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A BIBLIOMETRIC REVIEW OF RESEARCH ON PARTICIPATIVE LEADERSHIP THEORY IN EDUCATION: SCIENCE MAPPING THE LITERATURE, 1926-2023

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Abstract

This study aims to undertake a comprehensive analysis addressing the extent, growth patterns, and geographical spread, of journals, authors, and articles that have demonstrated the most significant impact in terms of relevance. The methodology entailed the use of visualization techniques and bibliometric analysis as quantitative tools and the adoption of an evaluative and descriptive approach to depict the research analysis. The data sourced from the reputable Scopus database have led to the identification of a total of 850 publications, encompassing various formats such as repositories, books, book chapters, journal articles, and proceedings. In the analysis of these publications, the study delves into the years 1926-2023, employing the R Studio and VOS Viewer software. The finding shows that North America and Europe are well-represented among the top contributors. The article's production over time highlights diverse trajectories among countries like Spain, the United Kingdom, the USA, Indonesia, and Canada. However, it's noteworthy that high productivity doesn't guarantee a similar level of citation impact. The relationship between productivity and relevance, is intricate, reflecting the dynamic nature of research impact in the academic domain. Furthermore, the analysis reveals a noticeable upward trend in the frequency of key categories such as leadership, human, article, education, and others over the specified period. Furthermore, the persistence of these trends from 2021 to 2023 signifies the enduring relevance and evolution of participative leadership research. The exploration of correlations with traditionally less associated dimensions reflects the field's adaptability and responsiveness to contemporary issues.

Keywords: *bibliometric analysis, leadership, participative leadership, education, science mapping*

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INTRODUCTION

Termed for its characteristics, participative leadership is an approach where leaders involve team members actively in the decision-making processes (Northouse, 2012). Following the inception of participative leadership by Likert in 1961, this leadership style has garnered considerable interest from numerous researchers (Wang et al., 2022, P. 3).

Likert (1961), recognized for formally presenting the concept in his book "A New Model of Management," outlined three primary principles of participative leadership theory. These principles encompass the mutual support principle, the group decision principle, and the high standards principle. However, before the formal introduction of the participative concept by Likert, the field had undergone periods of discussing participative leadership. The prevailing theory of the era asserted that heightened employee satisfaction and increased productivity were attributed to the active involvement or participation of employees, both through observation and hands-on engagement. In the 1950s, an expert scrutinized the experiments and concluded that the observed surge in productivity and motivation was specifically linked to the participative aspect, with employees actively participating in work processes (Landsberger, 1958). Furthermore, the concepts of power equalization and participation in management philosophies significantly influence organizational supervision (Hammer & Dachler, 1972), strengthened by the perspective of participative leadership from a manager's viewpoint (Greiner, 1973). In recent research, the discussion of the field has been developed, characterized by a focus on work performance (Chang, 2020; Huang et al., 2010; Miao et al., 2014), job satisfaction (Ghaffari et al., 2017) (Chan, 2019; Ghaffari et al., 2017), empowerment (Huang et al., 2010, 2010; Miao et al., 2014; Tak & Shin, 2017).

Participative leadership, frequently referred to as democratic leadership, is commonly acknowledged as the most effective style (Lewin, 1939). This is primarily attributed to the success of participative leadership, which underscores the crucial aspect of involvement, thereby enhancing school effectiveness and aligning with democratic principles (Leithwood et al., 1999). Argyris (1955) asserted that democratic leadership occurs when subordinates are allowed to participate in the various decisions made within their organization. These decisions, whether directly or indirectly affecting them, align with the previously discussed definition of participative leadership.

Both participative and democratic leadership, sharing similarities, undoubtedly incorporate participative management. In practice, this approach emphasizes involving members in decision-making processes for both types of leadership. Consequently, in their daily leadership activities, leaders proactively implement participative management with subordinates. This involves communicating significant values, efficiently organizing reporting mechanisms, and employing other adaptable strategies to encourage active participation. Argyris (1955) pointed out that participative management tends to achieve several outcomes: (1) fostering a greater sense of collective identity or unity among participants and their organization; (2) offering participants a comprehensive organizational perspective as opposed to the traditionally narrower departmental viewpoint; (3) reducing levels of conflict, hostility, and intense competition among participants; (4) enhancing individuals' mutual understanding, thereby promoting increased tolerance and patience towards others; (5) facilitating individuals' more open expression of their personalities, resulting in employees who remain with the organization because they derive fulfilling experiences from their work; and (6) cultivating a "work climate" conducive to creativity and the generation of ideas beneficial to the organization, stemming from the aforementioned tendencies.

Enhancing the context, participative leadership has emerged as the prevailing approach in education in the 21st century, as evidenced by the works of scholars (O'Hair & Reitzug, 1997). Participative leadership within the realm of education is thought to enhance the quality of teachers' professional experiences (Somech, 2002), as well as boost teachers' motivation (Yammarino & Naughton, 1992) and job satisfaction (Smylie et al., 1996). This part of the participative leadership style is especially interesting in leaders of this approach as people who work to encourage teachers to look for new

opportunities/inputs and navigate through challenges. They are meant to promote learning by providing for comprehension, exchange, and application of knowledge (Smylie et al., 1996). In participative structures, the teacher can augment the pool of ideas, materials, and methods that exist, which in turn, leads to an enhanced standard of teaching (Somech, 2005).

In addition, Argyris pointed out in 1955 as was discussed in the previous paragraph, the use of participative management in an educational context could produce several benefits. First, it may help enhance education community cohesion through on development of a coherent and identifiable collective conscience of educators, stewards, students, and the educational institution. Second, it could offer the participants a rather broad perspective organization, unlike when the emphasis is brought to a few departments only. Third, one gets to ask how the management that is participative in education may be of help in decreasing the levels of conflict, hostility, and intense competition that may be present among participants. Fourth, by reducing cross-cultural miscommunication, the approach aimed at helping educators, administrators, and students be more understanding and patient with each other. Furthermore, education participative management may lead to persons being freer to express their personality. This leads to much greater motivation and commitment on the part of the educational workforce and more satisfaction with one's work. Lastly, regarding the impact of participative management in an educational setting, the promotion of a positive perception of the work climate can be considered.

This environment is conducive to creativity, fostering the generation of innovative ideas that benefit the educational institution as a whole. The principles of participative management, as outlined by Argyris, thus hold the potential to significantly enhance the dynamics and effectiveness of educational settings. Therefore, this study aims to undertake a comprehensive analysis of the development of participative leadership research. To achieve this, we will employ bibliometric methods, with the research question below

THEORETICAL BASIS

Conceptual Background and Framework

In the current research, various studies have discussed participative leadership, particularly in educational settings (Benoliel & Barth, 2017a, 2017b; Chan, 2019; Gahwaji, 2019; Ghaffari et al., 2017; Junaris, 2023; Kosgei & Edabu, 2023; Lythreathis et al., 2019; Miao et al., 2014; Tak & Shin, 2017; Wang et al., 2022). The study's findings suggest that individuals in top positions within schools experience more benefits, emphasizing the importance of streamlining leadership practices in many primary schools. The positive influence exerted by participative leadership significantly enhances job satisfaction among teachers. As a result, it is recommended that primary schools adopt a participative leadership style among head teachers. The study further advises head teachers to take on the dual role of being both a coach and mentor to their subordinates.

Furthermore, the bibliometric visualization method is employed to provide a comprehensive overview of the structure of relevant research domains (2009). It has been widely used in research on participative leadership, particularly in areas such as lean leadership (Santos et al., 2023), teacher leadership (Pan et al., 2023), educational leadership and artificial intelligence (Harto et al., 2022), COVID 19 and leadership (Bauwens et al., 2022), educational leadership and management (Hallinger & Kovačević, 2021), leadership and teacher professional learning (Hallinger & Kulophas, 2020), safety leadership (Abdullah et al., 2020). The study revealed a shift in the composition of contributors to the knowledge base, transitioning from predominantly Anglo-American male scholars until the year 2000 to a more diverse representation in terms of gender and geographic origin over the last two decades. Additionally, the review highlighted a

broader transformation in the intellectual structure of the field. While the 1960s and 1970s saw a predominant focus on 'administration,' recent generations have witnessed a shift toward the embrace of 'leadership for learning' as the dominant theme (Hallinger & Kulophas, 2020).

However, among the mentioned research studies, there is a gap in the investigation of participative leadership specifically within the educational context using bibliometric analysis. While some literature extensively discusses participative leadership in various contexts and dimensions, a significant portion relies on empirical research. On another hand, many of these works explore participative leadership using bibliometric analysis in several discussions of lean leadership, teacher leadership, educational leadership and artificial intelligence COVID-19 and leadership, educational leadership and management, leadership, and teacher professional learning, and safety leadership. However, there exists a crucial need to scrutinize participative leadership. This scrutiny will be specifically focused on education and will utilize bibliometric analysis. The identified challenges underscore the importance of further exploration and research by scholars, as emphasized by Wang et al. (2022). Therefore, this study aims to undertake a comprehensive analysis of the development of participative leadership research. To achieve this, we will employ bibliometric methods and incorporate keywords related to "participative leadership" and education in Scopus. The information for this study will have been gathered from data obtained from 1926 when the data collection was initiated to the data that would have been collected until the end of the year 2023. Thus, this research seeks to explore: part I literature review on the state of participative leadership theory research and studies in educational settings globally: a scientometric approach from 1926 to 2023.

Starting from information mapping as its application it was discovered in science, medicine, and social sciences though up to now it is still relatively new in the field of education (Hallinger Dan Kovačević, 2019). Over the years, refinements in text mining along with citation analysis tools made available for Bibliometrics analysis to conduct magnified and encompassing studies than was ever possible in bias years. As for the method of bibliometric analysis, which is a rather recent approach, that has emerged as rather promising in questioning leadership in terms of the area of study within education during the contemporary period (Deepika Dhingra et al., 2023; An et al., 2023; Ashiq, et al., 2023; Bauwens et al., 2022; Hallinger & Kovačev.

RESEARCH METHOD

The purpose of this research was a systematic review of the literature regarding participative leadership theory in education based on articles and data published between 1926 and 2023 with a particular interest in science mapping. It used the visualization nature and bibliometric analysis as quantitative tools, with evaluative and descriptive research that illustrates the trend and characteristics of research in the areas of participative leadership theory in education. In this regard, the bibliometric visualization approach described by Garfield (2009) is centered on scholarly works on the participative leadership theory in education that is well indexed in the Scopus database. Basing my search on the above two keywords, the search yielded a total of 850 publications that included repositories, books, articles from journals, and proceedings. In this context, the focus is on the years 1926-2023, to examine the nature of the identified publications, using the R Studio and VOS Viewer software tools. The quantitative parameters chosen as research indicators include the number of publications, citation count, and total strength of links between objects that are illustrated in the information visualization. The general purpose of this type of methodological approach is to provide an extensive qualitative

analysis of the development and influence of research on participative leadership theory in education in the identified period.

Depending on the nature of the topic and the approach that is used, the research process occurs in five major steps. First of all, the process of defining the list of keywords critically important for a particular topic creates the basis for further data gathering. When dealing with the specification of the study on participative leadership theory in education, these keywords are extremely important as a backbone for the search. After that, the first search is narrowed or examined through the sorting or categorization process using some source of specific keywords. This involves obtaining articles from well-known databases mainly from Scopus in a way that the dataset is coherent and relevant. In the next step, each result from the initial search is refined manually following the study of published articles using the VOS Viewer and R Studio software, threshold settings are put in place to ensure that only data that meets the established parameters is used in the analysis of the study giving it more accuracy. This is followed by the compilation of initial statistical images that set out preliminary statistical topics for data aggregation. Some of the visuals are the number of publications, document sources, distribution of publications by institutions related to the subject, languages used in articles related to the sub-topic, distribution of educational material, and the topic with the most citations.

Additionally, the co-occurrence of words and author key analysis contributes to a comprehensive understanding of the research landscape. The final stage centers on data interpretation through an analytical narrative. Findings are explained based on the election results, and data interpretation is facilitated using the VOS Viewer and R studio application. The software's visualization capabilities, particularly its creation of variable maps related to keywords, play a pivotal role in representing the data, offering opportunities for further development in understanding the evolution and impact of research on participative leadership theory in education over the specified period.

RESULTS AND DISCUSSION

Result

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	1926:2023
Sources (Journals, Books, etc)	594
Documents	786
Annual Growth Rate %	4.33
Document Average Age	9.59
Average citations per doc	8.668
References	0
DOCUMENT CONTENTS	
Keywords Plus (ID)	1244
Author's Keywords (DE)	1984
AUTHORS	
Authors	1672
Authors of single-authored docs	318
AUTHORS COLLABORATION	
Single-authored docs	339
Co-Authors per Doc	2.26
International co-authorships %	13.49
DOCUMENT TYPES	
article	579
book	50
book chapter	129
conference paper	28

Figure 1. Main Information
Source: The Researchers' Process

Figure 1 encapsulates the main information derived from the data sources used in this research. The document spans a timespan from 1926 to 2023 and draws from 594 sources, including journals and books, resulting in a total of 786 documents. The annual growth rate stands at 4.33%, with an average document age of 9.59 years and an average of 8.668 citations per document. Notably, there are no references included in the documents. The content comprises 1244 Keywords Plus (ID) and 1984 Author's Keywords (DE). The documents involve 1672 authors, with 318 being single-authored. Collaboration among authors is evident, with an average of 2.26 co-authors per document, and 13.49% of these collaborations being international. The document types include 579 articles, 50 books, 129 book chapters, and 28 conference papers.

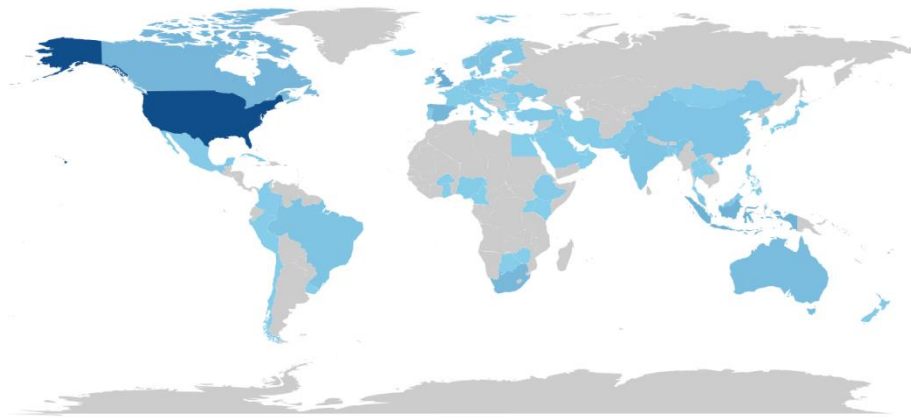


Figure 2 Countries' Scientific Production
Source: The Researchers' Process

Figure 2 provides information on the frequency of occurrence of various countries in a certain context, likely related to scientific production. The countries are listed along with their respective frequencies, indicating the number of times they appear or are referenced in the context being measured. The top 10 countries with the highest frequency of occurrence are the USA, UK, Indonesia, Spain, Canada, South Africa, Australia, Norway, Brazil, and Sweden. These countries have the most significant presence or impact in the given context. From the table below, the incidence was also found to occur frequently in various countries across the world, and out of the ten leading countries with the highest incidence, none of them are from the same continent. This means that scientific production is happening all around the world and some of the countries contributing to the production include, North America, Europe, Asia, and Oceania.

The USA and UK ranked first are located in North America and Europe respectively which indicate the supremacy in science of the European continent. A large amount of scientific output is also observed in two countries Indonesia representing Asia and Spain—Europe. Two more nations that have substantial involvement as participants are Canada from the North American continent and South Africa from Africa. Australia belongs to Oceania with more than 30% contribution followed by the countries from Europe, namely Norway and Sweden, as well as the South American country of Brazil. Meanwhile, the group of countries with the least frequency of occurrence, which includes Albania, Bulgaria, Cameroon, Dominica, Georgia, Latvia, Slovenia, Uganda, and

Uruguay, is located on various continents, reflecting the dispersion of minimal scientific output.

Based on the data, it's challenging to pinpoint a specific continent with the most significant scientific production, as the top-ranking countries are distributed across multiple continents. However, it is noteworthy that North America and Europe are well-represented among the top contributors. The lack of production is dispersed, making it difficult to identify a specific continent with consistently low scientific output. In summary, the scientific production, as indicated by the frequency of occurrence in the provided data, is globally distributed, with significant contributions from various continents. The lack of production is similarly spread across different continents, without a clear concentration in a particular region.

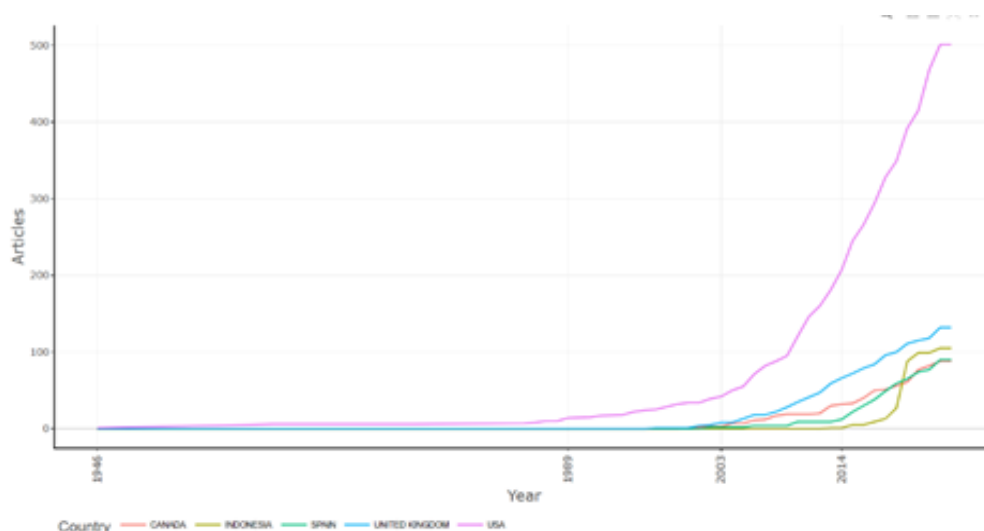


Figure 3. Countries' Production over Time

Source: The Researchers' Process

Figure 3 offers a comprehensive overview of the production of articles by different countries over time, presenting a longitudinal perspective on their research output. It highlights countries and the different articles for each year making it easier for us to understand the changes in the number of publications around the world. For example, looking at the past directions of Spain shows that the last article from this country was published in 1985 while the increase is observed from 2002 by 2 articles per year for 2002-2005. This upward trend continued, and although there is no data for 2022, the number of articles in refereed journals reached 90 in 2023 and 2024. In the same way, the UK has also shown a gradual increase in the number of articles, from 1 to 79 from the year 1997 to 2016 respectively. Further, this trend presents a clear and important understanding of the United Kingdom's parts and contributions to the world of academies over the years.

Now centering on the USA, we have seen that the country's rate of article production has been rising persistently from 6 in 1973 to a significantly high 501 in 2024. This enduring increase demonstrates the USA's notable and ongoing research contribution in the area of study, highlighting its leadership in the production of new knowledge. Now shifting to Indonesia, this figure indicates that article production in this country is on a continuous rise. It was quite surprising to find that nothing was published from 1946 to 2013, and then Indonesia noted a small increase in productivity and produced 1 article in 2013. This increased the output to exponential levels, which further empowered the number of articles that can be produced within the time frame, reaching 105 articles in

2024. With as many as 79 papers published in two years, it can be stated that the Indonesian authors markedly enhanced the scholarly production of the country in the last two years. In the case of Canada, the article production index has been witnessing the following growth: 2000 was 1, while, 2024 was 88. This has been the case, suggesting that the academic output of Canada in this vein has been significant and constant, making the country a key player in the formulation of the discussion within the field.

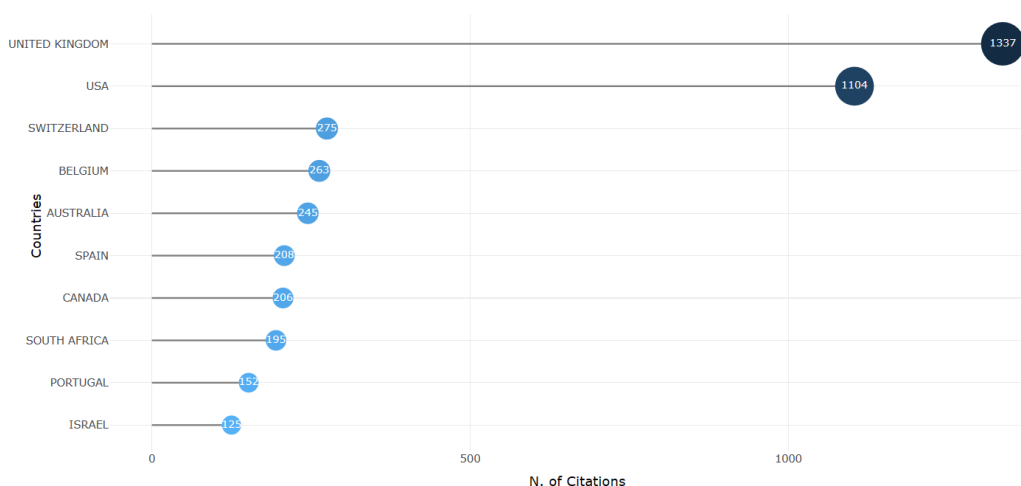


Figure 4. The most cited countries
Source: The Researchers' Process

Figure 4 provides insights into the most cited countries in the research of participative leadership in education. It presents the countries, the number of articles, the total citations, and the average article citations. The most cited country is the United Kingdom with 1337 articles and an average of 27.90 citations per article. This indicates that the research output from the United Kingdom in the field of participative leadership in education has garnered a high level of attention and recognition within the academic community. The second highest coefficient in the article is the USA which has 1104 articles with an average coefficient of 11. On average the articles elicited nearly 40 citations per article which points out the fact that there is extensive production of research but the average citation per article is lesser than that observed in the United Kingdom. The next trio of countries with the highest value of the average citation per article includes Switzerland, Belgium, and Portugal, with an average of 55.00, 52.60, and 38.00 respectively as compared to the United Kingdom which had 177,365 articles, and the USA which had 146,475 articles though this could be due to the lower number of articles that were produced by these two countries.

The numerical data obtained by comparing the table gives a comprehensive understanding or participation of the scientific production in the concept of citation impact in the institution of participative leadership in education. It has to be pointed out that the high productivity of publications is not always reflected at the same level in citation scores as observed in the top-ranked countries. The United Kingdom has produced research articles with an average citation per article receiving scores higher than other countries' averages; this portrays that the content of research done by the United Kingdom is not only measured by the number of articles produced but also by the impacts created by these articles. Finally, the United Kingdom remains the most cited nation with 1337 articles and an outstanding average of 27.90 citations per article. This shows that NREL has been producing a large number of publications but at the same time receiving a very high rate

of citations and acknowledgment within a very short span. In general, on average, each article has a high citation impact based on the results reported from the United Kingdom.

In the meantime, potentially competitive countries such as Switzerland, Belgium, and Portugal have lower article production, but use average citations of articles produced to stand at a higher level than the USA and the United Kingdom. This means that these countries are thus highly innovative and have relatively several articles, but have higher citation rates on average for each article produced. In the context of participative leadership in education research, Indonesia is among the top 10 most productive countries; however, it is not included as the most cited country in the field. The citation impact would indicate how influential the research from Indonesia is within the academic community. A higher average citation per article suggests that the research from Indonesia receives substantial attention and recognition. In the broader context of the provided data, Indonesia is recognized as a significant contributor to research on participative leadership in education. The analysis should ideally include the citation impact to fully assess the influence of Indonesia's research. The interplay between productivity and citation impact provides a more comprehensive understanding of a country's role in shaping academic discourse.

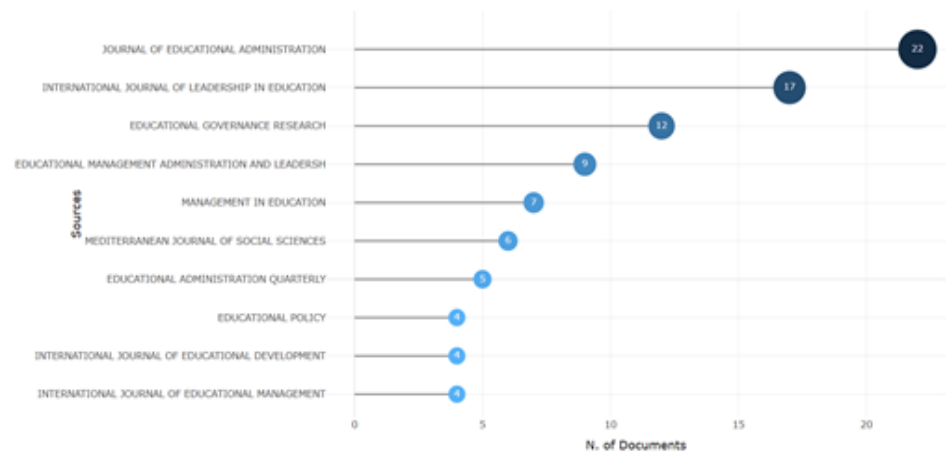


Figure 5. Most Relevant Sources

Source: The Researchers' Process

Figure 5 shows the rank of the most chosen sources of participative leadership in education. It highlights the list of the ten journals with corresponding rank order of frequency. The table consists of the names of the Journals, their rank, the Frequency of the Journal Articles, and the Total Cumulative Frequency. The top 10 journals and the number of articles they have are as follows: Articles containing the word ‘teaching’ appears in 22 articles in ‘The Journal of Educational Administration, 17 articles in the ‘International Journal of Leadership in Education’, 12 articles in ‘Educational Governance Research’, 9 articles in ‘Educational Management Administration and Leadership’ 7 articles in management in ‘Education’, 6 articles in ‘Mediterranean Journal of Social Sciences’, 5 articles in ‘Educational Administration Quarterly’, 4 These journals are some of the most renown in the academic world, they offer scholarly articles majoring in educational development. These trends can be used to define the lists of the most cited and influential sources focused on the specific aspect of leadership, namely participative leadership, in the context of education. This will give readers a good understanding of the important journals that are being recognized as publishing research and scholarly articles in this particular area of educational leadership.

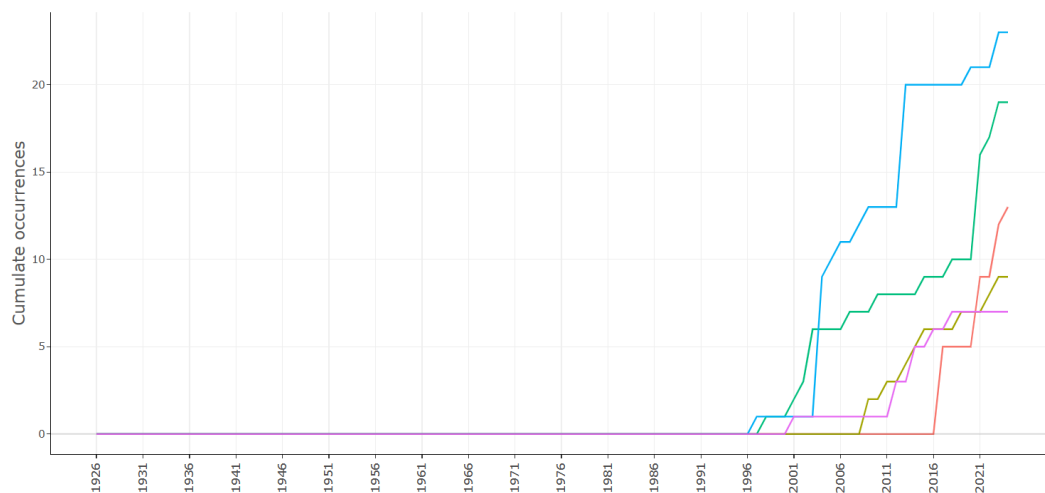


Figure 6. Source Dynamyc Overtime
Source: The Researchers' Process

Figure 6 shows 95-year from 1926 to 2023 data collection of the number of articles published in five categorically different educational journals. Rows are individual years, and columns are various educational journals, which present the results of a study. The numbers listed in the table represent the efficacy count of articles published in each of the journals during the described year. In the case of both journals, it is possible to observe an increasing number of articles being published in each of them in the years considered, pointing to the expanded production of academic outputs in the field of education.

Over the past few years, the number has significantly increased, while the “International Journal of Leadership in Education” is rather prominent with the largest number of articles addressed, which points to leadership as one of the directions in educational research. Dividing the number of articles in each journal of a given year, “The Journal of Educational Administration” had the highest of 22 articles;” the “International Journal of Leadership in Education” -17 articles. Additionally, "Educational Governance Research" contributed 12 articles, "Educational Management Administration and Leadership" published 9 articles, and "Management in Education" presented 7 articles during the respective period. This data not only showcases the quantitative growth in scholarly output across these educational journals but also hints at potential shifts in research focus and areas of emphasis within the broader field of education over the examined period. The increasing publication trends underscore the ongoing commitment to advancing knowledge and understanding in educational administration, leadership, governance, and management.

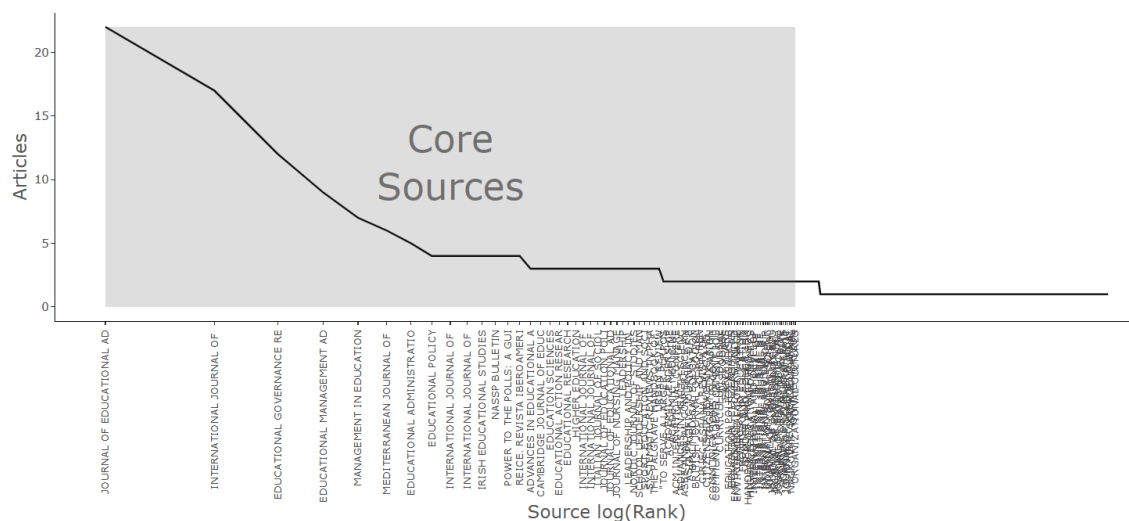


Figure 7. Core Sources by Bradford's Law
Source: The Researchers' Process

Figure 7 represents the Core Sources by Bradford's Law, which is a bibliometric concept used to identify the most significant sources in a specific field. The table lists the top 10 educational development journals in Zone 1, providing their ranks, frequencies, and cumulative frequencies. Bradford's Law states that "if scientific journals are arranged in order of decreasing productivity of articles on a given subject, they may be divided into a nucleus of periodicals more particularly devoted to the subject and several groups and zones containing the same number of articles as the nucleus when the number of periodicals in the nucleus and succeeding zones form a geometric progression.

When contextualized to this figure, the 'Rank' column means the ranking list based on the frequency of the journals in Zone 1. The "Freq" column indicates how often each journal appears in the sample and the "cumFreq" shows the cumulative frequency which is the sum of the frequencies of journals until a given entry in the list. This information is useful in ascertaining the relevance of Bradford Law OF scatter about educational development journals within the identified zone 1. This way, the current researchers and other stakeholders can understand the key journals existing in this particular area of study and get an idea of the key sources that have the greatest extent of input to the field of educational development for this zone.

In addition, The table shows sources of educational development journals in Bradford's law zone one as follows: Below the analysis is presented with the top 10 journals ranked by their frequency, their cumulative frequency, and the zone classification. The most frequent journal title is the Journal of Educational Administration which appears 22 times and has a cumulative frequency of 22 out of all words, the second most frequent is the International Journal of Leadership in Education – 17 and the total frequency equals 39. It also features some of the top journals in Zone 1, which include Educational Governance Research, Educational Management Administration, Leadership, and Management in Education. This information is helpful concerning the identification and comprehension of the distribution of the most important journals in the field of educational development within Zone 1 and will help researchers and stakeholders get a comprehensive approach to the most appreciated sources in their field of study and interest.

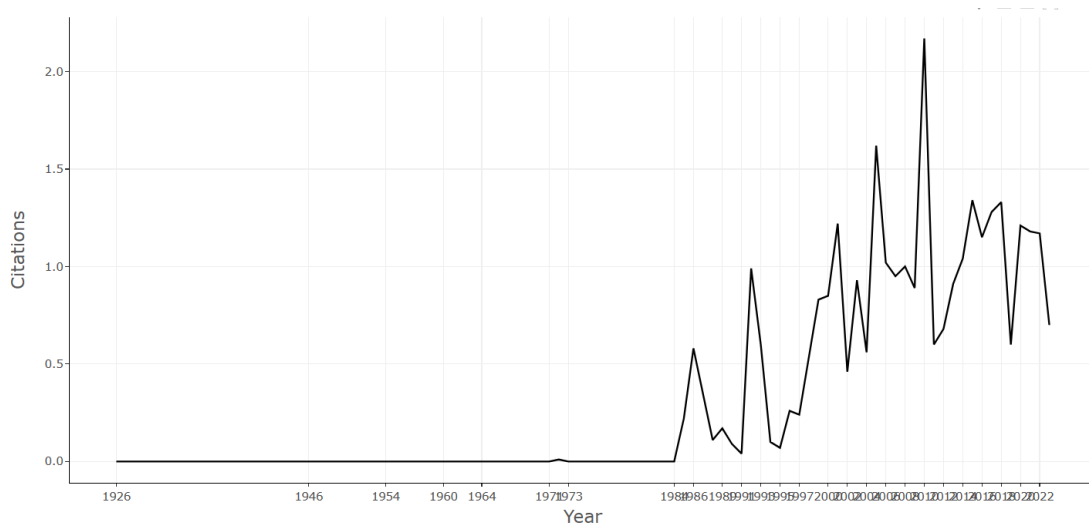


Figure 8. Average Citations Per Year

Source: The Researchers' Process

The dataset given in Figure 8 gives the required information and Sheds more light on the trends of the average citation per year in a concerned time of the field of study. The “Year” column defines the breakdown of the year-specific chronology intervals being discussed, while the “MeanTCperArt” column defines the total mean rate of citing per article of the corresponding year. The case number classed as “N” probably represents the number of articles or documents produced annually. Correlating this, “MeanTCperYear” represents the basic number of citations per year based on all articles that appeared in a given year. The “CitableYears” column provides an additional layer of analysis by shifting the count of years that is defined by the citations. In the last 10 years, the number of years considered citable for the articles published in the field of study is as follows: As for 2014, ten years are considered citable, nine years are considered citable as of the year 2015, eight years as of the year 2016, seven years as of the year 2017, six years as of the year 2018, five years as of the year 2019, four years as of the year 2020, three years as of the year 2021, two years as This data has given a view into the citable years for each of the articles that have been published in the last decade and how the research works have impacted those specific time frames. To a large extent, it allows for a fast and accurate calculation of the average penetration and coverage of articles in the field over various temporal periods. Analyzing the density of citations by article and by year helps the researchers identify trends and patterns present in all of the studies done in the field. Another advantage of the presence of the “CitableYears” is the opportunity to divide the overall impression about the value of the result achieved by the authors of the work being analyzed. Such an approach opens up rich opportunities for the qualitative assessment of the scholarly output within the field, providing meaningful insights into the dynamic processes of publication maturity and impact.

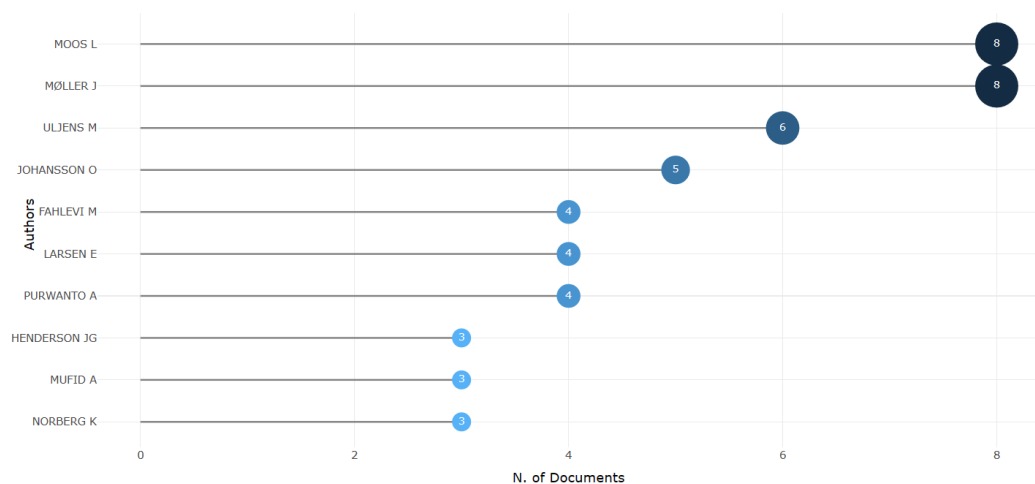


Figure 9. Most Relevant Authors

Source: The Researchers' Process

As depicted in Figure 9, the following are the most popular authors of the research on participative leadership in education. When determining the relevance of the authors, the quantity of articles they have written is considered as evidenced by the notable contributions made by the researchers under discussion in the current article. However, if singled-out individual authors were considered, then Moos L turns out to be the most productive author, who has contributed to the creation of eight articles. Coming immediately behind is Moller J, who along with Kremers, has written 8 articles, which demonstrate a direct involvement and robust participation in the discourse on participative leadership in educational management. Uljens M stands slightly further back with a total of 6 articles, which again reveals the author as one of the active and significant contributors to the development of knowledge in the given research area. Johansson O is another crucial author working in the field; overall, the author has 5 article publications, and the articles could be identified as productive and influential. Coming down the next few, Fahlevi M, Larsen E, and Purwanto A each possess an ideal total article production of four, as can be considered highly active within the present participative leadership literature.

Moreover, Henderson JG, Mufid A, and Norberg K are equally good with all of them writing 3 articles each for the benefit of the community. Although they are not as numerous as the most prolific authors, it highlights their valuable contribution to the scholarly discussion on participative leadership in the educational sector. To sum up, figure 5 offers an overall picture of who has equally contributed through the published articles, thus enabling the researchers as well as stakeholders in the field to identify and reward such individuals for their participle contribution towards the development of knowledge within the research area of Participative leadership in education.

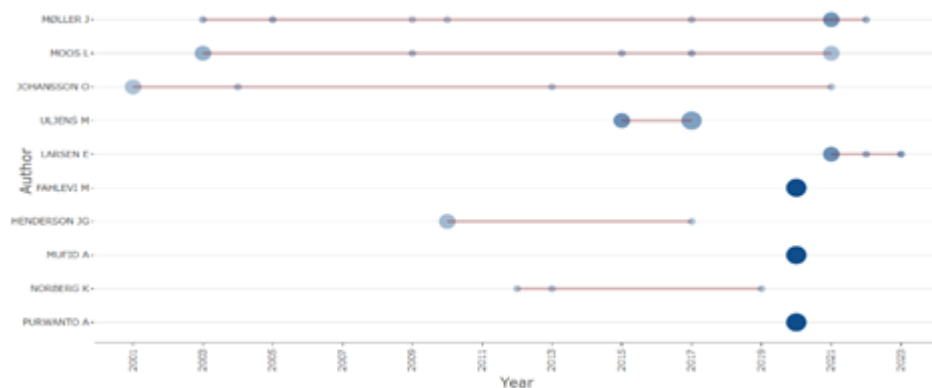


Figure 10. Authors' Production over Time
Source: The Researchers' Process

The graph shown above presents the manner and trend through which articles have been produced in the calendar years and passes a message on the trends and influence of the published research output in the education leadership context. The information provided contains the citation year information for several researchers over the years making it easy to compare patterns of citation. In Fahlevi M, 2020 year the frequency is equaled to 4 articles, and the total number of citations is equal to 55, and the average is 13. Quantitative measurement would be considered in terms of the number of citations per year which totals around 750 indicating substantial impact within that particular period.

Henderson JG published 2 articles: in the years 2010 and 2017. According to year-wise total citation analysis of the articles, the total citations of the articles were 19 and the total was 1, these demonstrated average citations at year levels of 1. 357 and 143. It can be seen that the company has experienced fluctuations in its average impact scores in the analyzed periods. Citation differences present herein would suggest that it is important to take into account the temporal receptacle of any given contributions to scholarly knowledge. While Johansson O has provided research for four quite distinct years, namely 2001, 2004, 2013, and 2021. After the launch of 15 citations and 13 citations in 2001 and 2004 respectively there were no citations in year 2013. But in the year 2021, there is a repetition with 1 citation, so the averse citation per year is between 0. 652 to 0. 333. The ups and downs of citation patterns imply that the impacts of scientific articles are changeable, and affected by factors in this research.

In addition, Larsen E resurfaces to influence the articles in 2021 2022, and 2023, with a hit rate of 2 articles. The number of citations for these years was 17, 4, and 4 in turn giving an average of 5 citations per year. 667, 2. 000, and 4. From the values presented above, the measured citation impact indicated relatively fair, yet variable, research engagement patterns at Future University, with a total citation value of 000 and 000 at the journal level, respectively. This pattern also underlines how it is more meaningful to analyze an author's productivity and performance for several years to evaluate the continuity and lasting worth of an author's contribution within an academic field. Moos L was published in the years 2002, and the frequency of its entries amounts to 2. The number of citations ranges from 3 to 50 citations per year and, therefore, the average number of citations per year from 1. 000 to 2. 381 episodically revealing its diverse scope in the long-term. Furthermore, these fluctuations in citation counts only overemphasize the fact that

research impact is not only a simple count of how often a paper is cited but depends on factors like the year of publication and could be influenced by the contents of the articles being cited.

Additionally, out of the several publications from Mufid A in 2020, with only one contributing to the total, the citations amounted to 48, making the average 12.000 citations per year. Depending on the reason for this, this concentration of citations in 2002 could point to that the author thereof was highly active in that particular period of research, possibly concentrated in the area of focus and making a sizeable contribution thereof within a particular theme of research. The publication activity of Møller J was carried out in the period from 2012 to 2019 with the main density in the frequency of articles in 2018, one publication. The analysis of the total citations has essential differences for each year, which enabled us to estimate the average of citations per year which varied from 0.000 to 5.000, about convergence-divergence data patterns, stressing different outcomes across time. This concern merely reasserts how accurate citation measurements are subject to temporal fluctuations and that evaluating a longer period would help examine a work's growing influence over time. By combining the number of citations received by the contribution in the years 2012, 2013, and 2019 it was seen that these three contributions got 2, 1, and 2 citations respectively giving an average citation per year ranging between 0.091 to 0.400. They might be an author who has not received sudden boosts in citation rates but rather the constant, albeit relatively low, number of citations reflecting continuous contribution to the scholarly discourse.

As shown above, Purwanto A published four articles in 2020, which covered 55 citations and an average of 13 citations.750 per year, which can be considered to have a high level of impact. This clearly shows that the author may have published a certain set of articles within that given year and thus this concentration of citation may have influenced what was published in that particular year and may have a great impact on the author when writing within the given time frame. In 2015, 2017, and 2024; Uljens M published articles having a frequency of 2 articles and citations of 49, 27, and 0 respectively, therefore; the average citation per year = $3-10.857$ to 5.30 . Impact: O'Reilly's Library has incorporated LMCs to show levels of impact; 444. The lack of citations in and from 2024 may mean that no primary sources are being published within this field of study that year; however, it could also mean a transitional period where research interest shifts to a different topic or area, stressing the significance of the historical approach. Altogether, this division shows a more thoughtful picture of each author's citation activity in the reviewed years, allowing us to see not only the general trends in their productivity in the investigated period but also immediate fluctuations in their research output. The dynamics in research impact can be deduced from the changes in citation status implying the importance of exhaustive assessment of the accumulative academic production that's temporally sensitive.

In the case of data discussed below, authors' productivity in the context of participative leadership in the field of education and the citation impact of the produced works show complex interdependence between these types of scholarly contributions. The highest number of publications is found with Moos L and Moller J, who published 8 articles as authors, indicating their strong commitment to the research area. Nevertheless, this relationship is not always direct; in other words, productivity does not necessarily directly translate into greater relevance as indexed by citation impact.

Fahlevi M, writing 4 articles, becomes an outstanding character for the year 2020 with a citation impact of 55 papers on average equal to 13 papers. means they would get 750 citations per year during that particular year of operation. Likewise, four papers of Purwanto A in 2020 received 55 citations, indicating a strong relevance with an average of

13 citations. 750 citations per year. These examples demonstrate that one can achieve high productivity in the scientific sense along with a high citation score, thus proving the impact of particular articles within a particular timeframe.

On the other hand, Moos L and Moller J, which are leaders in terms of productivity, do not have a similar pattern of fluctuations in citation impact for the given period. For example, from the Moos L, citation counts are 3 to 50 in different years, showing the author has had an impact on a variety of topics throughout the years. The dynamic symbiosis between citations and views highlighted here reflects the complex and often time-variable nature of research outcomes and their various facets. All these authors have their genius in their area of specialization and as seen from the above distinguished authors with low productivity are as important to the existing pool of knowledge as their fellow authors are important. Therefore, the candidate made a worthy contribution with a single contribution in 2020 that was cited 48 times, albeit with an average of 12 citations. During the same period, five thousand citations per year on average. This focused contribution implies that even if the number of articles by individual researchers is low, they can still produce commendable progress in certain areas or the field of selected topics.

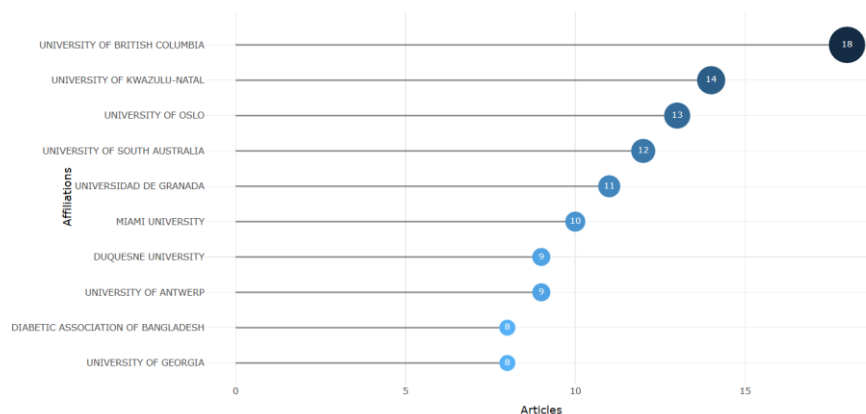


Figure 11. Most Relevant Affiliations
Source: The Researchers' Process

In terms of relevant affiliations in participative leadership in education, information can be obtained from Figure 11. It presents the list of contributors in terms of universality and organization page count for articles published in this field. The most related works in participative leadership in education are headed by the University of British Columbia with 18 articles in its scholarship. Next to this is the University of KwaZulu-Natal having contributed 14 articles and the University of Oslo with 13. Furthermore, in terms of individual contributions, the University of South Australia has submitted 12 papers, the Universidad de Granada submitted 11 papers, and Miami University submitted 10 papers. Other writers and organizations consist of Duquesne University and the University of Antwerp with 9 articles each, the Diabetic Association of Bangladesh, and the University of Georgia with 8 articles each. These figures capture the level of engagement and value throughout the contribution of these institutions to academics and literature on participative leadership in education.

Table 2. Most Global Cited Documents

Paper	DOI	Total Citations	TC Year	Per	Normalized TC
Bolden R, 2011, Int J Manage Rev	10.1111/J.1468-2370.2011.00306.X	600	46.15		24.50
Valencia Rr, 2010, Dismantling Contemp Deficit Think: Educ Thought and Pract	10.4324/9780203853214	480		34.29	17.40
Ruhstaller T, 2006, Eur J Cancer	10.1016/J.Ejca.2006.03.034	215		11.94	6.19
Hatcher R, 2005, Br J Sociol Educ	10.1080/0142569042000294200	187		9.84	3.41
Woods Pa, 2005, Democratic Leadersh In Education	10.4135/9781446211885	130		6.84	2.37
Jenkins H, 2013, Convergence	10.1177/1354856513482090	127		11.55	12.73
Trinidad C, 2005, Leadersh OrganDev J	10.1108/01437730510624601	121		6.37	2.20
Jha S, 2007, World Dev	10.1016/J.Worlddev.2005.10.018	118		6.94	8.94
Cochran-Smith M, 2006, Harv EducRev	10.17763/ Haer.76.4.56v8881368215714	110		6.11	3.17
Au-Yong-Oliveira M, 2018, Telematics Inf	10.1016/J.Tele.2017.10.007	95		15.83	10.31

Table 2 shows the most globally cited documents, providing the authors, titles of the papers, DOI, total citations, total citations per year, and normalized citations for each document. The most cited document on the topic is from Valencia, R. R. (2010), "Dismantling Contemporary Deficit Thinking: Educational Thought and Practice.

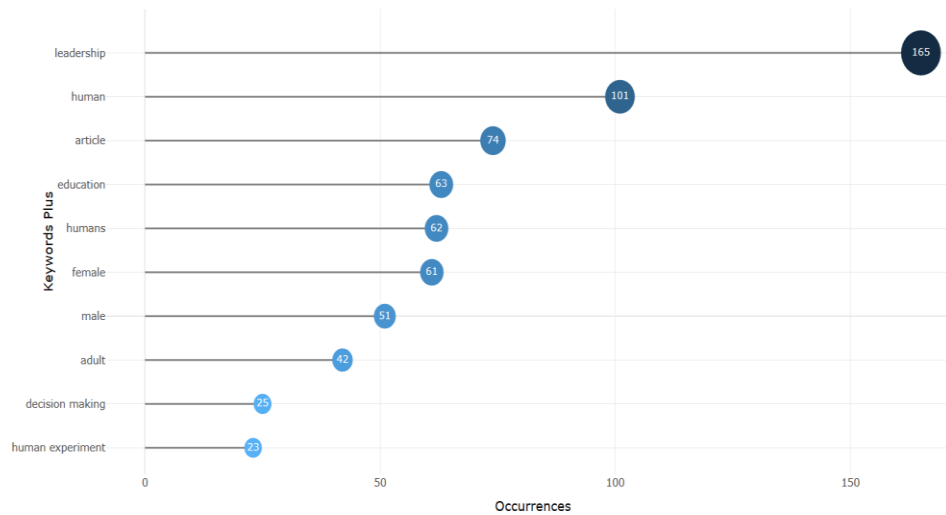


Figure 12. Most Frequent Words

Source: The Researchers' Process

Figure 12 shows the document containing data on various categories such as leadership, human, article, education, humans, female, male, adult, decision-making, and human experiments from 1926 to 2023. The occurrences of the mentioned categories are tracked from 1970 to 2023. The data shows the frequency of these terms in the document. For example, "leadership" occurred 165 times, "human" occurred 101 times, "article" occurred 74 times, "education" occurred 63 times, "humans" occurred 62 times, "female" occurred 61 times, "male" occurred 51 times, "adult" occurred 42 times, "decision making" occurred 25 times, and "human experiment" occurred 23 times. The data indicates the prevalence and frequency of these terms within the document over the specified period.

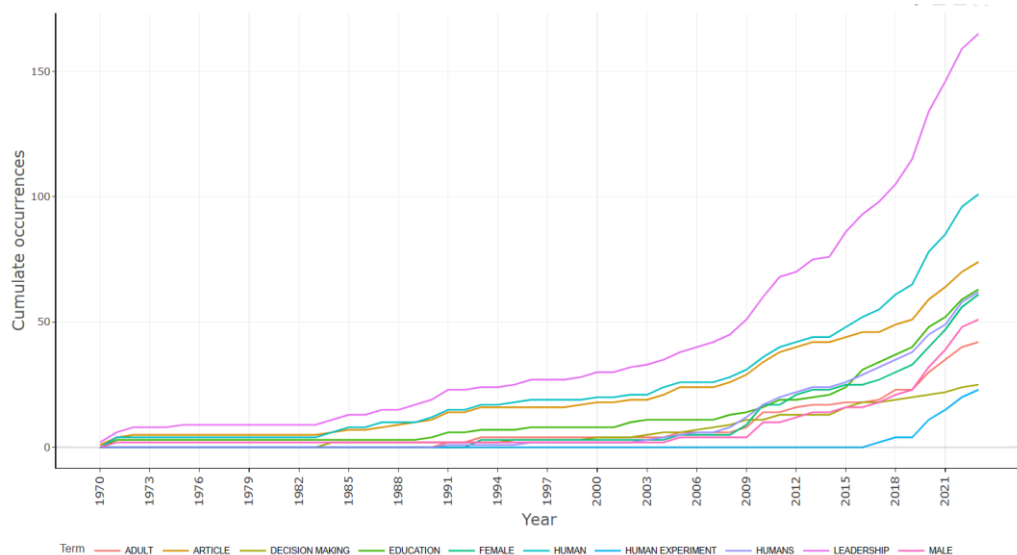


Figure 13. Words' Frequency over Time

Source: The Researchers' Process

Figure 13. shows an increase in the occurrences of these categories over the years, with the highest occurrences in 2023. It indicates a rising trend in the frequency of these terms. This suggests a growing emphasis on these concepts over time. The specific numbers provided for each year demonstrate a consistent upward trajectory in the occurrences of these categories, reflecting an increasing focus on leadership, human,

article, education, humans, female, male, adult, decision making, and human experiment within the document.

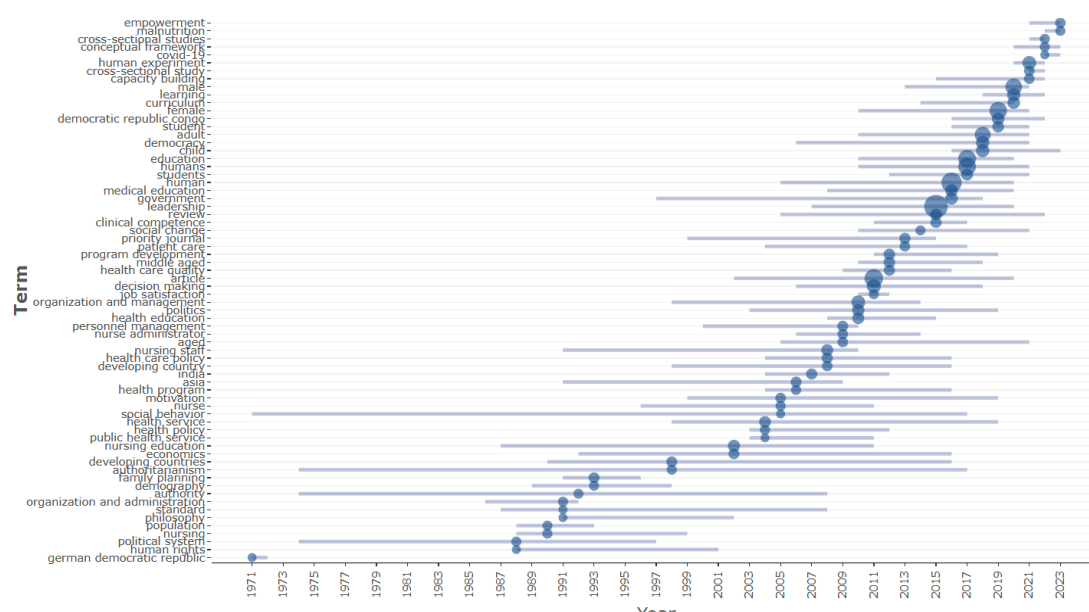


Figure 14. Trend Topics Time
Source: The Researchers' Process

Figure 14 contains data on various topics and their frequency over the years in the research of participative leadership in education. The topics include German Democratic Republic, political system, human rights, nursing, population, organization and administration, philosophy, standard, authority, family planning, demography, developing countries, authoritarianism, nursing education, economics, health service, health policy, public health service, motivation, nurse, social behavior, Asia, health program, India, nursing staff, health care policy, developing country, personnel management, aged, nurse administrator, organization and management, politics, health education, article, decision making, job satisfaction, middle aged, program development, health care quality, priority journal, patient care, social change, leadership, review, clinical competence, human, government, medical education, education, humans, students, adult, child, democracy, female, democratic republic congo, student, male, learning, curriculum, human experiment, capacity building, cross-sectional study, conceptual framework, cross-sectional studies, COVID-19, empowerment, malnutrition.

In the meantime, topics that lack frequency in participative leadership in education are "cross-sectional study," "conceptual framework," "cross-sectional studies," "COVID-19," "empowerment," and "malnutrition," each with a frequency of 5 to 7. Moreover, contemporary trends in participative leadership research within the field of education entail an exploration of correlations with aspects that traditionally exhibit limited associations. Notably, these less frequently correlated dimensions encompass themes such as capacity building, cross-sectional study, conceptual framework, cross-sectional studies, COVID-19, empowerment, and malnutrition. It is noteworthy that these trends endure from 2021 to 2023, contributing to the evolving discourse within the academic landscape.

CONCLUSION

The finding shows in the analysis of scientific production, article counts over time, and citation impact in the field of participative leadership in education, a nuanced landscape of contributions from various countries is revealed. The above table and the word cloud have rendered the 10 most frequent English-used countries in the world as USA, UK, Indonesia, Spain, Canada, South Africa, Australia, Norway, Brazil, and Sweden which are distributed all the world over. Studying the list of leading contributors one can identify that North America and Europe are among the leaders, which proves the internationality of the topic of participative leadership.

Those foci of analysis apply to article production change over time showing that different paths exist for countries like Spain, the United Kingdom, the USA, Indonesia, and Canada. The update of each country's output may well illustrate its emerging dedication to enhancing the body of knowledge in the sphere of participative leadership in education. However, it is important to emphasize that, while the visualization shows high productivity corresponding to the leading countries, the citation impact is accordingly low. Thus, some countries score high on citation impact rank while there are others that though prolific in their publication outputs have a lower citation impact. These differences make it necessary to consider both the publication outputs and the citation rates for the vessels to get a more holistic view of every country's contribution to the development of the academic discourse on participative leadership in education. Comparing the productivity and the citation impact of each country yields an exhaustive picture of the relative contributions of each to the construction of voices of academic discourse in participative leadership in education. Here, we obtain a more detailed understanding of the geography of scientific production, how the outputs have evolved for numerous countries, and how citation scores differ between leading research countries.

It is a complex and nonlinear one that unfolds the volatility and idiosyncrasies of relevance in the academic sphere concerning productivity. To summarize, the illustrated analysis of the authors' productivity and citation impact in the context of participative leadership in education has illuminated the multifaceted nature of these two types of scholarly contributions. Most of the authors published many articles and the number of publications is rather impressive, therefore authors claim a noticeable contribution to the field. However, basic links between productivity and citation impact, which an extent measure research relevance, do not always present clear escalation patterns. Finally, there are particular examples when authors with the least contribution have illustrated rather high citation impact, which proves that high productivity indeed can correlate with high citation impact. These cases demonstrate that it is the active role of particular articles within a limited period.

On the one hand, the citation rates vary during different years if authors have similar publication outputs, which proves that research influence reflects scientific content more subtly. Thus, the difference in effect in the long and short term further underlines those numerous aspects define the impact of the research and one of the important ones is the year of publication, its content, and the periods of increased visibility. Low-productive authors also present valuable contributions to the scientific community by disproving the opinion that a certain impact degree can be achieved without high productivity. While some authors have made few submissions into the pool, their works get highly cited; Getting to the key point that high citation impact may come from seminal submissions within certain contexts or themes of research. As it was found in the course of this analysis, some authors are productive in terms of publications and achieve impressive citation scores consistently; at the same time, it appeared that the link between productivity and

importance is not direct. This underlines the imperative of developing a critical analysis of how the productivity and relevance of research and scholarly work in the overall context of the area of participative leadership in the education context which is complex and constantly evolving.

Moreover, by conducting a word frequency analysis, the author focuses on a shift in the use of leadership, human, article, and/or education and other similar words on a more frequent basis beginning the specified period to the present. It demonstrates that the frequency of the document's updates increases steadily due to concern with more significant and essential issues in leadership, human behavior, education, decision-making, etc., thus making the content of the document substantively more valuable over time. Examining several features of participative leadership consequential to the education of the community, the discussion makes a focal point on the multiplexity of research in the sphere. Some of the themes presented fall under political science, others under social policy or health economics, and this feature clearly shows the interdisciplinarity of this field of study. Furthermore, the identification of the other dimensions characterized by lower levels of correlation, that is capacity building & development, cross-sectional studies, and COVID-19 considerations also shifts the focus to what constitutes the academic discourse of the field. In addition, as presented in this study, the continuous changes in major participation trends between the years 2021 to 2023 ensure the participative leadership research agenda remains relevant and dynamic. The extension of the analysis toward such correlations with dimensions that years back were considered far from it underlines the field's modern orientation and proactivity in addressing the issues of the present day, including but not limited to the COVID-19 pandemic, and more broadly, the general focus within the academic discussion regarding empowering and building up the capacities.

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