Exploring Critical Discussion Research: A Bibliometric Analysis of Scopus-Indexed Publications

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Abstract

This study uses bibliometric analytic approaches to analyses all publications indexed in the Scopus database on critical discussion from 1929 to 2023 to trace the evolution and direction of critical discussion research on Scopus-indexed publications. The data obtained were analysed using Excel and R/R-Studio. VOSviewer analyses the simultaneous occurrence of keywords and document citations visually. The author found 502 publication data that match the function, subject, and criteria that have been set. The results of this study show an annual growth rate of 5.28%, with the publication of the most data in 2022 graphical analysis. The United States is the country that contributes the most publications affiliated with The University of British Columbia. Valcke, M. Become the most prolific writer in critical discussion themes. The bibliometric analysis performed was limited to Scopus data. Other national and international databases should have been considered in the study. This study presents a brief overview of the literature accessible to researchers working in education and provides recommendations for future research.
Keywords: Human, Education, Methodology, Critical Thinking, Communication

Introduction

Many learning theorists are trying to conduct research whose discussion focuses on efforts to improve learning practices (Shohib & Othman, 2019) with innovative applications (Thomas et al., 2013; Vázquez et al., 2021) for teachers. Understanding and applying several factors that can influence teachers' innovative behavior, such as demographic, individual, and organizational factors in teaching and learning activities (Abrar et al., 2023), so that they can produce effective and innovative learning (Thomas et al., 2013). One form of innovative and interactive learning teachers use is active learning methods (Melati et al., 2023), including discussion groups (Timmers et al., 2008), the power of two, active knowledge. Sharing, jigsaw learning, card sorting, rotating roles, etc. These various methods are mainly carried out by students discussing with each other.

In this way, understanding and applying critical discussion correctly in organizing learning (Wildan, 2018) is very necessary. Various problems and phenomena that occur in society can train the ability to think critically (Zid & Casmana, 2021); however, this critical thinking needs to be trained and directed correctly so that it can be used to solve problems (Ruiz-Tagle & López M, 2014) with the right solution (Kanzian, 2020; Poce et al., 2012). Critical thinking is needed in group discussions; this can be used in the world of work (Anowar et al., 2014; Mckeown et al., 2014), society (Marcella & Chowdhury, 2020), or education.

The discussion method in learning is the process of conveying information where the teacher provides opportunities (Chapman et al., 2019) for students to give opinions (Abu-Heran et al., 2014; Stumpf, 2016; Zid & Casmana, 2021), collect information, solve cases (Hribar, 2020) or making conclusions (Sá et al., 2021) in groups. This method aims to train students to think critically, train teamwork (Koh et al., 2018), and train (Johnston & Terp, 2019) students' courage to express their opinions. So, critical discussion research is needed to see how important its use is.

Thus, in conducting a critical discussion, critical thinking involves several things, including assessing rationally, thinking logically and systematically, and looking at a thing or problem carefully. According to Robert Ennis, a leading American philosopher in critical thinking, he concluded that the critical thinking process is reasoning about an action or belief that is logical and focuses on determining what will later be believed and applied in life. In simple terms, the critical thinking process is the ability to reason objectively to look at problems so that the results are not based on assumptions but on existing reality. The benefits of implementing critical discussion are that students will be able to see problems from various perspectives, become reliable individuals, be independent in dealing with problems, be able to find new ideas and opportunities, students will be able to think clearly and rationally, be able to hone their skills in public speaking and language. , can increase adaptability and be used to develop personal potential and creativity.

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One approach to assess scientific research outcomes, examine the relationship between science and technology, map out scientific domains, monitor the growth of new knowledge in specific fields, and serve as future indicators for strategic planning is through the use of bibliometric indicators (Macedo et al., 2022). In papers indexed by the Scopus database from 1929 to 2023, the goal of this study is to map the evolution and trajectory of critical debate research. Since the first article on critical research was discovered in 1929, the year 1929 was picked as the beginning year according to data from the Scopus database.

Based on research by (Bernardini Di Gialleonardo, 2023), in the last few decades, learning strategies have increasingly been developed to improve and strengthen student learning by increasingly involving student participation in the learning process. The results obtained through an anonymous assessment survey distributed to almost 200 students show that there is a general appreciation for the experience and ability to visualize theoretical concepts in educational projects in the post-covid era introduced by the Politecnico di Milano. The feedback received was positive so this performance will be repeated in the next academic year with modifications based on suggestions from students (Hadi, 2018).

Meanwhile, research (Echeverria, 2023) states that critical education will increase democratic human interaction. So that society will efficiently develop the quality of the existing education system (Rupp, 2018). The goal achieved from this research is in the form of a defense that every existing educational effort must start from the micro education level, namely with critical thinking and dealing with existing control logic; one way of training is with light discussions to train critical thinking(Andriyani & Apriantoro, 2023). From previous research regarding critical discussion, bibliometric analysis research methods have yet to be used to map scientific publications in various fields.

Based on previous research with the theme of critical discussion of novelty, in this research, the author uses bibliometric analysis in processing data obtained from the Scopus database so that researchers can observe research from various published articles that have been limited to both national and international ones. Hopefully, this can provide progress in developing knowledge on related themes.

Method

Bibliometric analysis methods were used in this research (M. S. Apriantoro et al., 2022). Data was obtained using a Boolean search engine to comb the Scopus database between 1929 and 2023. The search was conducted on August 18, 2022, at 08.05 WIB. The research uses R and Rstudio, VosViewer, and Microsoft Excel tools to analyse citations, document content, and networks. Researchers took three stages in processing the dataset (M. Apriantoro et al., 2023).

In the first stage, researchers will conduct a literature review of related themes to ensure relevant research is carried out on bibliometric topics. Apart from that, a literature review helps determine appropriate keywords that represent the research's scope.

In the second stage, at the stage, the researcher used the boolean operator TITLE-ABS-KEY (critical AND discussion AND of AND the AND work) to search Scopus, which produced 15,207 documents. Next, filtration is carried out with the boolean operators (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT- TO (LANGUAGE, "English")) AND (LIMIT-TO (SUBJAREA, "soci")) to limit only the subject area in the form of social science, only articles as document type, document sources only journals, and only English language articles, resulting in a final document of 3,668.

In the third stage, analysis was carried out on the final search documents using Scopus analyser and R and Rstudio to determine the number of documents per year, documents by journal, author, affiliation, country, and subject/field. Next, analysis was carried out at the document network level with visualization via VOSviewer and Microsoft Excel data processing. This research procedure can be seen in Figure (x) below:
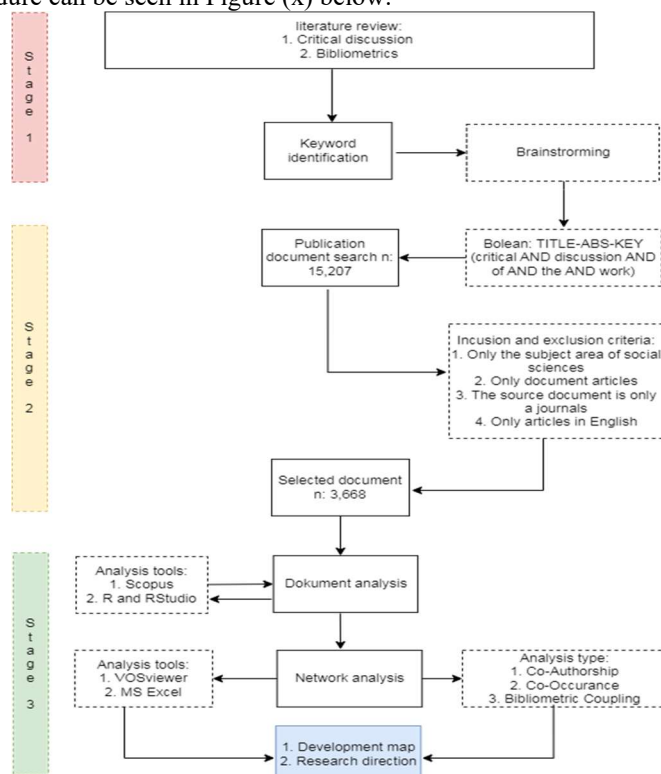

Figure 1. Research Procedure

Result and Discussion
Document Analysis

Table 1 outlines 3,668 documents collected over 94 years from 1992 to 2023, including 7674 authors, 1714 single authors, 11.01% international cooperation in writing, and 166,856 citations with an average number of references per document of 17.21 citations.

Table 1. Summary of The Review

Description	Results
Main Information About Data	
Timespan	1929:2023
Sources (Journals, Books, etc)	1784
Documents	3668
Annual Growth Rate %	5,82
Document Average Age	8,73
Average Citations Per Doc	17,21
References	166856
Document Contents	
Keywords Plus (id)	4455
Author's Keywords (de)	9781
Authors	
Authors	7674
Authors Of Single-Authored Docs	1714
Authors Collaboration	
Single-Authored Docs	1785
Co-Authors Per Doc	2,2
International Co-Authorships %	11,01
Document Types	
Article	3668

Documents by Year

Figure 2 shows the development of publications on the critical discussion theme from 1929 to 2023. The first documents appeared in 1929. From 1929 to 1968, documents experienced stagnation, totaling 1 document. The peak increase in document publications occurred in 2022, with a total of 365 documents.
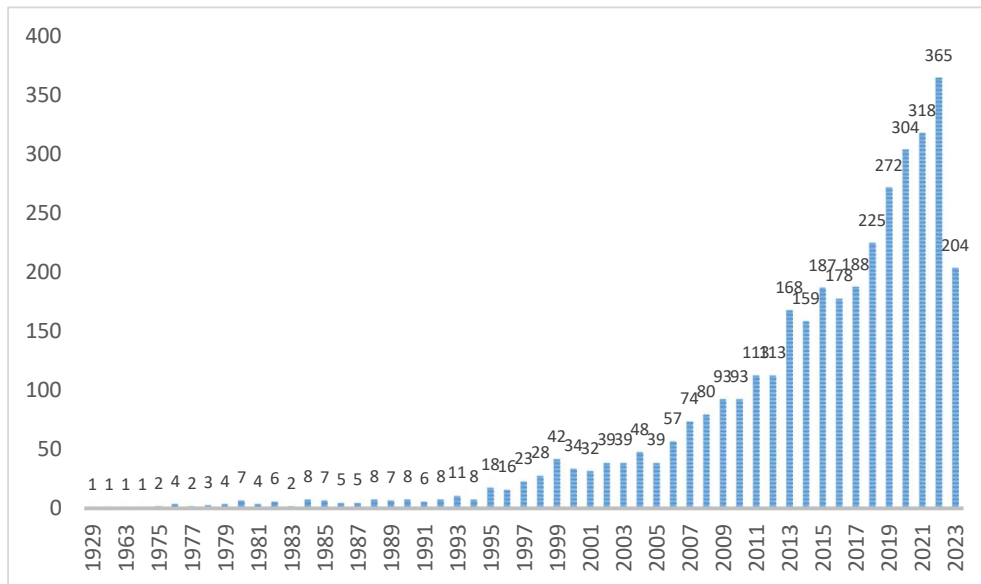
Figure 2. Development of Publication by Year

Most Influential Authors

Figure 3 shows the ten most influential authors in publications about critical discussion. Valcke, M. leads with the number of publications of 5 documents, followed by Apple, MW, Fenwick, T, Fung, D, and Garret, PM with the number of publications of 4 documents each.
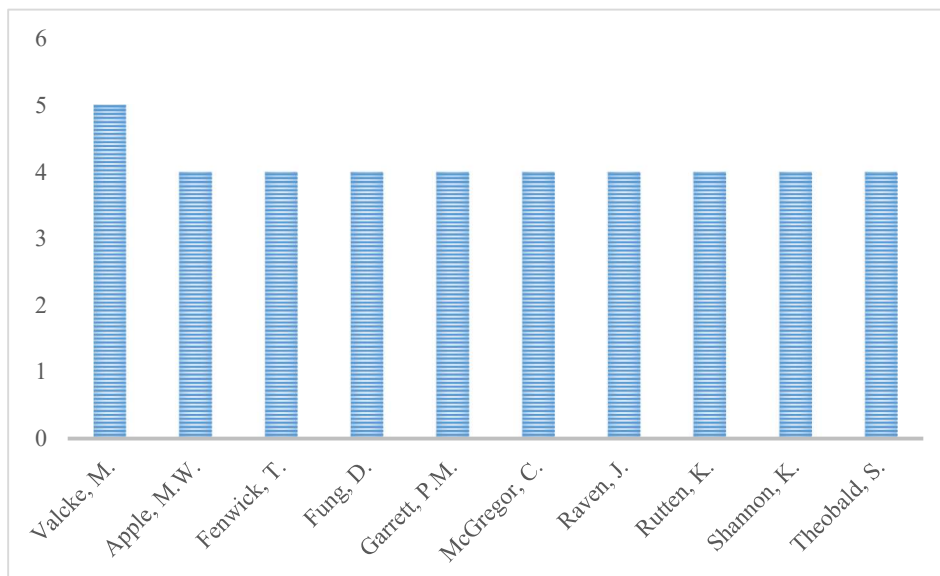
Figure 3. Most Influential Authors

Documents by Affiliation

Figure 4 shows that The University of British Columbia is the most influential institution in publishing research on critical discussion, with 38 publications. She was then followed by the University of Toronto, which published research results in critical discussion with 34 publications. Then, the University of Edinburgh also contributes to research related to this discussion, with a total of 29 publications. Then Monash University with 28 publications. And University College London with a total of 26 publications.
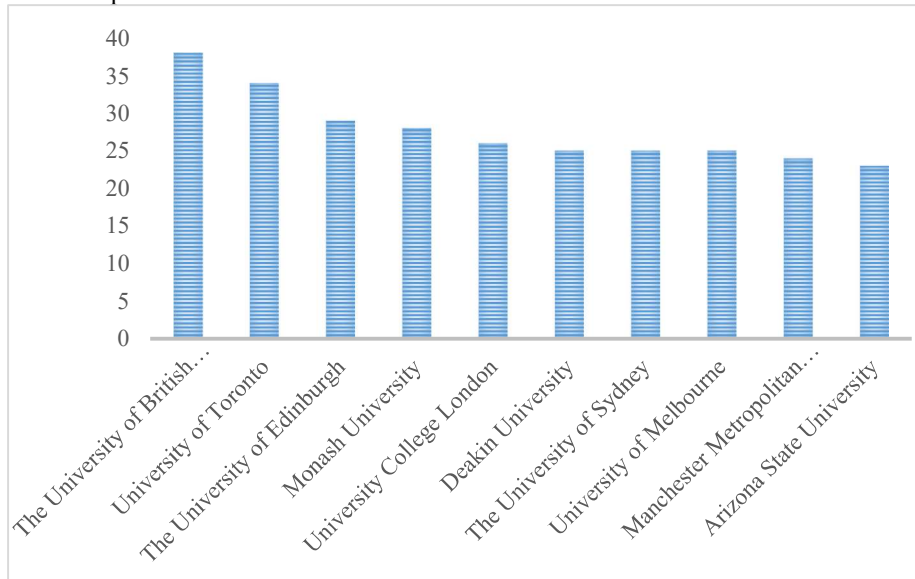
Figure 4. Most Influential Affiliates

Documents by Country

Figure 5 shows publications by country with the theme of critical discussion. Countries on the European continent dominate with a total of 5 countries, followed by countries from the American continent, which occupy the second dominant position with a total of 3 countries. This shows that countries on the European continent mostly carry out research with the critical discussion theme.
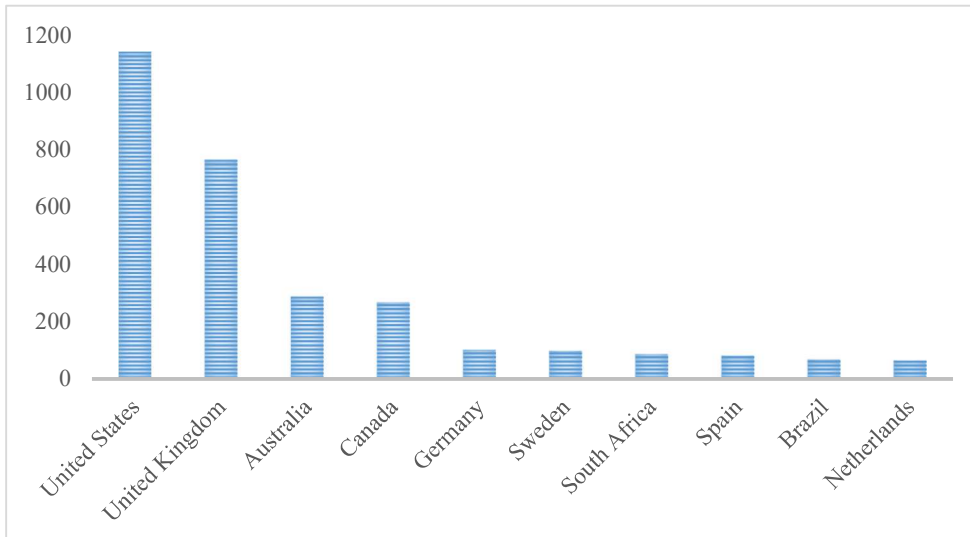

Figure 5. Document Publication by Country

Documents by Source

Figure 6 shows journals that actively contribute publication documents with the theme of critical discussion—led by Sustainability Switzerland with 40 documents, followed by the British Journal of Social Work with 28 documents, Social Work Education with 27 documents, Social Science and Medicine contributing 22 documents, and the Journal of Social Work Education also contributing 19 documents.
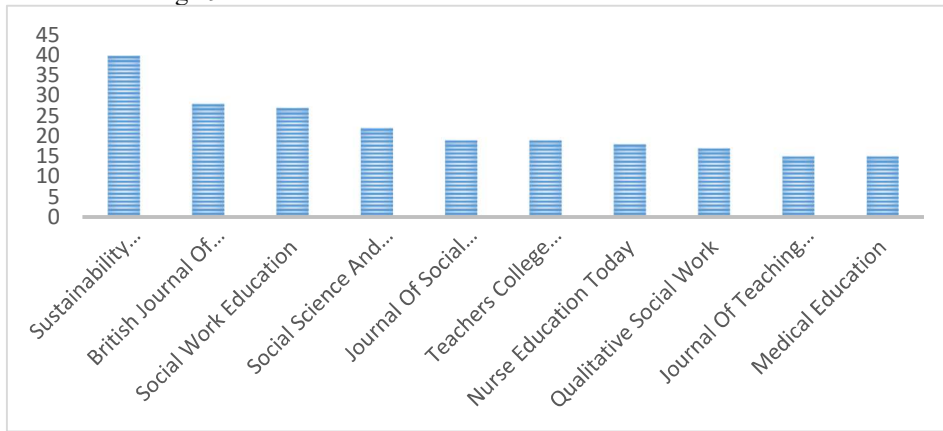

Figure 6. Documents Publication by Source

Three-Field Plot

Three components make up Figure 7: subject content, author name, and name of the journal publication. The three pieces are connected by gray plotlines that are connected. For every journal with the theme of Critical Discussion, a list of authors who frequently contribute to their publications is provided. Plot size: Plot size represents the size of the distribution related to the topic. The photo up above shows seven journals. Dark Red associated with multiple writers, including Adams J. and Smith R., is the journal Hooks B. (1994), which published the critical discussion. The next six items, totaling one outflow, came after this.

The author with the greatest number of articles written about the critical discussion with topics used in social justice, identity, race, social work, and education is Thomas I. The third element connects each research topic to authors who write extensively on higher education. The analysis results show 14 keywords, with Higher Education and critical thinking at the top. This shows that the word is closely related to research related to research topics in critical discussion.
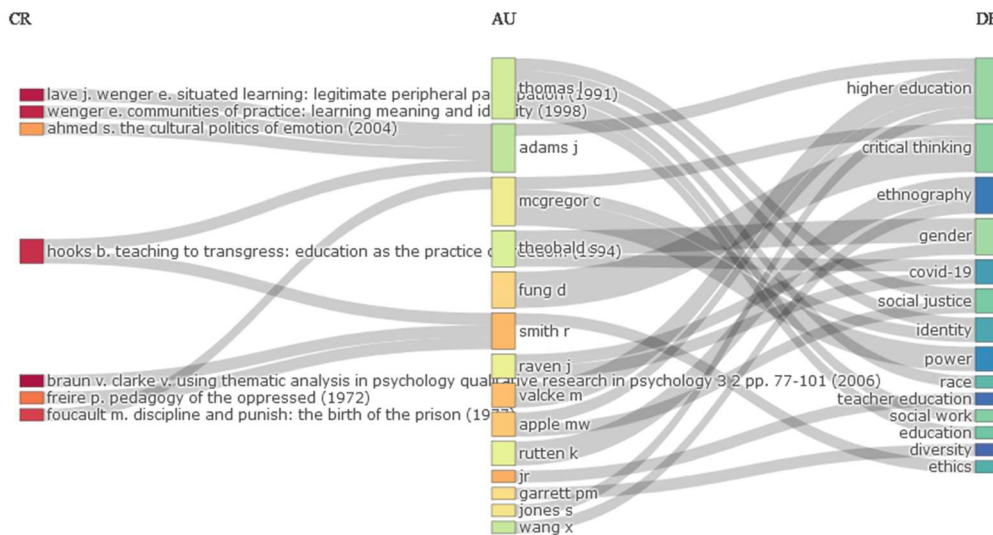

Figure 7. Three-Field Plot

Corresponding Author's Countries

Based on the figure 8, countries with the most collaborative writing in publications with critical discussion themes with foreign writers are the United States and England with the same number, followed by Australia and Canada with the same number. Meanwhile, the country with the most publications on critical discussion themes with collaboration between writers in one country is the United States, followed by the United Kingdom and Australia. The continent with the most collaboration in writing on critical discussion themes with foreign writers is the European continent, followed by the

American continent. Meanwhile, the continent with the most writing collaborations with writers in one country is the American continent.
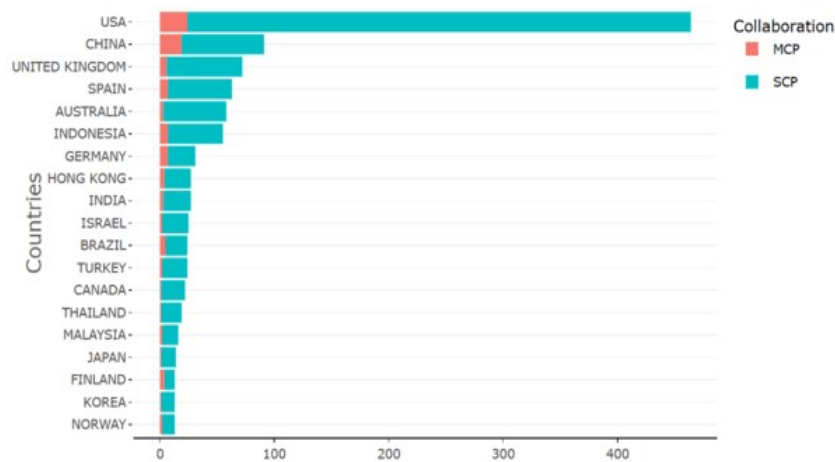

Figure 8. Corresponding Author's Countries

Most Global Cited Document

The paper with the most extensive total citations is Barron B, 2003, J Learn Sci namely 977 citations. The total citations owned by Barron B do not affect the total citations per year because the author Stanton-Salazar Rd has a total citation of 426, where the number of citations is the lowest among others. However, the total citations per year are pretty extensive, even higher than the results of citations per year in the second order, namely Garfield E, which only amounted to 13.89. The total number of citations remains unchanged by the year of publication since the more the year is published, it does not mean that the total citations are the most. Like Garfield E, the earliest citation published, compared to others, was in 1979, but the citation results were less than De Wever B was only published in 2006. Where the number of citations is 33.78.

Table 2. Most Global Citied Document

| Paper	Total Citations	TC per Year	Normalized TC
Barron B, 2003, J Learn Sci	977	46.52	13.69
Garfield E, (1979). Scientometrics	625	13.89	3.96
De Wever B, (2006). Comput Educ	608	33.78	12.52
Gregson N, (2000). Environ Plan D Soc Space	554	23.08	10.14
Cook-Sather A, (2002). Educ Res	528	24.00	10.91
Klinger Da, (1997). Criminology	498	18.44	10.98
Zenker S, 2020, Tour Manage	495	123.75	52.54
Knights D, 1989, Sociology	487	13.91	5.07
Webb Sa, 2001, Br J Soc Work	480	20.87	9.39
Stanton-Salazar Rd, (2011). Youth Soc	426	32.77	16.65

Network Analysis
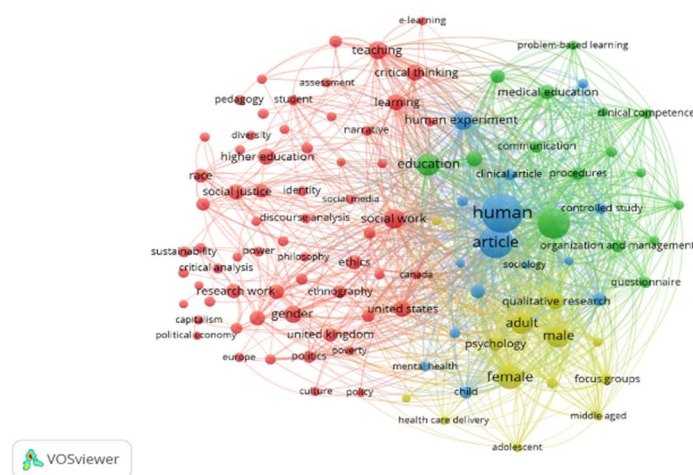
Figure 9. Occurrence Analysis

The image above analyses occurrences from research on critical discussion with a minimum cluster size of 1. So, 4 clusters with four colours are formed, namely red, green, yellow, and blue, with 63 items in each cluster. The keyword "Human" dominates with a link strength of 2918.
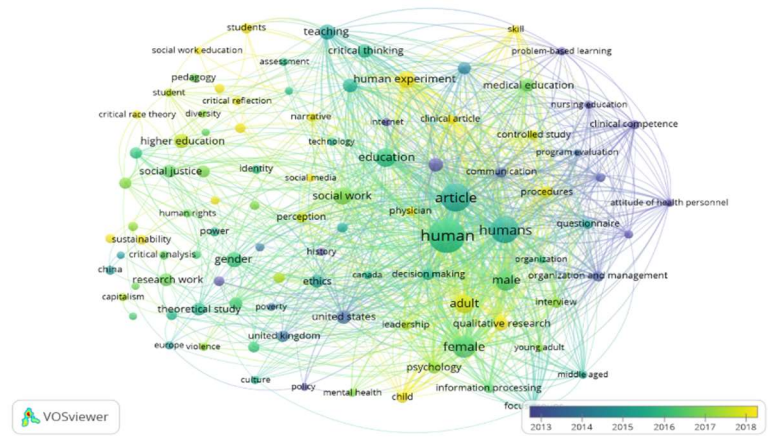

Figure 10. Keyword Network Analysis

The image above shows keyword network analysis based on overlay. The keywords human experiment, adult, child, qualitative research, and procedures are keywords used in recent years in research with the theme of critical discussion. Meanwhile, the keywords methodology, communication, organization, and management are keywords that have been used for a relatively long time since 2013.
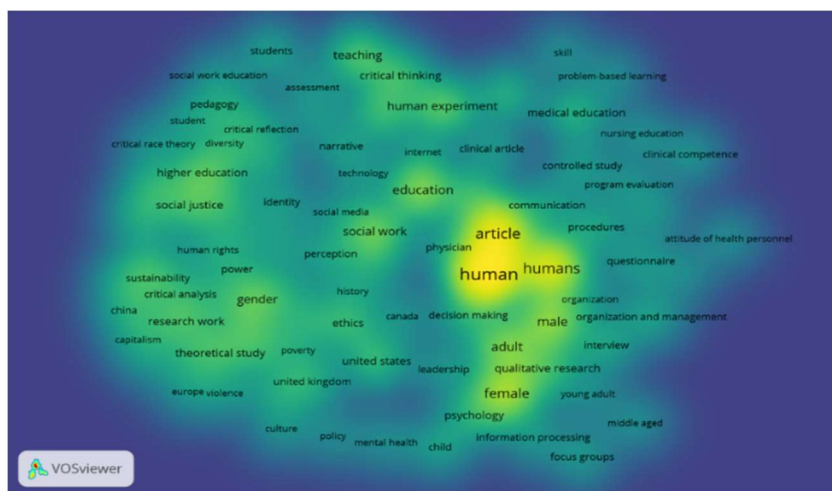

Figure 11. Research Density

The keywords human, humans, article, male, adult, and female are keywords that have high density. Meanwhile, learning, teacher education, race, philosophy, and knowledge are keywords that have a dark colour or less clear colour, meaning these keywords still need to be researched.

The Occurrences of Each Cluster

Table 3. The Occurrence in Each Cluster

Keywords	Occurrences	Clusters
1. Social work	115	1
2. Teaching	93	1
3. Gender	87	1
4. Higher Education	78	1
5. Critical thinking	76	1
1. Adult	129	2
2. Articles	302	2
3. Human	434	2
4. Human Experiment	106	2
5. Leadership	32	2

1.	Education	142	3
2.	Methodology	72	3
3.	Communications	42	3
4.	Focus Groups	36	3
5.	Information Processing	33	3

The occurrence in each cluster, which represents the major themes in research on critical discussion, is displayed in the above table. Social activities are the theme in the first cluster, human resources are the theme in the second cluster, and education is the subject in the third cluster.

Conclusions

Based on the research above, it is known that there is positive growth in research on critical discussions of 5.82% per year, with peak publications occurring in 2022. Author Valcke, M is the most relevant author with a total of 5 documents published. The University of British Columbia is the affiliate with the highest productivity/most influential affiliate, with the publication of 38 documents, and the United States is the country with the most publications, with 1141 published documents, followed by the UK with 764 documents. Based on country analysis, it is known that research with a critical discussion theme is popular among countries on the European continent. The Swiss Sustainability Journal is the most relevant source for publications with a critical discussion theme of 40 documents. Thomas I is the most influential writer, producing five main keywords from the three-field Plot analysis. The paper by Barron B., 2003 J Learn Sci is the document with the most extensive total citations of 977 citations with an average annual citation of 46.52 on the global citation index. In the network analysis, 'human' is the dominant keyword, with a total link strength of 2,918 networks. The keyword "qualitative research" is a keyword used in recent years. These keywords can indicate the novelty of research in the field of education. Based on cartographic analysis, it is known that there are three main themes, namely social activities, human resources, and education.

This research has the limitation of only conducting analysis on the Scopus database without considering other databases and only considering English language documents. Future research is expected to explore other databases, such as WOS, and consider analysis in more complex languages.

Acknowledgments

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