend is increasing, starting from nine papers in 1991 to 403 papers in 2020. Especially in the wake of the new millennium, the number of publications had been on the rise rapidly, indicating that a mounting number of scholars were engaged in this field, showing their continued concerns about the issues of equity in educational arena.

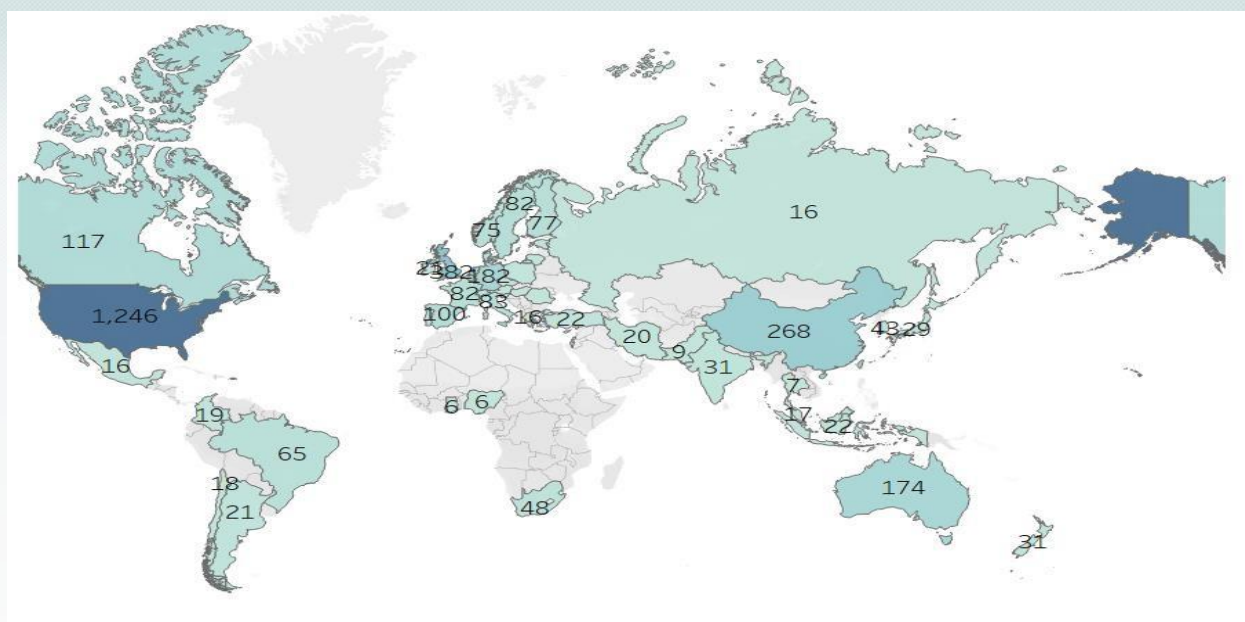


**Fig 2.** Development trajectories of publications on educational equity from 1991 to 2020

### Country Contributions and Collaborations

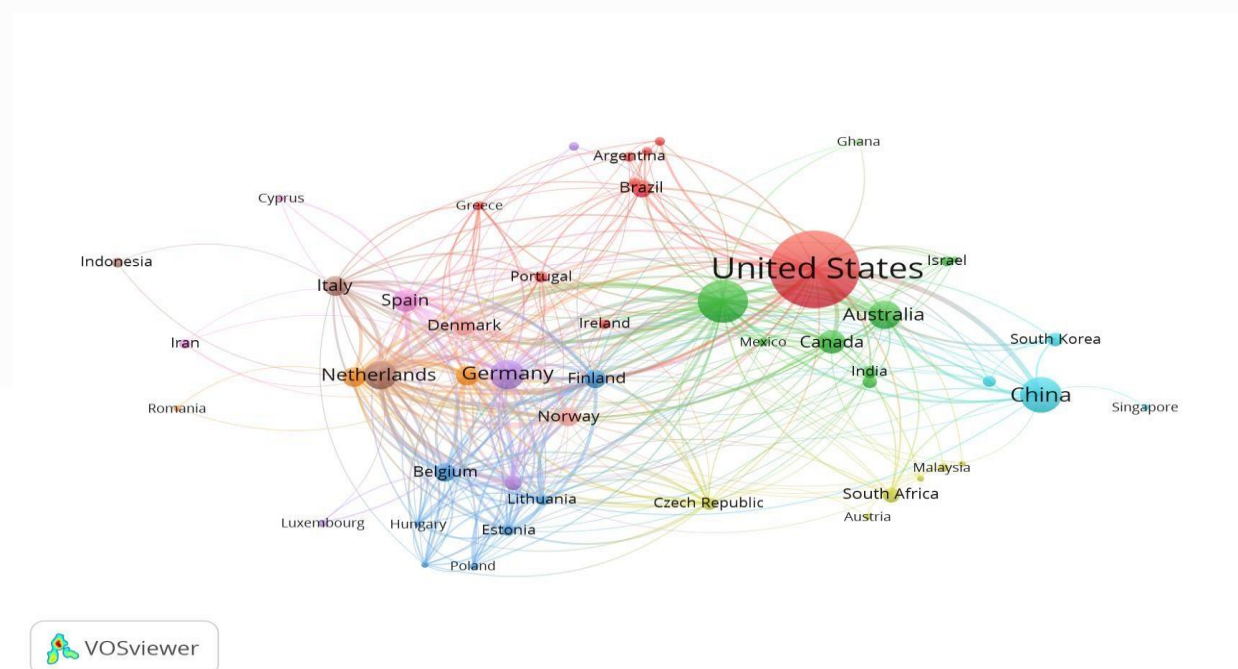
As for the geographical distribution of the publications, as the Fig. 3 illustrates, the top10 countries out of 158 that publish the largest number of documents on educational equity are United States, United Kingdom, China, Germany, Netherlands, Australia, Canada, Spain, Italy, France. Compared with other countries, researchers from United States have contributed most to this field, accounting for 38.7% of the total quantity. Then United Kingdom comes second with 382 articles (11.9%), followed by China with 268 articles (8.3%). Other countries with high contributions more than 100 articles are Germany (182), Netherlands (175), Australia (174), Canada (117) and Spain (100).

The country collaborations to the documents published on educational equity were analyzed based on the software VOSviewer. The minimum number of documents was set at five, and out of 156 countries, 50 met the criteria. As seen in Fig. 4, the 11 clusters in different colors illustrate the country collaboration network of educational equity research. Seen from Fig. 4, the most influential countries are United States, United Kingdom, China, Australia, Germany, Netherland and Canada. It is examined that United States is in the same cluster with Brazil and Argentina while United Kingdom, Australia, Canada and India are in the same cluster.



**Fig 3.** Geographical distribution of publications by country

Clearly, the cluster with the largest collaborations appears to be the red cluster with a network of nine countries. In this cluster, the leading country in publications-United States collaborates with 34 countries, enjoying the same links with Germany (purple). The green cluster ranks the second in which the country with the maximum collaborations and highest link strength of all is United Kingdom, which works with 40 countries, including those in Asia and Africa and holds a large total link strength of 312. Other prominent countries are China (light blue), Netherland (brown), Italy (brown), Finland (dark blue) and Spain (pink).



**Fig 4.** The network visualization map of country collaboration

### Most Productive Authors and Journals

The third research question was intended to explore the most productive authors and journals on the topic of educational equity. The total number of authors is up to 6064. As listed in the Table 1, there are 12 authors who have published more than 13 articles in this domain. Mackenbach, J. P. from EUMC, Netherlands, is the most prolific author with a total number of 45 articles published, followed by Kunst, A. E. with 37 publications who is also from Netherlands. Average citations per

article for these authors shows varying degree, ranging from the minimum of 21 (represent by Martikainen, P.) to the maximum of 107 (represent by Borrell, C.). In terms of the research topic, it's surprising that most of the authors themselves do not specialize in the educational fields, instead, they look into the equity issue from the perspective of the correlation between educational inequities and healthy conditions or socioeconomic status.

**Table 1**

Top 10 productive authors in educational equity domain

Rank	Author	Nation/Institution	Topic	NoP	TC	ACPC
1	Mackenbach, J. P.	Netherlands/EUMC	Education and Health	45	2745	61
2	Kunst, A.E.	Netherlands/University of Amsterdam	Education and Socioeconomic Status	37	2904	78
3	Deboosere, P.	Belgium/Vrije Universiteit Brussel	Education and Health	24	1209	50
4	Leinsalu, M.	Sweden/Sodertorn University	Education and Health	18	498	28
5	Martikainen, P.	Finland/University of Helsinki	Education and Health	18	384	21
6	Eikemo, T.	Norway/ NTNU	Education and Health	17	502	30
7	Bopp, M.	Switzerland/University of Zurich	Education and Health	17	1092	64
8	Menvielle, G.	France/Sorbonne University	Education and Health	17	438	26
9	Regidor, E.	Netherlands/EUMC	Education and Health	15	1076	72
10	Borrell, C.	Spain/ASPB	Education and Health	13	1386	107
11	Costa, G.	Italy/Turin University Medical School	Education and Health	13	1346	104
12	Strand, B.H.	Norway/ NIPH	Education and Health	13	448	34

Note. NoP: Number of Publications; TC: Total Citations up to June, 2021; ACPC: Average Citations Per Article; EUMC: Erasmus University Medical Center; NTNU: Norwegian University of Science and Technology; ASPB: Agència de Salut Pública de Barcelona; NIPH: Norwegian Institute of Public Health.

Among 1168 journals, the journal Educational Policy (EP) is the largest contributor with total 56 documents published in this field (See Table 2). Then, Teachers College Record (TCR) ranks second with 46 articles published, followed by British Journal of Sociology of Education (BJSE) with 42. Other journals in the list all have published more than 20 documents on equity issues in educational field. In terms of total citations and Elsevier's (Scopus) Citescore, Journal of Epidemiology and Community Health (JECH) receives highest citations of 1540 and gets the highest Citescore. The other two journals that obtain more than 1000 citations and high Citescore are European Sociological Review (ESR) and American Educational Research Journal (AERJ). The other journal with high Citescore is Journal of Education Policy (JEP). It is observed that Teachers College Record (TCR) receives no Citescore in 2019.

Another obvious finding was that almost all of the prolific journals are ranked Q1 by ScimagoJR except Education Policy Analysis Archives (EPAA) and Frontiers of Education in China (FEC), revealing that these authoritative journals are aware of the significance of equity and social justice in education and are willing to publish relevant research to promote universal understanding on this topic.

### Topical Foci in The Educational Equity Field

The fourth question was answered through co-occurrence analysis of author keywords. Keywords, serve as an important part of literature analysis, can highly represent the trends and patterns of

the studied field (Callon et al., 1993). Through analyzing keywords, the research hotspots and general progress of a certain field can be clearly identified. To remove redundant keywords when analyzing the keyword co-occurrence, a thesaurus file was employed.

**Table 2**

Top 20 productive journals in educational equity research

Rank	Journal	NoD	TC	CPD	Citescore	H-index	JQ
1	EP	56	538	9.6	4	52	Q1
2	TCR	46	837	18.2	N/A	89	Q1
3	BJSE	42	866	20.6	3.7	74	Q1
4	EPAA	41	210	5.1	1.3	46	Q2
5	RSSM	36	760	21.1	3.3	37	Q1
6	IJED	35	815	23.3	2.8	56	Q1
7	TUR	33	478	14.5	2	39	Q1
8	PO	29	350	12.1	5.2	332	Q1
9	ESR	28	1222	43.6	5.4	87	Q1
10	PJE	28	236	8.4	2	41	Q1
11	JECH	27	1540	57.0	6.2	170	Q1
12	EEE	26	251	9.7	2.1	42	Q1
13	EUS	25	392	15.7	1.9	38	Q1
14	REE	25	497	19.9	3.3	48	Q1
15	UE	25	458	18.3	4.4	56	Q1
16	JEP	24	694	28.9	6.2	77	Q1
17	AERJ	23	1059	46.0	5.9	121	Q1
18	BPH	23	554	24.1	3.9	143	Q1
19	UJPH	22	359	16.3	3.7	91	Q1
20	FEC	21	102	4.9	0.5	16	Q2

Note. TC: NoD: Number of Documents; Total Citations; CPD: Citation Per Documents; JQ: Journal Quartiles; EP: Educational Policy; TCR: Teachers College Record; BJSE: British Journal of Sociology of Education; EPAA: Education Policy Analysis Archives; RSSM: Research in Social Stratification and Mobility; IJED: International Journal of Educational Development; TUR: The Urban Review; PO: Plos One; ESR: European Sociological Review; PJE: Peabody Journal of Education; JECH: Journal of Epidemiology and Community Health; EEE: Equity and Excellence in Education; EUS: Education and Urban Society; REE: Race Ethnicity and Education; UE: Urban Education; JEP: Journal of Education Policy; AERJ: American Educational Research Journal; BPH: BMC Public Health; UJPH: European Journal of Public Health; FEC: Frontiers of Education in China.

To be specific, the keywords "educational inequalities", "education inequalities" and "education inequality", "education equity" and "educational equity", "inequalities" and "inequality", "social inequalities" and "social inequality", "education reform" and "educational reform" as well as "education policy" and "educational policy" were found duplicate, thus "educational inequalities" and "education inequalities" were replaced with "educational inequality", "education equity" with "educational equity", "inequalities" with "inequality", "social inequalities" with "social inequality", "education reform" with "educational reform" and "education policy" with "educational policy". Among the 5690 key words retrieved, 110 have minimum occurrence of 10 (words of countries including China, Latin America, Brazil, Europe, Germany, France, United States, Mexico, Sweden, India, Finland, Australia and South Africa were deleted manually).

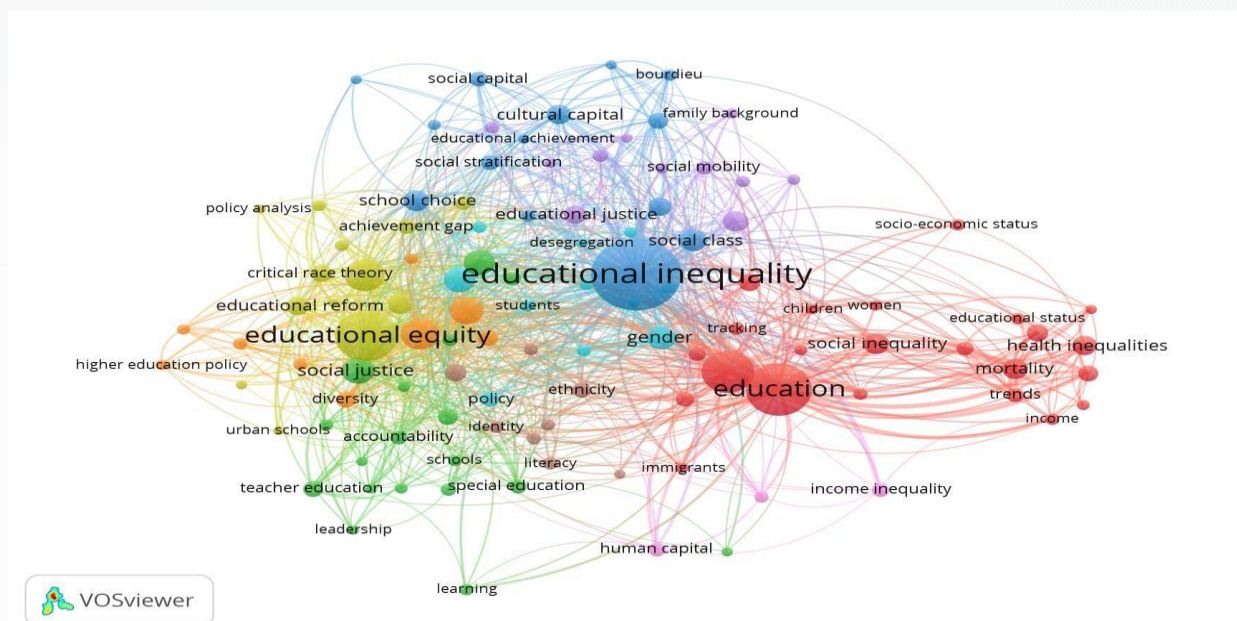
The generated overlay visualization map is demonstrated in Fig. 5, revealing the most frequently-used keywords in the publications on educational equity. It can be seen that all keyword nodes expand radially around the "educational equality" node (509), among which the more prominent nodes are "education (278)", "educational equity (249)", "inequality (179)", "educational policy (104)", "equity (98)", "higher education (78)", "social justice (73)", "educational equality (64)" and "race (62)", suggesting that in the year period, researchers have diverted their attention to these mentioned topics in this field.

As the VOSviewer displays, these key concepts can be classified into nine clusters altogether which may indicate some potential directions in the studied field. The first cluster in red discusses the impact of educational inequity on socio-economic status and health care. The second cluster in green focuses on the equity in inclusive education, drawing attention to the multicultural education, special education and also the important link in achieving equity-the professional



development for teachers. Within this cluster, the node "COVID-19" is also emerging as a new research focus. The third cluster in dark blue discusses on the educational inequality from the perspective of sociology, employing Bourdieu's key concepts of capital and habitus (Bourdieu, 1977) as theoretical framework. The fourth cluster in gold elucidates the relationship between educational equity and educational policies or reforms, showing a tendency to adopt qualitative research to measure the specific issues.

The fifth in purple focuses on the educational justice, covering the themes such as educational attainment and the equality of opportunities. The sixth cluster in light blue represents the factors that may lead to inequity, including race, class, culture, gender and intersectionality. The seventh cluster in orange presents the equity concerns regarding higher education, including the equal access to get educated, the policy to enhance equity and the diversity to be maintained in higher education systems. The eighth cluster in brown discusses the influence of ethnicity in achieving educational equity. The last cluster only contains three nodes, focusing on the potential correlation between educational equity and income equality under the context of uneven human capital brought by globalization. It can be understood that these keyword co-occurrences have attracted the greatest attention from the academia during this period.



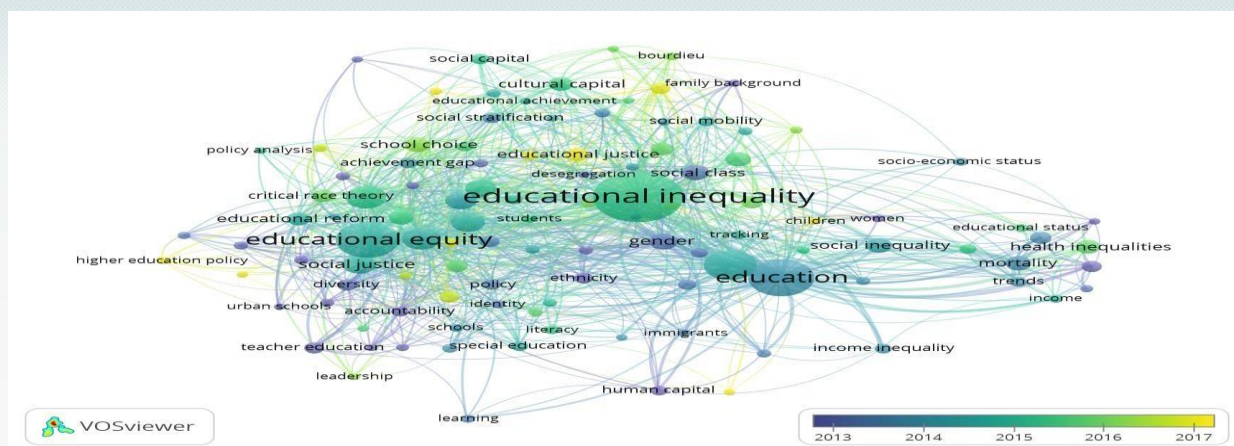
**Fig 5.** The network visualization map of co-occurrence of keywords

Fig. 6 visualizes the changes of research foci in the research of educational equity during the latest decade. With educational (in)equality dominating the research attention, it can easily be noticed that "gender", "ethnicity", "racism", "social class", "diversity", "accountability" as well as "teacher education" in educational equity were heavily studied before, but topics like "higher education policy", "migrant children" and "COVID-19" (the yellow node near "human capital") have come to the new fore in this field. Another interesting finding is a growing number of studies have employed "qualitative research" (the yellow node below "higher education policy") to examine the equity issues in educational field.

### Intellectual Structure of Educational Equity Knowledge Base

The intellectual structure of the educational equity research field from 1991 to 2020 is illuminated by using a comprehensive author co-citation analysis (ACA). McCain (1984) validated that ACA could serve as a useful tool to clarify changes in the intellectual structure of microeconomics and to explore the intellectual structure of a given topic.

By setting the minimum number of citations of an author at 100, the VOSviewer generated a co-citation map with a display of 104 authors (See Fig. 7). Each node represents an author and the size of the nodes in the co-citation map refers to the number of author co-citations. Papers that are frequently co-cited with each other will tend to be aggregated and centered. The cluster in the map suggests the school of thoughts or the knowledge groups that consist of perspectives in similarities shared by a group of scholars (Pilkington & Meredith, 2009).



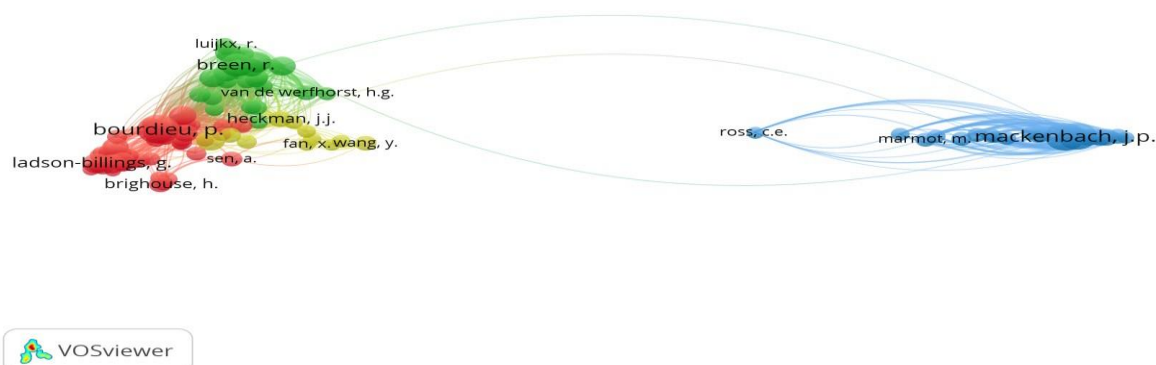
**Fig 6.** The overlay visualization map of co-occurrence of keywords

In the author co-citation map, four clusters indicating discrete schools of thoughts are identified. Bourdieu, P., Breen, R., Mackenbach, J. P. and Hanushek, E. feature the largest node in each cluster, showing that they are the most co-cited authors respectively. The first cluster in red, as the largest one, contains 48 scholars associated with the educational equity from sociocultural context, representing by authors like Bourdieu, P., Lareau, A. and Ladson-billings, G. Noticeably, Bourdieu, P. receives 861 co-citations and owns total link strength of 7870. It's examined that these prominent scholars share the common inquiries in this field.

The cluster in green is composed of 24 scholars whose research interest lies in exploring the connection between social class differentials and educational attainment. The representatives are Breen, R., Goldthorpe, J., Erikson, R. and Shavit, Y., whose work is much related with each other. Interestingly, Breen, R., Goldthorpe, J. and Erikson, R. have close collaborations on the influence of inequalities in class stratification on educational attainment.

The cluster in blue consists of 21 scholars who focus on the educational equity in terms of health care. Mackenbach, J.P., Kunst, A.E., Huisman, M., as the leading scholars, have done several studies to validate the relation between educational differences and public health status in western European countries. Additionally, as seen in the Fig.7, the blue cluster, lying toward the outskirts compared with the other three, obtains fewer co-citations with other papers, indicating that this school of thought displays more discrete thematic focus.

The yellow cluster shows the weakest co-citation network with only 11 scholars, touching upon the impact of economics in schooling on children's academic performance. The most influential scholar is Hanushek, E. who has been co-cited 328 times, then followed by Heckman, J. and Woessmann, L. They explicitly center on how economics in public schools (e.g., production, efficiency, policy, teacher effectiveness) lead to the disparities in the performance of students.



**Fig 7.** Author co-citation map on educational equity, 1991 to 2020

## Discussions

This article presents a bibliometric analysis of educational equity research conducted by VOSviewer, Microsoft Excel and Tableau based on 3216 research documents obtained from Scopus database between 1991 and 2020 to uncover the features of relevant publications on the performance of development trajectories, international contributions and collaborations, prolific authors and productive journals, topical foci as well as intellectual structure pertaining to educational equity. The section elaborates on the interpretations of the findings of the study.

### **International Efforts Have Facilitated Educational Equity Studies Since the Past Two Decades**

Generally speaking, a great deal of international efforts has facilitated educational equity studies to a large extent. A group of scholars reaffirmed that it is the international synergies of efforts that support equity for all students (Artiles, 2020; Sherman & Poirier, 2007; Whitley & Hollweck, 2020). Before 1990, the literature on this field is really scarce. However, since 1990s, pursuing equality of education for all and reducing the educational gap between different regions and social groups have become shared goals for countries around the world to reformulate their major social policies. In 1990, UNESCO held the first World Conference on Education for All in Jomtien, Thailand, and agreed to World Declaration on Education for All (UNESCO, 1990) by over 150 countries to promote the universal right for education. Also, OECD education ministers had reached a consensus to place more emphasis on high quality and equity in education and training (OECD, 1997). The endeavor may account for the initial slow growth in the research area of educational equity.

After entering the new millennium, the international communities attached greater importance to equity and quality in education, just like Sherman and Poirier (2007) reported, "international support of educational equity has continued into the 21st century" (p. 19). In the 2000 World Education Forum in Dakar, Senegal, the Dakar Framework for Action, as a re-affirmation of the vision of World Declaration on Education for All, was adopted to call for collective commitment to education for all (UNESCO, 2000). Moreover, MDGs signed in the same year are pledged to achieve primary education universally and eliminate gender disparity in basic education. Artiles (2020) also views the MDGs on Education as a boon to eradicating inequities in education. Serving as the successor of the MDGs, the SDGs attach greater attention to equity, seeking to ensure equal access to learners at all levels (United Nations General Assembly, 2015). The important role SDGs play in minimizing the educational gap should be highlighted. In the study on current policy reform in Canada, Whitley and Hollweck (2020) propose that UN with SDGs should be given due credit for promoting equitable and inclusive policy across the area. Under such backdrop, the different nations of the world with shared vision have responded to the emergent call of achieving the goal of educational equity in the new era, leading to the rapid growth of publications on this field.

### **The Disproportionate Representation of Educational Equity Studies Exists in Global Context**

Though there is a surge of academic attention and global commitment on educational equity, the disparities in the volume of research among different countries reveal that educational equity are disproportionately studied and addressed. For a start, authors found that the majority of the countries that with highest number of publications are developed ones and geographically located in North America and Europe. As Table 1 and Table 2 demonstrate, the most prolific authors are all from Europe and the most productive journal EP and the highest-cited one JECH are both published by England, strengthening the dominant role of the western countries in educational equity studies.

More importantly, all the countries except Indonesia are the member countries of OECD, which have been motivated by OECD to address the issues of access, participation and equity in education and training (OECD, 1997). Asian countries, such as the top three contributors-China, Japan and Indonesia, also loom as indispensable forces to be reckoned with. But one alarming fact noticed is that African countries, which are thought to be the continent tortured by the most

extreme social inequities, have contributed the least to the educational equity knowledge base. The majority of the studies involve the enduring inequalities in South Africa, the area that has long fought for a racially equal education system after the apartheid while other parts of Africa seem to be overlooked by scholars. This finding is consistent with the statement made by Salmi (2018) that though equity is considered a top priority for governments, many countries still have narrow understanding of equity groups. Consequently, inequity and inequality in education continue to be major problems across countries and regions (Campbell, 2020; Cochran-Smith et al., 2016; Truog, 2000) and worse still, the inequities problems in some aspects and some areas seem even bigger than before (Crawford-Garrett, 2017; Yang Hansen & Gustafsson, 2019).

Furthermore, the country collaboration map reveals that several clusters of the countries have formed close cooperative relationship in this studied area, creating country collaboration network contingent on influential countries such as United States, United Kingdom, China, Australia, Germany, Netherland and Canada. The only developing country-China has long placed educational equity as the current policy priority (Mu et al., 2013) and has achieved much improvement especially in ensuring equitable access to higher education (Chen et al., 2018; Wang, 2013). European countries tend to collaborate with their counterparts more frequently while Asian countries like China, South Korea, Singapore and Japan appear to co-work more in this field. Generally, more concern is given on the local community instead of the global concern (Yaacob et al., 2019). In response to the deficient cooperation between east and west, Marom et al. (2021) has suggested, global cooperation should be advocated to overcome this universal crisis that exposes the interdependence of the whole world.

To conclude, though equity in education is greatly highlighted in the whole world manifested in the surge of the publications, the researchers from developed countries appear to care about equity challenges more than developing countries and the western counties are still the leading forces in addressing these problems to benefit their education policies and systems. Also, a global cooperation network has not yet been built. Therefore, scholars from Asian and African countries may need to devote more to this grand issue to expand the impact of their publications and at the same time the barriers to international cooperation should be broken down for tackling the inequities at global level.

## **Research Foci Imply Broad and Multi-Faceted Themes**

The research foci in educational equity studies imply broad and multi-faceted themes. Through keywords co-occurrences map, major themes of "educational equality", "education", "educational equity", "inequality", "educational policy", "higher education", "social justice" and "race" are identified as the sustainable area of study within the umbrella of educational equity research. Scholars have paid most attention to the impact of educational inequity on socio-economic status and health care, showing that educational inequity is a determining factor of the social inequality (Hu et al., 2019) and healthy issues (Jameson et al., 2020).

Besides, when examining factors that may lead to inequity, including race, class, culture, gender and intersectionality, the educational status of black people is increasingly discussed in articles such as written by McArthur & Lane (2019), McPherson (2020) and Sampson et al. (2020). The explosion of relevant studies may also be confirmed in the statement of Howard (2016) that the Black Lives Matter movement born in 2013 has gained additional attention since then.

In addition, the emerging topics like "higher education policy", "migrant children", "COVID-19" show that educational equity research implies broad and multi-faceted themes that are pertinent to the contemporary social issues. Taking COVID-19 as an example, equity is considered the first concern for those who are disadvantaged by the pandemic (Trinidad, 2021). The majority of studies focus on the equitable access to remote learning in the post-COVID-19 era (Aguiera & Nightengale-Lee, 2020; Tienken, 2020).

From the studies on heavily touched upon topics and these emerging topics, the research foci undoubtedly contain broad and multi-faceted themes, providing researchers with insights into the equity in education at each educational level across the globe.

## **Educational Equity Research Involves Interdisciplinary Perspectives**

More significantly, the studies have revealed some underlying school of thoughts and the identified intellectual structure signifies that educational equity is an interdisciplinary domain that

attracts continuous and increasing attention from the academic world, covering the perspectives of sociocultural context, social stratification, health care and economic impact.

Noticeably, overwhelming studies on educational equity are conducted based on the tenets of sociology, employing the key concepts of Bourdieu, P. as the theoretical framework. The reason he is so influential in this domain may be due to his early attention on the issue of equality in research on schools by proposing the theory of cultural capital (Castelli, Ragazzi, & Crescentini, 2012). Another two well-cited scholars sharing the same research inquiry are Lareau, A. who centered on the impact of cultural capital on navigating education (Lareau, 1987) and Ladson-billings, G. who proposed the theory of Culturally Relevant Pedagogy, aiming to help prospective teachers to guarantee justice and equity in teaching (Ladson-Billings, 1995). Other equity frameworks focus on culture include cultural responsiveness (Gay, 2000) and equity literacy (Gorski, 2017) which place social justice at the center of the education.

In addition to perceiving educational equity as an issue regarding pedagogy and sociology, scholars have also discussed educational equity from the perspective of health care. The most prolific author Mackenbach, J. P. is also the representative for leading the studies on looking into the association between educational equity and health care. A solid cooperation network can be detected among these productive European scholars such as Mackenbach, J. P., Kunst, A.E., Deboosere, P. and Regidor, E., attracting due attention to the inequities caused by health issues. The research on equity from the perspective of health care has corroborated that education equity is an important social determinant of health (Lippman, 1998).

Indeed, these studies, committed to presenting contemporary landscapes of educational equities from interdisciplinary perspectives, have largely enriched the previous studies. Synthesizing knowledge from multiple distinct academic disciplines can really benefit educational equity studies. The importance of interdisciplinary trend has been noted earlier by Artiles (2011) who calls for "an interdisciplinary perspective to explore the complexities of educational inequities" and believes that the novel perspectives can help "transcend the limits of traditional research on educational equity" (p. 431).

## Limitations of the Study

Though the results entail detailed quantitative analysis of the educational equity knowledge base, there are still limitations in this study. The first limitation lies in the use of a single database where the documents were obtained. The Scopus database is considered to be the largest one that can provide full range of documents, but still may not be able to include all the valuable documents on this given topic. It is considered that using multiple sources of databases may better enrich the findings.

Additionally, the selection criteria were limited to articles, review papers and conference papers in English only, other valuable documents that could contain the research foci may not be covered and investigated. Moreover, the interpretations of the clusters on both keywords co-occurrence and intellectual structure maps may be personal and incomprehensive, though authors have done their utmost to be impartial.

Thus, research in the future can solidate the quantitative rigor of the bibliometric analysis based on multi-databases and the combination of bibliometric analysis with systematic review is suggested for generating more substantive findings in this research area. However, despite the limitations, this bibliometric research can as well present thought-provoking insights and significant perspectives into this area for researchers interested in educational equity.

## Conclusion

This study, to a modest extent, has presented a general overview of educational equity research between 1991 and 2020 based on scientific mapping. The 30-year bibliometric analysis has found that: 1) in the wake of the new millennium, brought by international efforts mostly led by OECD and UNESCO, the number of publications has been on the rise drastically, referring to 6064 authors, 1168 journals and 158 countries. 2) countries with most contribution and collaboration are United States, United Kingdom and China. 3) Among the most active journals in this domain, the journal Educational Policy (EP) is the largest contributor with 56 documents published in this field while the Journal of Epidemiology and Community Health (JECH) received the highest citations and Citescore. 4) Based on keywords co-occurrences, research foci are identified to be "educational equality", "education", "educational equity", "inequality", "educational policy", "higher

education", "social justice" and "race" regarding to the equity concerns in educational arena and in recent decade, studies on equity in topics of "higher education policy", "migrant children" and "COVID-19" are also emerging. 5) Bourdieu, P., Breen, R., Mackenbach, J. P. and Hanushek, E. are the most co-cited authors, forming the intellectual organization of the educational equity research field.

Based on the findings, the authors have further summarized that: 1) international efforts have facilitated educational equity studies since the past two decades, 2) the disproportionate representation of educational equity studies exists in global context, 3) research foci imply broad and multi-faceted themes, 4) Educational equity research involves interdisciplinary perspectives. On the whole, apart from contributing to the burgeoning literature on educational equity, this bibliometric research can also orient new entrants in the domain of educational equity, providing guidance to enable them to identify the research priorities for future studies. Therefore, in response to the insufficiencies in this research area, the authors call for a global cooperation network and scholars' sustained commitment to addressing the cross-cutting issue of education equity from diverse themes and interdisciplinary perspectives.

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