LEADERSHIP IN HIGHER EDUCATION: A BIBLIOMETRIC STUDY

LIDERANÇA NO ENSINO SUPERIOR: UM ESTUDO BIBLIOMÉTRICO

LIDERAZGO EN EDUCACIÓN SUPERIOR: UN ESTUDIO BIBLIOMÉTRICO

José PRUDÊNCIO JÚNIOR[1]
e-mail: prjoseprudencio@gmail.com

Cristina ZUKOWSKY-TAVARES[2]
e-mail: cristina.zukowsky@gmail.com

Derson da S. LOPES-JR[3]
e-mail: dersonlopes@me.com

Editor: Prof. Dr. Sebastião de Souza Lemes
Deputy Executive Editor: Prof. Dr. José Anderson Santos Cruz

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[1] Adventist University Center of São Paulo (UNASP), São Paulo – SP – Brazil. Pedagogue. Master's student in Education at UNASP and General Director of FAAMA.
[2] Adventist University Center of São Paulo (UNASP), São Paulo – SP – Brazil. Postdoctoral degree in Education from USP. Professor in the Professional Master's Program in Education at UNASP. Guest Professor at FAAMA.
[3] Amazonia Adventist College (FAAMA), Benevides – PA – Brazil. Doctoral degree and Postdoctoral student in Administration at UNICAMP. Academic Director of FAAMA.

ABSTRACT: This article sought to develop a bibliometric analysis of Leadership in Higher Education in the Web of Science database, selecting the period from the beginning of the database until 2023 using the VOSviewer software. The study revealed that Higher Education was the journal that published the most on the subject, and Mayhew M. J. was the author who produced the most articles. Among the largest citations present in the sample is the article by Robinson V. M. J. (2008), the most cited in the area, after the articles related to methodological aspects, and K. Leithwood, the author with the most citations. The study offers guidance for those who wish to research the topic studied.

KEYWORDS: Leadership. Higher Education. Bibliometric Study.

RESUMO: *Esse artigo procurou elaborar uma análise bibliométrica sobre Liderança no Ensino Superior na base de dados Web of Science, selecionando o período desde o início da base até 2023 utilizando do software VOSviewer. O estudo revelou que o Higher Education foi o periódico que mais publicou sobre o assunto e Mayhew M. J. foi o autor que mais produziu artigos. Dentre as maiores citações presentes na amostra, estão o artigo de Robinson V. M. J. (2008) como o mais citado da área, após os artigos relacionados à aspectos metodológicos e K. Leithwood autor com maior citação. O estudo oferece um direcionamento para aqueles que desejam produzir pesquisas no tema estudado.*

PALAVRAS-CHAVE: *Liderança. Ensino Superior. Estudo Bibliométrico.*

RESUMEN: *Este artículo buscó desarrollar un análisis bibliométrico sobre Liderazgo en Educación Superior en la base de datos Web of Science, seleccionando el período desde el inicio de la base de datos hasta el año 2023 utilizando el software VOSviewer. El estudio reveló que Higher Education fue la revista que más publicó sobre el tema y Mayhew M. J. fue el autor que produjo más artículos. Entre las mayores citaciones presentes en la muestra, se encuentra el artículo de Robinson V. M. J. (2008) como el más citado en el área, después de los artículos relacionados con aspectos metodológicos y de K. Leithwood, el autor con más citaciones. El estudio ofrece orientación para quienes deseen realizar investigaciones sobre el tema estudiado.*

PALABRAS CLAVE: *Liderazgo. Educación Superior. Estudio Bibliométrico.*

Introduction

Increasingly, the theme of leadership understands that competitiveness is directly and highly linked to the issue of management (TANURE, 2007). However, it was only in the late 19th century that studies on leadership emerged more systematically, although ancient Greek philosophers had already discussed the subject (GUMUS *et al.*, 2018). Nowadays, leadership is defined as a social process in which relationships are established through the influence that people exert on each other (FERREIRA *et al.*, 2016). This process, in the words of Ferreira *et al.* (2016), is composed of institutions, leaders, and followers. In this sense, therefore, any individual can be a potential leader, whether within their own family or in a business, political, sports, or even religious organization.

In the educational context, research on leadership is recent, including in the university setting (ADRIANO; RAMOS, 2015). There is, however, a consensus that a teacher has a strong influence on students' behavior, and managers are responsible for the guidance, training, and appreciation of teaching work (SLOBODZIAN; BATISTA, 2021). According to a study conducted by Rodrigues *et al.* (2019), the role played by the teacher in the organization is essential for reinforcing students' levels of motivation, satisfaction, dedication, and commitment to the institution. Furthermore, the authors suggest that the teacher's behavior has the power to directly influence the future attitudes of students. The objective of this study is to provide guidance for those wishing to conduct research on leadership in higher education, pointing to prominent researchers and resources on the subject.

Bibliometric studies are more than simple statistical surveys. They make analyses more complex and diversified, being of great utility for data analysis science (FERREIRA, 2010). This analysis technique is relevant as it provides useful information that serves as a guide for researchers who want to understand the research status of a particular topic. Understanding productivity and the advancement of knowledge helps identify the most productive authors and research centers that have contributed the most to the development of a specific field of study (MORETTI; CAMPANARIO, 2009).

Literature Review

Leadership is an influential act in the activities of individuals or groups to achieve a goal in a particular situation (CARVALHO; BERTOL; ALBERTON, 1998). However, just as a leader inspires, they are also inspired (MCCALL, 1986). Tanure (2007) reports that leaders, unlike bosses, are individuals capable of mobilizing people and producing incredible results. Leaders also make bold decisions at times but are individuals who have a high degree of frustration and know their own weaknesses while also having a lot of focus and energy at work (TANURE, 2007).

Due to the strong influence of a leader on their followers, leadership can affect the behavior of employees in an organization, such as attitudes, motivation, performance, and commitment (DA SILVA; NUNES; ANDRADE, 2019). In the business context, leaders are crucial figures for organizational prosperity since they can captivate employees, keep them satisfied to impact performance and business profitability (SOUSA; CORREIA, 2022).

The theme of leadership is approached when considering the skills and competencies required in each nucleus where interpersonal relationships occur. Thus, leadership in the educational sphere assumes responsibilities related to the administration and management of the institution. According to Torres and Palhares (2009), such leaders must balance the dissemination of values of citizenship and democratic participation while envisioning managerial values and technical efficiency in learning. Consequently, according to Torres and Palhares (2009), leadership exercised in the classroom faces mutual objectives of balancing responses to various mechanisms of control, inspection, and evaluation, with a view to results, along with a search for democratizing education.

In this context, the school leader, over the years, has been very important in achieving improvements in educational outcomes on a global scale (LEITHWOOD; DAY, 2008; ZHANG; BOWERS; MAO, 2021). Especially in Higher Education Institutions (HEIs), Sousa and Correia (2022) point out that teachers play a central role and can be considered the primary vehicle for knowledge transmission, i.e., mentors. Still in the context of HEIs, the teaching staff can stimulate critical debate, communication, and innovation among students, enhancing and developing students (SOUSA; CORREIA, 2022).

Thus, among the few studies in the area of leadership in higher education, two main research currents stand out. One characterizes the style of educational leader as a hybrid, while another current calls such leaders transformational.

Hybrid leadership, or multicultural, agrees that in the context of universities, leaders perform certain functions individually, while other functions occur in a distributed manner (ADRIANO; RAMOS, 2015). In other words, many decisions are based on regulations that impose a certain standardization in the learning process, while the subjective profile of the teacher influences how knowledge is transmitted (CANEN; CANEN, 2008; LEITHWOOD; DAY, 2008). In this debate on individual leadership, the study by Zhang *et al*. (2020) argues that in the classroom, the teacher can be considered an authentic leader, as they have the space to emphasize their teaching skills and strategies that promote student engagement.

On the flip side, the field that advocates transformational leadership believes that motivational, collaborative, and interpersonal skills are essential for leaders' ability to improve teaching and learning (ROBINSON; LLOYD; ROWE, 2008). However, it is worth noting that this style of leadership is highly complex, as it reinforces the sense of teamwork and interpersonal relationships since the principal, for example, needs to confront a multiplicity of issues related to the educational community (SOUZA; MARTINS; CARVALHO, 2017.

Given that this style of leadership advocates assisting in the change of individuals that is necessary for them to achieve their goals, the transformational educator can be classified as visionary for having the ability to plan and commit to their activities (Rodrigues *et al*., 2019). In the results of the study by Freitas and Rua (2019), transformational leadership also contributes to the construction of superior performance.

In the educational context, transformational leadership enables the effective achievement of established goals (FREITAS; RUA, 2019). Additionally, such leaders show greater interest in students than in institutions and create an atmosphere of collaboration and mutual assistance for students and the institution, providing an opportunity to build a university that is more appropriate for the day-to-day challenges of the student-teacher relationship (RODRIGUES *et al*., 2019).

So far, consolidated or classical leadership styles applied in the educational context have been addressed. However, in a study that sought to conduct a systematic review of leadership models in educational research, Gumus *et al*. (2018) provide some models strictly oriented to leadership in education, including instructional leadership, curriculum leadership, distributed leadership, and teacher leadership.

Educational leadership is primarily exercised by the school principal (GUMUS *et al*., 2018). This leadership consists of three components: defining the institution's mission, which requires principals to structure and communicate the school's objectives; managing the

instructional program, which suggests that principals coordinate the curriculum, supervise and evaluate instruction, and monitor student progress; and promoting the school's learning environment, which includes principals' efforts to protect teaching time, provide incentives for teachers and learning, promote professional development, develop and enforce academic standards, and maintain high visibility (GUMUS *et al.*, 2018).

Although educational leadership also focuses on the development and coordination of effective student curricula, curriculum leadership is primarily focused on monitoring, implementing, and improving scientific curricula (GUMUS *et al.*, 2018). Curriculum leaders, on the other hand, include principals, and staff in general, but mainly the teaching staff (GUMUS *et al.*, 2018).

Gumus *et al.* (2018) report that in the last decade, distributed leadership has been widely discussed in the context of education. Also called "shared leadership", "collaborative leadership", "delegated leadership", and "dispersed leadership", this style suggests the involvement of all employees in the decision-making process and collaboration among all employees as ways to effectively coordinate work and solutions to organizational problems (GUMUS *et al.*, 2018).

In conclusion, teacher leadership is a debate surrounding the notion that teachers hold a crucial position in how schools operate, as well as in the central functions of teaching and learning (GUMUS *et al.*, 2018). Thus, the style of teacher or faculty leadership admits that all members of an organization can lead, with leadership considered a distributed agency. Therefore, these leaders must participate in the decision-making process of educational institutions, contribute to the professional development of students, share their knowledge with their peers, and generate new ideas for educational development (GUMUS *et al.*, 2018).

Methodology

This research employed bibliometric analysis for the development of its study. Bibliometric analysis is a research technique that applies statistical methods to determine qualitative and quantitative changes in a specific research topic, establishing the profile of publications related to the subject and detecting trends (DE BAKKER; GROENEWEGEN; DEN HOND, 2005). Bibliometrics had its beginnings in 1923, initially known as statistical bibliography, and later in 1934, it received the denomination by which it is known today. Its popularization only occurred from 1969 onwards, clarifying the concept of bibliography and

bibliometrics, where the latter is characterized by the predominant use of quantitative methods over discursive ones (BERNARDINO; CAVALCANTE, 2011).

Araújo (2006) points out that bibliometric studies spread in the 1970s in Brazil through the Brazilian Institute of Scientific and Technological Information, IBICT. Araújo (2006) also indicates that these studies covered a wide range of literature, such as Chemistry (CARVALHO, 1975 *apud* ARAÚJO, 2006) and Geology (FIGUEIREDO, 1972 apud ARAÚJO, 2006), but also specific topics like Chagas disease (CALDEIRA, 1974 apud ARAÚJO, 2006), schistosomiasis (OLIVEIRA, 1975 apud ARAÚJO, 2006), or cocoa (RIBEIRO, 1978 apud ARAÚJO, 2006). Other areas of application have used this methodology since then, in fields such as Law, Physics, Social Sciences, and others. Recently, bibliometric studies have been conducted in the field of social sciences on topics such as Corporate Social Responsibility (SOUZA *et al.*, 2013), Volunteer Management (RAMOS; DOMINGUES, 2015), Management Control (RITTA; LAVARDA, 2017), Internationalization of Higher Education (GAZZONI *et al.*, 2018), Supply Chain Management (SOUZA; MESQUITA; ANTONIALLI, 2017), University-Industry Cooperation (ROSA *et al.*, 2015), Organizational Performance (Dias; Toni, 2017), Work-Life Balance (VILELA *et al.*, 2018), and Family Budget (PALHARES; OLIVEIRA; PIRES, 2019).

This analytical technique is crucial as it provides valuable information that guides researchers who want to understand the research status of a particular topic. Understanding productivity and the advancement of knowledge is useful for identifying the most productive authors and research centers that have contributed the most to the development of a specific field of study (MORETTI; CAMPANARIO, 2009). Additionally, the analysis provides a profile of the research field, succinctly presenting authors, journals, publication years, themes, and articles that passively compose the studied topic (REY-MARTÍ; RIBEIRO-SORIANO; PALACIOS-MARQUÉS, 2016).

Some applications of bibliometrics include identifying trends and the growth of knowledge in an area, core journals of a discipline and their users, measuring secondary journal coverage, predicting publication trends, assessing the productivity of individual authors, organizations, and countries, studying the dispersion and obsolescence of scientific literature, measuring the degree and patterns of collaboration among authors, and the emergence of new themes, analyzing citation and co-citation processes, assessing the performance of information retrieval systems, evaluating statistical aspects of language, words, and phrases, and the circulation and use of documents in a documentation center (PERES VANTI, 2002).

According to Araújo (2006), this technique emerged as an indication of the need for studies and evaluations of scientific production and communication activities, with its initial development based on the creation of empirical laws regarding the behavior of literature. For example, Bradford's Law deals with the productivity of journals and estimates their relevance in a particular area of knowledge. Lotka and Zipf's laws contribute to the evaluation of journals (FERREIRA, 2010), with Lotka's Law describing author productivity and Zipf's Law describing word frequency in a given text (URBIZAGÁSTEGUI ALVARADO, 2002).

In this study, Lotka's Law, formulated in 1926 and used in many studies to investigate author productivity in various disciplines (ALVARADO, 1984), was employed. Lotka discovered that a significant portion of scientific literature is produced by a few authors, and that small producers together match the productivity of the large producers (ARAÚJO, 2006). As a result, the researcher formulated the law of inverse squares: $yx = 6/p2xa$, where yx is the frequency of authors publishing x number of works, and a is a constant value for each scientific field (ARAÚJO, 2006). The law was refined by (PRICE, 1976 *apud* ARAÚJO, 2006), where the number of members of large producers corresponds to the square root of the total number of authors, and half of the total production is considered a criterion to determine if the elite is productive or not (ARAÚJO, 2006).

With data extracted from articles, the aim is to discover the most cited authors, the most productive authors, the research elite, research frontiers, authors' impact factors, geographical and/or institutional origins of the most influential authors in a specific research field, the most used document types, the average age of the literature used, literature obsolescence, geographical and/or institutional origins of the bibliography used, most cited journals, the core journals that constitute a field (ARAÚJO, 2006). A commonly used concept in citation analysis is the impact factor. The impact factor is the division of the number of citations received by an author divided by the number of papers that received at least one citation to identify authors who produce significant works (ARAÚJO, 2006).

This study used the Web of Science (WoS) online database, which contains scientific documents in various research areas. The fact that WoS provides data on the results of scientific research enables bibliometric analysis because WoS offers data on output, dissemination, collaboration, and the impact of these documents (DE BAKKER; GROENEWEGEN; DEN HOND, 2005). This type of analysis represents a methodological innovation compared to traditional literature reviews (DE BAKKER *et al*., 2005). In addition to WoS resources, the VOSviewer software was also used as a tool for analyzing the collected data. VOSviewer is a

freely available computer program developed for the construction and visualization of large bibliometric maps with ease.

For the sample selection, the initial search used the term *lead* in high* educ**, aiming to study terms related to higher educational leadership and its possible variations. All available periods in the database were analyzed. The results of the literature quantification and the mapping of relationships between authors and texts can constitute empirical inputs that highlight the peculiarities of the knowledge production process (ALVARENGA, 1999).

The research was conducted in June 2023. The search for the term *lead* in high* educ** found 272,513 documents. For the purposes of the research, only those classified as articles were selected, refining the search to 229,255 articles. Subsequently, articles that met the themes of interest in this study, Educational Education Researches, were selected, resulting in a base of 14,759 articles used for the elaboration of this bibliometric analysis.

Results and Discussions

This section presents and discusses the results obtained from bibliometric analyses. The bibliometric indicators used included the following: the language of publication of research, number of documents published per year, countries where the articles were published, journals in which the authors published their research, authors most prevalent in the studied dataset, journals, authors, and articles most cited in the researched papers, and the most frequent keywords in the researched papers.

Language, Year, and Country of Publication

Understanding the language and country of publication is essential, as it provides insights for future researchers in the field regarding the ideal profile of an article with a higher probability of publication and also reveals the country with the most significant interest in the subject matter. The publication year of the studies allows us to assess whether the topic is on the rise or in decline and indicate its current relevance. Several journals accept article submissions in more than one language. Following the trend of the dominance of studies in English, most of the researched studies were published in this language, totaling 10,700 articles, representing 97.65% of the studies found.

The oldest article in the WoS related to Leadership in Higher Education dates back to October 1922, authored by H. O. Bennett under the title "Developing Leadership in the High

School Situation", published in "Education". The year 2018 marks a growth in the production on the topic, with 65.09% of the articles found being published from 2018 to 2023, with particular emphasis on 2020 as the year of the highest production. Figure 1 presents the distribution of production over the last 10 years.

Figure 1 – Distribution of Articles by Year of Publication
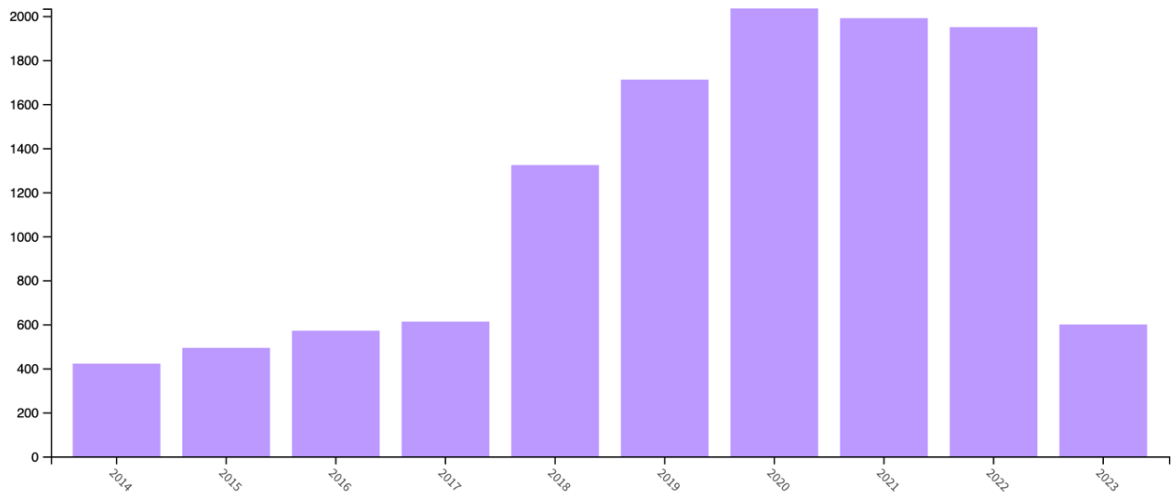
Source: Research Data (2023)

The traditional research hubs also account for the majority of analyzed articles on leadership in higher education, with 78% of the articles being published in North America and Europe, and 51.80% of the total articles being publications from the United States.

Authors and Journals

Analyzing the journals that publish research on a specific topic is essential to assist in the decision of which journals to search when conducting a literature review. It also demonstrates alignment with the research focus and the journal to which an article will be submitted. Table 1 presents the journals that have published most of the documents in this WoS selection. The top three positions are occupied by "Higher Education", with 376 articles, followed by "Teachers College Record", with 349 articles, and "Studies in Higher Education", with 337 articles. Studies in "Higher Education" had a JCR impact factor of 3.02 in 2017 and ranked 56th out of 209 in its category.

Table 1 – Journal Ranking by Number of Articles

	Journal	Count	Percentage (%)
1	*Higher Education*	376	2.548
2	*Teachers College Record*	349	2.365
3	*Studies In Higher Education*	337	2.283
4	*Educational Management Administration Leadership*	271	1.836
5	*Bmc Medical Education*	270	1.829
6	*Research In Higher Education*	239	1.619
7	*Journal Of Diversity In Higher Education*	217	1.470
8	*Journal Of Higher Education*	208	1.409
9	*International Journal Of Sustainability In Higher Education*	189	1.281
10	*Education Sciences*	188	1.274

Source: Research Data (2023)

Table 2 presents the authors with the most articles in the studied sample. In this ranking, we have M. J. Mayhew and E. T. Pascarella, with 29 articles published, followed by A. Kezar (25) and P. Hallinger (21).

**Table 2** – Author Ranking by Number of Articles in WoS

Author	Record Counts	Percentage (%)
Mayhew M. J.	29	0.196
Pascarella E. T.	29	0.196
Kezar A.	25	0.169
Hallinger P.	21	0.142
Bowman N. A.	20	0.136
Daly A. J.	20	0.136
Hu S. P.	20	0.136
Kelchen R.	19	0.129
Mcnaughtan J.	19	0.129
Trolian T. L.	17	0.115
Tan C.	16	0.108
Umbach P. D.	16	0.108
Duran A.	15	0.102
Garvey J. C.	15	0.102

Grissom J. A.	15	0.102
Taylor Z. W.	15	0.102
Wang X. L.	15	0.102
Keddie A.	14	0.095
Kim J.	14	0.095
Kuh G. D.	14	0.095
Lee M.	14	0.095
Rangel V. S.	14	0.095
Rockenbach A. N.	14	0.095
Devos G.	13	0.088
Page S.	13	0.088

Source: Research Data (2023)

Analyzing the author clusters of the articles with the assistance of VOSViewer, we observe the formation of four concentration hubs (Figure 2), but they appear to be less cohesive, indicating that the articles in this theme encompass various approaches.

Figura 2 – Author Concentration Clusters
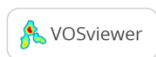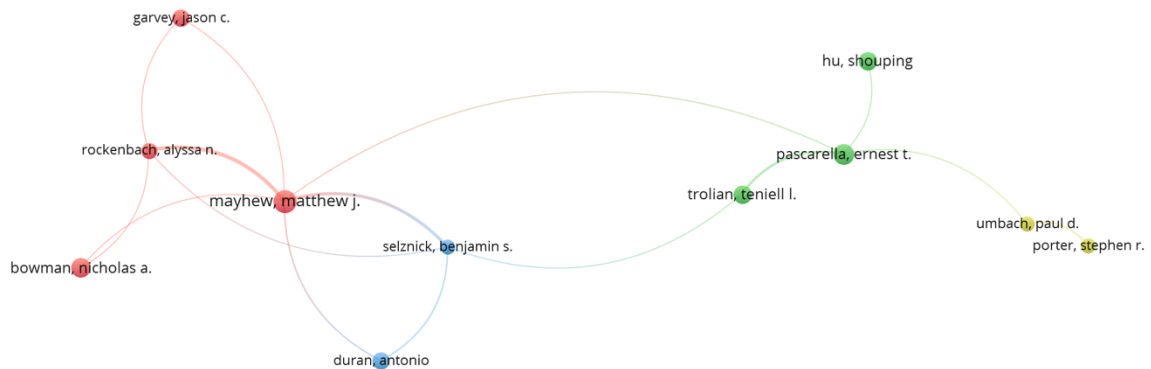
Source: Research Data (2023)

The ranking changes significantly when considering the number of citations for the articles. More articles in the database do not imply that other authors will cite these articles. Citation is more relevant for calculating an author's impact than the number of articles produced. Table 3 presents the author ranking ordered by citations and provides the number of articles in the studied sample. In this new scenario, it is notable that Amaury Nora stands out with 3,980 citations in just 5 articles. This prominence is largely due to the article on structural equation modeling titled "Reporting structural equation modeling and confirmatory factor analysis results: A review", cited 3,635 times. This article is methodological and unrelated to the leadership theme in higher education. Following this, we have David Boud, a researcher in the field of learning, with 1,120 citations in 9 articles, and Alex Bowers, with 737 citations in 11 articles. Alex Bowers is an author who analyzes leadership, with a notable article in which he is a co-author, "*Authentic leadership and teachers' voice behavior: The mediating role of psychological empowerment and moderating role of interpersonal trust*". M. J. Mayhew, previously in the first place, does not appear among the top 20 most cited authors, and E. T. Pascarella, who also held the first position, now appears in sixth place among the most cited authors behind P. Hallinger.

Table 3 – Author Ranking by Citations

	Author	Record Count	Citations
1	Amaury Nora	5	3980
2	David Boud	9	1120
3	Alex J. Bowers	11	737
4	Paul D. Umbach	11	726
5	Philop Hallinger	18	713
6	Ernest T. Pascarella	21	692
7	Ve Lee	6	689
8	M. B. Paulsen	6	634
9	Jason A. Grissom	15	632
10	G. D.Kuh	13	574
11	Stephn R. Porter	11	542
12	Alan J. Daly	20	523
13	Cristopher Lubiemski	11	508
14	Gloria Crisp	11	502
15	Dragon Gasevic	8	453

16	E. P. Stojohn	11	448
17	Louise Morley	6	444
18	L. Kann	6	443
19	J. G. Ross	5	431
20	Alma Harris	10	429
21	Matthew A.	6	407
22	Simon Marginson	7	402

Source: Research Data (2023)

Articles, Authors, and Journals with the Most Citations

This analysis differs from the previous ones as it examines the content of the researched articles, considering the content of each of the 14,759 articles selected for this study. It thus identifies the articles, authors, and journals most cited in this research. In other words, these data demonstrate which studies have had the most significant influence on the thinking, discussion, theory, and methodology of the authors who have produced articles on Leadership in Higher Education.

Table 4 – Most Cited Articles and Books

	Author/year	Title	Citation
1	Braun V., 2006	*Using thematic analysis in psychology*	325
2	Miles M., 1984	*Qualitative data analysis: A methods sourcebook*	275
3	Miles M. B., 1994	*Qualitative data analysis: An expanded sourcebook*	257
4	Hu It., 1999	*Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria versus New Alternatives*	248
5	Podsakoff P. M., 2003	*Common method biases in behavioral research: A critical review of the literature and recommended remedies*	207
6	Merriam S. B., 1998	*Qualitative Research and Case Study Applications in Education*	187
7	Lincoln Y. S., 1985	*Naturalistic Inquiry*	187
8	Fornell C., 1981	*Evaluating Structural Equation Models with Unobservable Variables and Measurement Error*	185
9	Saldana J., 2009	*The Coding Manual for Qualitative Researchers*	184
10	Merriam S. B., 2015	*Qualitative research: A guide to design and implementation*	172
11	Patton M. Q., 2015	*Qualitative Research & Evaluation Methods: Integrating Theory and Practice*	164
12	Cohen, J., 1988	*Statistical Power Analysis for the Behavioral Sciences*	164

13	Robinson V. M. J., 2008	*The Impact of Leadership on Student Outcomes: An Analysis of the Differential Effects of Leadership Types*	163
14	Yosso T., 2005	*Whose culture has capital? A critical race theory discussion of community cultural wealth*	161
15	Patton M. Q., 1990	*Qualitative evaluation and research methods*	160
16	Strauss A. L., 1998	*Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*	151
17	Pascarella E.T., 2005	*How College Affects Students: A Third Decade of Research*	139
18	Dimaggio P. J., 1983	*The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields*	138
19	Astin A., 1993	*What matters in college? Four critical years revisited*	136
20	Bass B., 1985	*Leadership and performance beyond expectations*	134
21	Creswell J. W., 2013	*Qualitative Inquiry & Research Design: Choosing among Five Approaches*	131
22	Strauss A., 1990	*Basics of qualitative research: Grounded theory procedures and techniques*	131
23	Bandura A., 1977	*Self-efficacy: Toward a unifying theory of behavioral change*	130
24	Glaser B. G., 2000	*The discovery of grounded Theory*	130
25	Hair J. F., 1998	*Multivariate Data Analysis with Readings*	127
26	Stake Robert, 1995	*The Art of Case Study Research*	126
27	Vygotsky L. S., 1978	*Mind in Society: Development of Higher Psychological Processes*	126
28	Creswell J. W., 2002	*Qualitative research*	125
29	Burns, J. M., 1978	*Leadership*	124
30	Leithwood K., 2004	*How Leadership Influences Student Learning*	123
31	Lave J., 1991	*Situated Learning: Legitimate Peripheral Participation*	123
32	Baron R. M., 1986	*The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations*	121
33	Wenger E., 1998	*Communities of practice: Learning, meaning, and identity*	113
34	Leithwood K., 2008	*The Impact of School Leadership on Pupil Outcomes*	111
35	Bandura A., 1997	*Self-efficacy: The exercise of control*	111
36	Boyer E., 1990	*Scholarship Reconsidered: Priorities of the Professoriate*	110
37	Weick Karl, 1995	*Sensemaking in Organizations*	109
38	Raudenbush S. W., 2002	*Hierarchical Linear Models. Applications and Data Analysis Methods*	109
39	Bryman A., 2007	*Effective Leadership in Higher Education: A Literature Review.*	109
40	Meyer J. W., 1977	*Institutionalized Organizations: Formal Structure as Myth and Ceremony.*	109

Source: Research Data (2023)

A total of 482,657 citations were found in the articles included in the sample. Table 4 presents the ranking of the top 40 most cited documents. One notable characteristic of this list is the significant number of articles and books related to methodology and quantitative analysis, demonstrating that many articles in the database were quantitative. Not all the most cited authors who have written about leadership in higher education appear with their works among the top 40 most influential, except for Leithwood and Pascarella.

In Table 5, you will find the most cited authors, with K. Leithwood, P. Hallinger, and J. P. Spillane occupying the top three positions with 1,310, 1,140, and 848 citations, respectively. It's worth noting that P. Hallinger also stands out in the previous lists, underscoring his relevance in the field. This list differs from Table 3 as it includes articles not part of the WoS database.
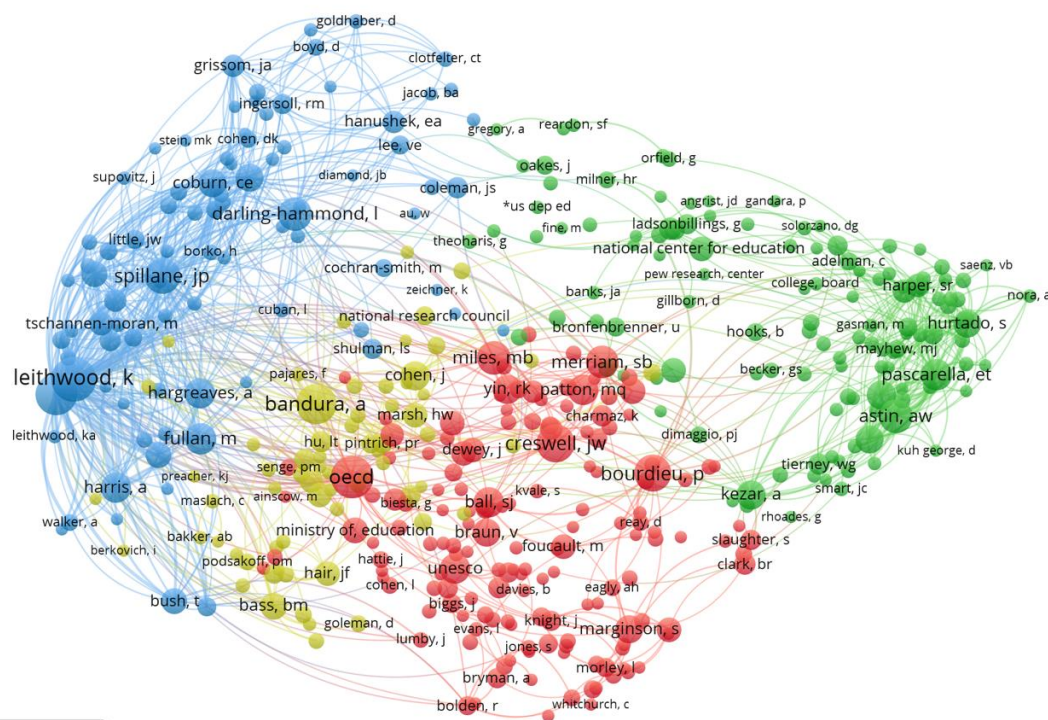
Table 5 – Most Cited Authors

	Author	Citations
1	K. Leithwood	1310
2	P. Hallinger	1140
3	JP. Spillane	848
4	A. Harris	641
5	M. Fullan	714
6	A. Bandura	922
7	ET. Pascarella	731
8	KS. Louis	423
9	JW. Creswell	923
10	A. Hargeaves	546
11	I. Darling-Hammond	603
12	CE. Coburn	492
13	AS. Bryk	414
14	OECD	768
15	M. Tschannen-Moran	361
16	P. Gronn	337
17	BM. Bass	557
18	AW. Astin	546
19	T. Bush	461

| 20 | GD. Kuh | 536 |

Source: Research Data (2023)

Analyzing the author clusters from Table 5, as shown in Figure 3, we find a distribution significantly different from those presented in Figure 2 for the authors cited in Table 2. In this scenario, there is a higher interaction among the cited authors, indicating greater interconnectedness of subjects. The most plausible explanation is that the authors in Table 5 have provided the theoretical and conceptual foundation for those listed in Tables 2 and 3 to conduct their studies in specific areas through the lens of leadership in higher education. It's worth noting that some authors appear in both cases due to the conceptual nature of their research. Figure 3 also highlights the most relevant research hubs, with a focus on the blue cluster, which includes authors K. Leithwood and P. Hallinger (not visible in the figure, as they appear behind Leithwood, but confirmed upon zooming in on the image), and J. P. Spillane. This area is of the greatest interest for developing studies in leadership, social sciences, and education combined. Figure 4 depicts the density of authors and strengthens the arguments presented here.

Figure 3 – *Clusters* of Concentration for the Most Cited Authors
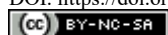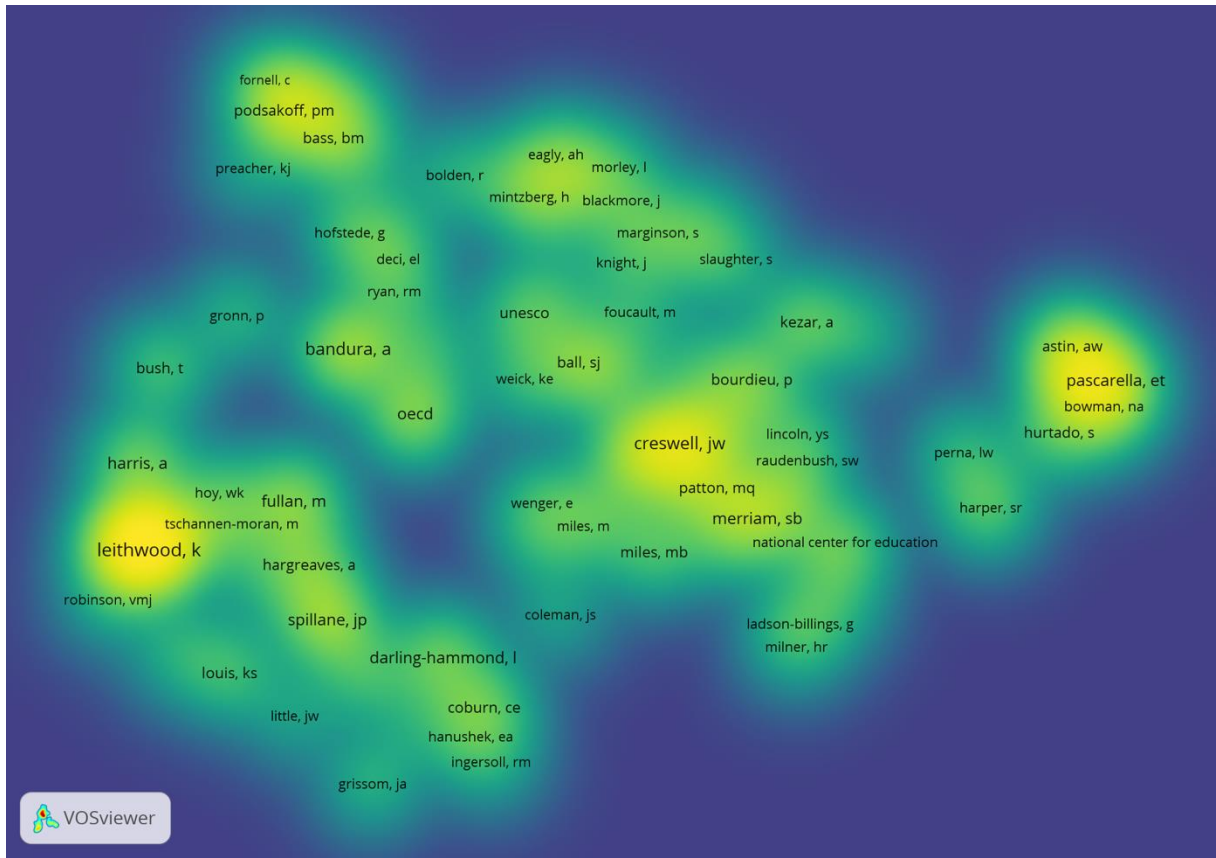

Source: Research Data (2023)

Figure 4 – Density of Concentration for the Most Cited Authors

Source: Research Data (2023)

The journals most frequently cited in the sample are presented in Table 6. In total, 177,126 journals are cited in the studied articles. To visually demonstrate the concentration of journals, Figure 5 displays the clusters, focusing on the blue, yellow, and green hubs, as the red hub extends to topics less associated with the themes targeted in this work.

Table 6 – Most Cited Journals

	Journal	Citations
1	*Higher Education*	4657
2	*Educational Administration Quarterly*	4226
3	*American Educational Research Journal Research in Higher Education*	3912
4	*Studies in Higher Education*	3890
5	*Teaching and Teacher Education*	3662
6	Revista Educação Res	3637
7	*The Leadership Quarterly*	2875
8	*The Journal of Higher Education*	2822

9	*Academy of Management Journal*	2771
10	*Computacional Educaction*	2663
11	*Journal of Personal Social Psychology*	2602
12	*Educational Policy*	2574
13	*Journal of College Student Development*	2566
14	*Teachers College Record: The Voice of Scholarship in Education*	2490
15	*Journal of Educational Administration*	2489
16	*Revista Higher Education*	2286
17	*Educational Management Administration & Leadership*	2248
18	*Educational Evaluation and Policy Analysis*	2216
19	*Academy of Management Review*	2189
20	*Journal of Management*	1826

Source: Research Data (2023)

Figure 5 – Clusters of the Most Cited Journals
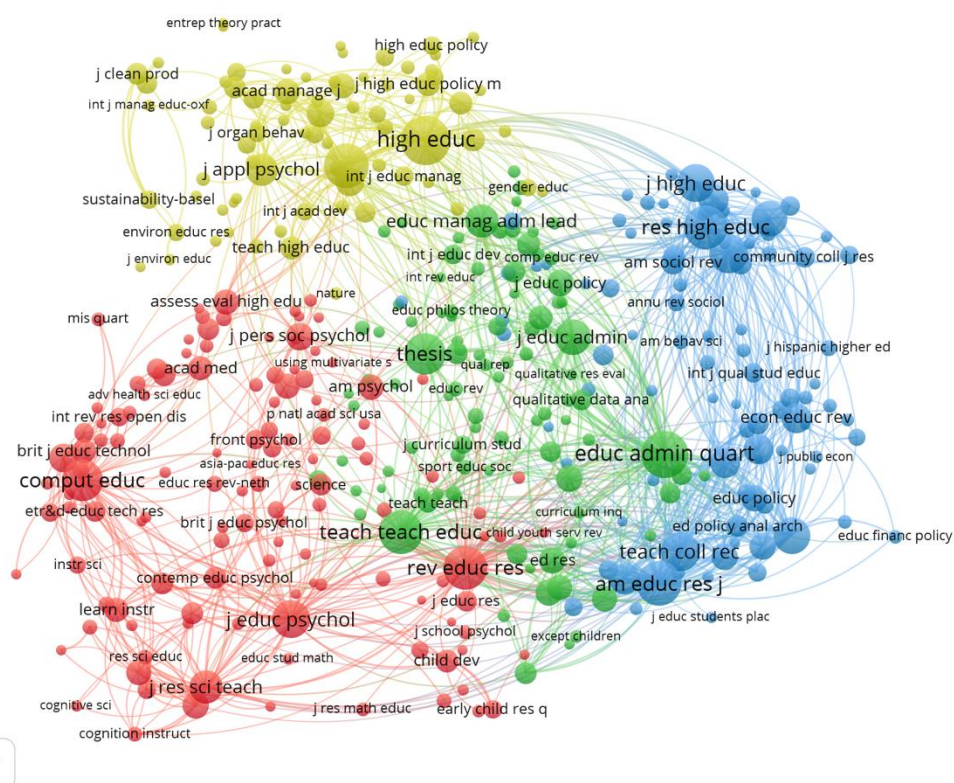
Source: Research Data (2023)

Frequent Keywords

Studying keywords is important because it reveals the themes discussed in the articles, allowing us to discern the trends in the field of study and the ideas that are most frequently discussed in research. Analyzing research in the area of *Lead* in High* Educ**, it can be observed that the term "leadership" is the most frequent, with 1,754 occurrences. This indicator is certainly influenced by the fact that it is the term closest to the research conducted in WoS. The sequence of the most cited terms confirms the trend of the most studied theme, with "education" being the second most frequent term, followed by "higher education". The top 20 most cited terms can be observed in Table 7.

Table 7 – Most Frequent Keyboards

	Keywords	Frequency
1	*Leadership*	1754
2	*Education*	1172
3	*Higher Education*	1170
4	*Impact*	780
5	*Performance*	753
6	*Higher-Education*	800
7	*Students*	703
8	*Management*	533
9	*Gender*	465
10	*Perceptions*	459
11	*Model*	472
12	*Teachers*	460
13	*Work*	360
14	*Experiences*	336
15	*Achievement*	335
16	*Diversity*	326
17	*Policy*	378
18	*Race*	326
19	*Knowledge*	356
20	*Women*	277

Source: Research Data (2023)

Figure 6 displays the existence of four clusters of keywords, represented by the following colors: blue, red, green, and to a lesser extent, yellow. While there is a prominence of the terms "leadership" and "education", there is also a balance among the words used and a strong correlation between them.

Figure 6 – Clusters of Keyword Concentration
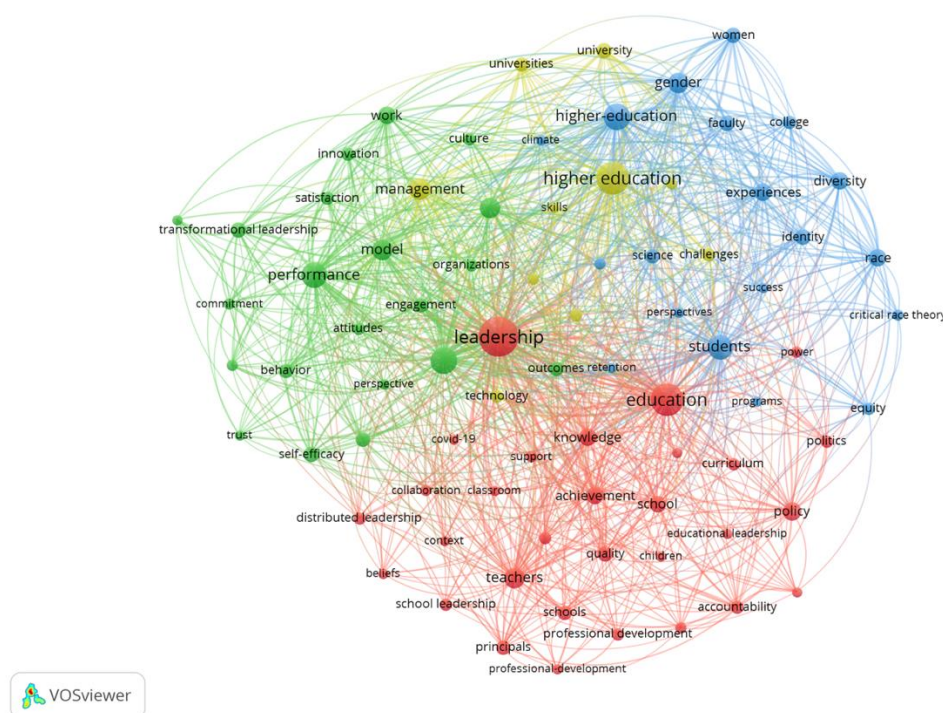
Source: Research Data (2023)

Conclusion

This article aimed to conduct a bibliometric analysis on Leadership in Higher Education using the Web of Science database, covering the period from the inception of the database up to 2023, utilizing the VOSviewer software. The study revealed that "Higher Education" was the journal that published the most on the subject, and Mayhew M. J. was the author with the highest number of published articles. Among the most cited works in the sample, Robinson V. M. J.'s article (2008) was the most cited in the field, followed by articles related to methodological aspects, and K. Leithwood emerged as the author with the highest number of citations. The study also found that 97.65% of the articles were in the English language, and 65.09% were published from 2018 to 2023, with 2020 being the year of the highest production.

This research provides guidance for those interested in conducting research on leadership in higher education, pointing to prominent researchers and resources in the field. It offers valuable insights for those seeking to delve into the topic, providing information on which journals to consult and which authors are eminent. It is worth noting that this subject is still relatively underexplored, especially within the Brazilian context, making it a promising area for new publications.

Limitations of the study include the use of only one database. For future studies, it is suggested to include articles that are not part of WoS and even those outside traditional databases to encompass articles that may not be within the conventional research circle but could contribute significantly to the subject. Furthermore, conducting an in-depth study of the most relevant articles, analyzing the applied methodologies, collected data, common discussions, and remaining research gaps, is recommended for further research in this area.

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