A Scientometric Overview

By Fatkul Anam

Advances in Social Science, Education and Humanities Research, volume 477
Proceedings of the International Conference on Community Development (ICCD 2020)

A Scientometric Overview of Educational Development Literature

Fatkul Anam*
Universitas Wijaya Kusuma Surabaya
fatkulanam@yahoo.co.id

Mega Firdaus
Universitas Nahdlatul Ulama Sidoarjo

Andre Septianto
Universitas Nahdlatul Ulama Sidoarjo

Agung Purnomo
Bina Nusantara University

Abstract. **Educational development is essential to enhance the standard of education with the collaboration of educators, students, and parents. This research aims to map the status of international educational development publication literature indexed by Scopus using scientometric overview. The study has carried out scientometric methods and analysed research data using the analysis search results service from Scopus and the VOSviewer application. The research data of 5,807 academic documents published from 1910 to 2019 were obtained from the Scopus database. The results showed an increasing trend in the number of educational development literature at the international level each year. The most productive countries, research institutions, and individual researchers in educational development literature were the United States; UCL Institute of Education; and Watson, K. The greatest number of funding sponsors in the international educational development literature was the Economic and Social Research Council. The most intensive subject areas and sources of publications in educational development literature were social science and International Journal of Educational Development. There were three patterns of collaborative researchers and five networks of research keywords and in the educational development literature.**

Keywords: scientometrics, educational development, literature

INTRODUCTION

Educational development is among the Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs)'s most important priorities in enhancing the standard of education in today's modern era. Education is one most fundamental political, social, economic developments of any country and can make a major contribution to development [1], [2]. As international allies for reform in developing countries, the MDGs and SDGs function to obtain universal basic education and great education for everyone [3]. Without sustainable development education, we cannot manage and create a sustainable future [4]. Educational development is the process of helping colleges or universities or other educational institutions that function effectively as a teaching and learning community [5]. Academics are a special place, where educational development is not isolated from unbalanced power structures. Is that a vulnerable work position from administrative staff or the accreditation body authority [6].

Collaborative work is needed between teachers, students, and parents in educational development to improve the quality of education. The quality of education is often a highly politicised issue. Increasing access to high-quality education continues to be an urgent agenda for governments in developing countries. The challenges of education policy have shifted from increasing the amount of education to improving its quality [7]. Examples of efforts to improve the quality of education are potential policies to improve teacher skills, namely evaluating them, giving them feedback, and providing them with training [8]–[10]. Besides, students also need to prepare themselves for the quality of education and a good future. Education for students is done by practising skills in communication, collaboration, creativity, critical thinking so students can adapt and are sensitive to change [11]. These changes present major challenges for education in general. Therefore, education aims to prepare young people to live, succeed, and work in the future [12]. The role of the family is also important. Mothers are participating in the development of education for their children. Fathers are more focused on giving examples of role models or social processing of children [13]. Educational development needs to be developed with the spirit and principles of entrepreneurship.

Educational development methodologically is characterised by an approach and emphasis on facilitation and collegiality for direction, teaching, or training [14]. Generally, the previously published literature related to educational development is limited to the scope in one space [15], one subject [16], or one country [17]. The problem is there is no review of educational development publications literature that shows the big picture that is visualised every year with data from all countries. Also, there are no studies that specifically address the

relationship between authors, affiliations, keywords, and the impact of educational development publication literature. Therefore, this research aims to map the status of international educational development publication literature indexed by Scopus using scientometric overview.

METHOD

This research has mapped the status of educational development publication literature globally in the past century and has been indexed by Scopus. The data that has been used was obtained from the Scopus database using the document search service in May 2020 [18]. This study has carried out scientometric methods and analysed research data using the analyse search results service from Scopus and the VOSviewer application [19]. The VOSViewer tool is used to build and visualise bibliometric networks, namely the number of studies, researchers, academic affiliations, countries, fields, keywords, and author collaboration [20]. This survey was conducted by identifying keywords related to educational development to search for and identify related articles from the Scopus database for 5,807 documents published from 1910 to 2019. Research limits the retrieval of data to 2019 without looking at 2020 (exclude 2020) so that the data the yearly obtained describes the condition of the study in one whole year from January to December. The query command that is applied when mining data on Scopus is TITLE-ABS-KEY ("educational development") AND PUBYEAR <2020).

The study analysed co-authorship with units of analysis of authors and full counting methods using VOSViewer to get the author's collaboration network. The study carried out an analysis of co-occurrence with analysis of keywords and a full calculation method using VOSViewer to obtain a network of keywords.

RESULT & DISCUSSION

This section explains about increasing data results based on affiliation, country, subject area, document type, documents per year from sources, documents per year from fields, and document citied, co-occurrence, and author networks in educational development literature.

3.1 Most Frequent Country Affiliation of Educational Development Literature

Figure 1 shows the countries that have the largest contribution in publishing educational development literature. They were the United States with 1,568 documents, followed by the United Kingdom with 936 documents, Australia with 332 documents, Canada with 245 documents, China with 219 documents, South Africa with 201 documents, Germany with 161 documents, South Korea with 156 documents, the Netherlands with 139 documents, Spain with 126 documents, India with 115 documents, Hong Kong with 108 documents and Sweden with 106 documents. Country Number of Educational Development Per Year Figure 1.

3.2 *Most Frequent Institution Affiliation of Educational Development Literature*

The most productive research institution in the publication of educational development literature was the UCL Institute of Education with 53 documents. Followed by the University of London with 53 documents, the University of Oxford and The World Bank, the USA with 42 documents each, Stanford University with 40 documents, University of Cambridge and University of Wisconsin-Madison with 36 documents each, the University of Nottingham with 35 documents, The University of Hong Kong and The Education University of Hong Kong with 34 documents each.

3.3 Most Individual Authors of Educational Development Literature

The individual author with the most publications in educational development literature was Watson, K., with 13 documents. Followed by Mervis, J., with 12 documents, Rozelle, S., with 9 documents, Zhang, L., with 9 documents, Mason, M., with 8 documents, Mok, KH, with 8 documents, Ololube, NP, with 8 documents, Sanada, K., with 8 documents, Shimizu, C., with 8 documents, Chapman, DW, with 7 documents, McGrath, S., with 7 documents, Shi, Y., with 7 documents, as seen in figure 3. Individual Writer. Most Individual Authors of Educational Development Literature in Figure 3.

3.4 Most Frequency of Educational Development Literature by Subject Area

The most intensive subject area in the publication of educational development literature was Social Sciences with a proportion of 47.7%. It is then followed by fields of study such as Environmental Science 7.7%, Earth and Planetary Sciences with a proportion of 6.1%, Medicine with a proportion of 5.5%, Economics, Econometrics, and Finance 5.4%, Arts and Humanities with a proportion of 3.8%, Engineering with a proportion of 3.5%, Business, Management and Accounting with a proportion of 3.3%, Agricultural and Biological Sciences with a proportion of 2.9%, Psychology with a proportion of 2.6% and others with a proportion of 11.4% as shown in Figure 4.

3.5 Most Frequent Type Document of Educational Development Literature

The most document type in the publication of educational development literature was Article with 4,689 documents (80.7%). Followed by Review with 361 documents (6.2%), Conference Paper with

342 documents (5.9%), Book Chapter with 183 documents (3.2%), Short Survey with 115 documents (2.0%), Book with 67 documents (1.2%), Note with 17 documents (0.3%), Editorial with 16 documents (0.3%), Erratum with 8 documents (0.1%), Conference Review with 2 documents (0.0%) and others with 7 documents (0.1%). Most Frequent Type Document of Educational Development Literature in Figure 5.

3.6 Annual documents based on the source of Educational Development Literature

The most widely publicized source in educational development literature is the "International Journal of Educational Development" with 488 documents. Followed by the "Kedi Journal of Educational Policy" with 182 documents, "International Review of Education" with 158 documents, "Economics of Education Review" with 139 documents, and "Comparative Education" with 108 documents as shown by Figure 6 Research Publication Sources.

3.7 Annual documents of Educational Development Literature

Figure 7 shows that the number of publications in the international educational academic literature tends to increase every year. The highest publication of international academic documents in the field of educational development occurred in 2011 with 386 documents. Meanwhile, in 2018 there were 315 documents, in 2017 there were 288 documents, in 2016 there were 304 documents, in 2015 there were 351 documents, in 2014 there were 343 documents, in 2013 there were 371 documents, in 2012 there were 410 documents, in 2011 there were 386 documents, in 2010 there were 380 documents, in 2008 there were 282 documents, in 2009 there were 317 documents, in 2007 there were 237 documents, in 2006 there were 192 documents, in 2005 there were 98 documents, in 2004 there were 75 documents, in 2003 there were 82 documents, in 2001 and 2000 there were 170 documents, from 1910 to 1999 there were 757 documents published. Number of Documents Per Year of Educational Development Literature in Figure 7.

3.8 Document Cited of Educational Development Literature

The most cited literature in educational development was Cummins, J. in 1979 entitled "Linguistic Interdependence and the Educational Development of Bilingual Children" in "Review of Educational Research" with 1,151 citations. Cited by Highest in Figure 8.

3.9 Keyword Network

The keyword network construction has been compiled with the VOSViewer tool. The criterion for a minimum number of documents related to keywords was thirty repetitions. Thus, from 16,443 keywords, 271 keywords met the thresholds. There are five groups of research keywords related to educational development literature. Keyword Networks in Figure 9.

1. Green Cluster - sub-topic: student, e-learning, engineering education, training, learning.
2. Red Cluster – sub-topic: educational development, education policy, educational attainment.
3. Yellow Cluster – sub-topic: educational status, cohort analysis, cross-sectional studies, school.
4. Blue Cluster – sub-topic: education program, teacher, education, leadership, article.
5. Purple Cluster – sub-topic: Europe, western Europe, England.

3.10 Author Network

The criteria for the minimum number of documents per author were five documents. Thus, from 11,154 authors, 49 authors were found who met the thresholds. Figure 10 shows that there are three groups of collaboration patterns between researchers in the educational development literature.

1. Red Cluster: Zhang, Y., Liu, J., Bray, M., & Mason, M.
2. Green Cluster: Wang, J., Luor, R., Zhang, L., & Rozelle, S.
3. Blue Cluster: Liu, C., Shi, Y.

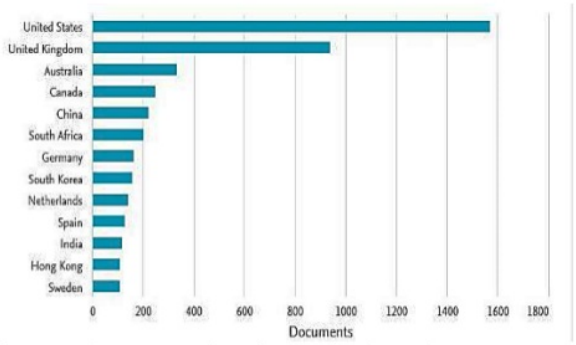

Figure 1. Country Number of Educational Development Per Year

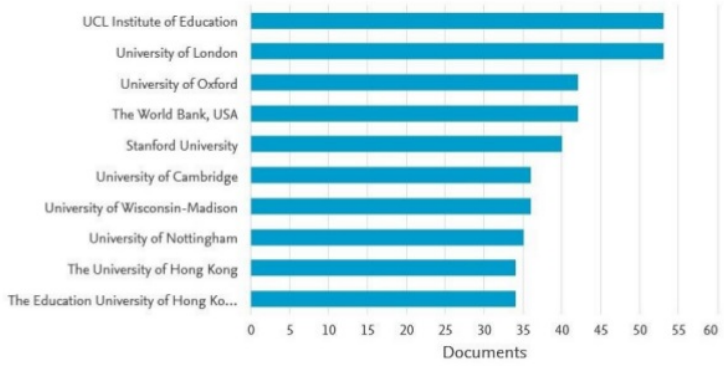

Figure 2. Affiliation Number of Educational Development Per Year

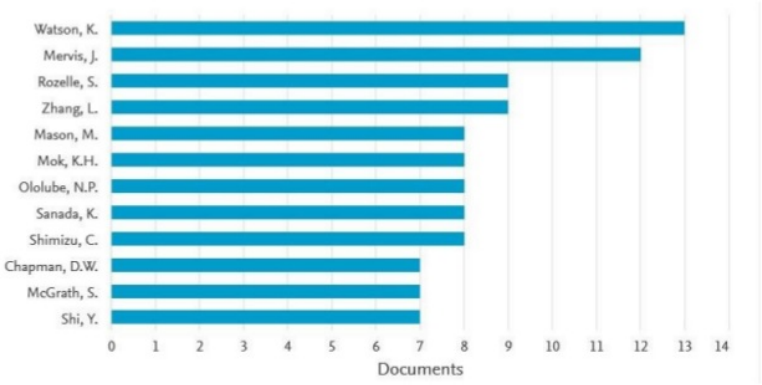

Figure 3. Most Individual Authors of Educational Development Literature

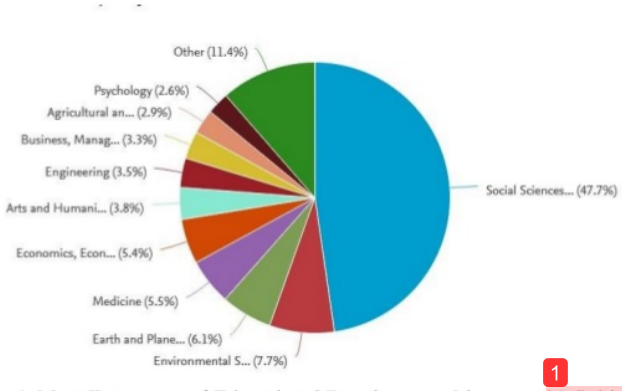

Figure 4. Most Frequency of Educational Development Literature by Subject Area

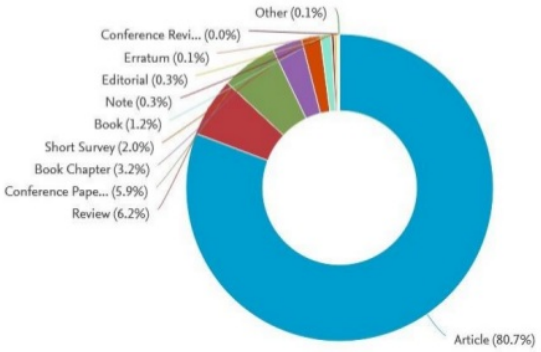

Figure 5. Most Frequent Type Document of Educational Development Literature

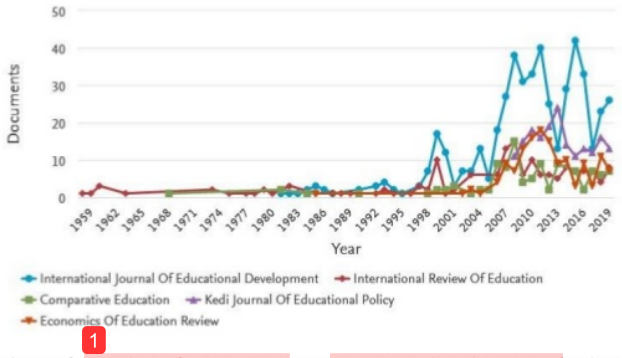

Figure 6. Number of Documents Per Year Based on Sources of Educational Development Literature

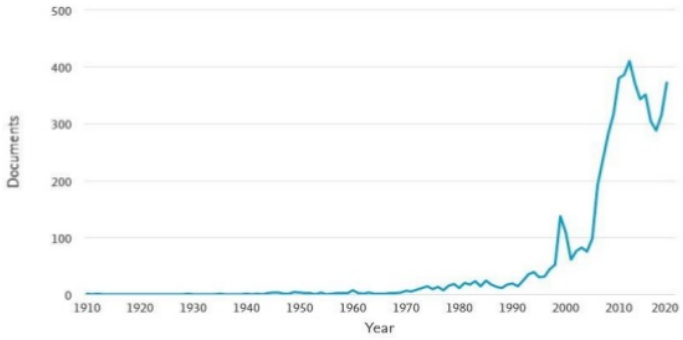

Figure 7. Number of Documents Per Year of Educational Development Literature

	Document title	Authors	Year	Source	Cited by
☐ 1	Linguistic Interdependence and the Educational Development of Bilingual Children	Cummins, J.	1979	Review of Educational Research 49(2), pp. 222-251	1151
	View abstract ⌄ View at Publisher Related documents				
☐ 2	Not for profit: Why democracy needs the humanities ([1] Book)	Nussbaum, M.C.	2012	*Not For Profit: Why Democracy Needs the Humanities* pp. 1-168	834
	View abstract ⌄ Related documents				
☐ 3	Cultural Intelligence: Its Measurement and Effects on Cultural Judgment and Decision Making, Cultural Adaptation and Task Performance	Ang, S., Van Dyne, L., Koh, C., (...), Tay, C., Chandrasekar, N.A.	2007	Management and Organization Review 3(3), pp. 335-371	609
	View abstract ⌄ View at Publisher				
☐ 4	Benefits of undergraduate research experiences	Russell, S.H., Hancock, M.P., McCullough, J.	2007	Science 316(5824), pp. 548-549	552
	View at Publisher Related documents				
☐ 5	Immersive interfaces for engagement and learning	Dede, C.	2009	Science 323(5910), pp. 66-69	545
	View abstract ⌄ View at Publisher Related documents				

Figure 8. Cited by Highest

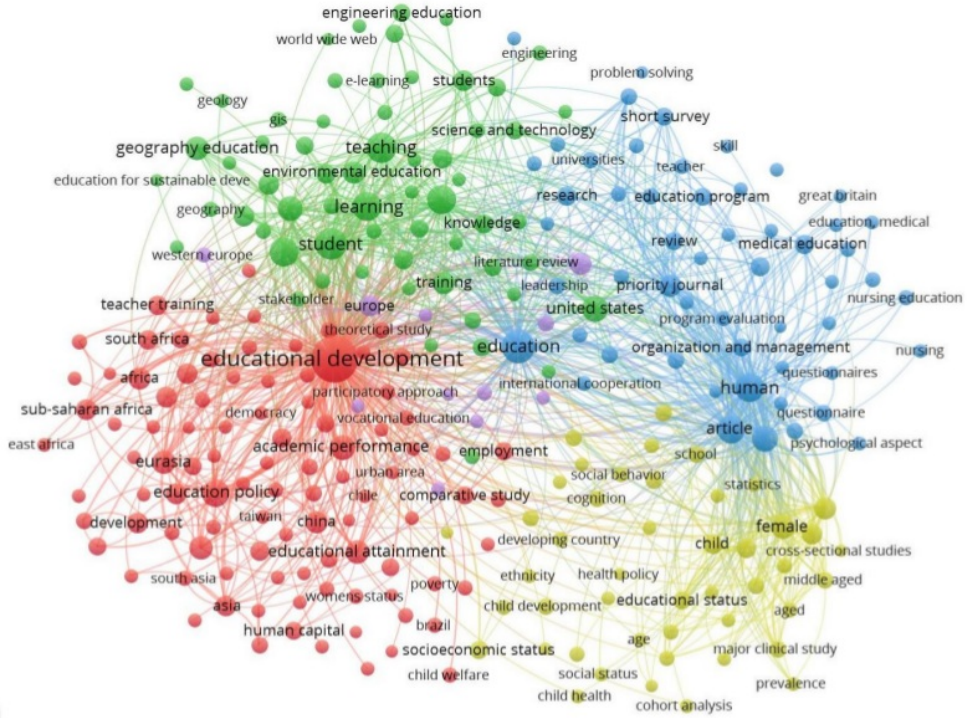

Figure 9. Keyword Networks

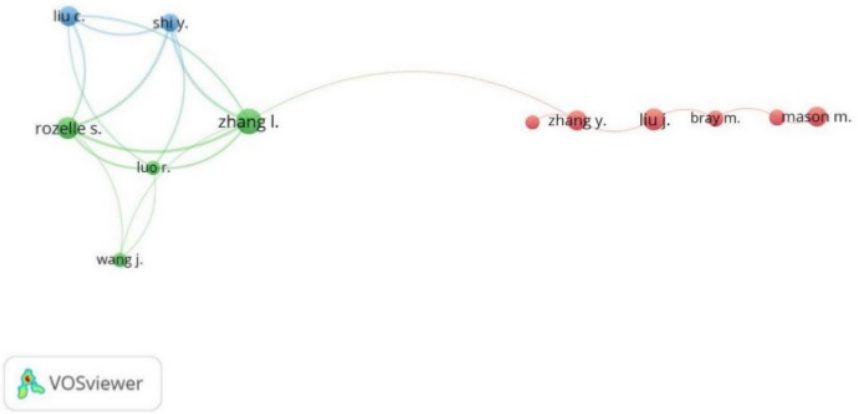

Figure 10. Author Network

CONCLUSION

The results of this study indicate the status of the map and the trend of increasing numbers of international educational development literature every year that are indexed by Scopus. The culmination of a publication on the educational development literature was in 2011 with 386 documents. The most productive research institutions, countries and individual researchers in the publication of educational development literature are the UCL Institute of Education with 53 documents, the United States with 1,568 documents and Watson, K., with 13 documents. The study area and document type of the most widely published educational development literature are Social

Sciences with a proportion of 47.7% and article. The most widely published source of educational development literature is "International Journal of Educational Development" with 488 documents. Literature with the highest number of document citations is Cummins, J. in 1979 entitled "Linguistic Interdependence and the Educational Development of Bilingual Children" with 1,151 citation documents. There were three patterns of collaborative researchers and five networks of research keywords and in the educational development literature.

Future research is to analyse contributions and explain the impact of research by measuring citations based on a combination of data obtained from Scopus and WoS.

ACKNOWLEDGMENT

We thank Universitas Airlangga for supporting Scopus database access.

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