

Evolution of the Scholarly Landscape in Teacher Leadership Research: A Bibliometric Examination of Literature from 2014 To 2023

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Abstract:

Over the past decade, there has been a notable surge in the attention directed toward teacher leadership, where it has assumed a pivotal role in initiatives aimed at reforming and enhancing the realm of education. This bibliometrics analysis delves into the scholarly terrain of teacher leadership research available within the Scopus database, spanning the years 2014 to 2023. The primary objective of this study is to discern emerging trends, identify existing research lacunae, and outline potential implications for future inquiry and educational practice in this dynamic field. This comprehensive review consolidates insights derived from a diverse array of studies that scrutinize multiple facets of teacher leadership. It investigates the impact of various leadership styles on teacher morale, student achievement, and overall school improvement. Moreover, this analysis probes into the role of educators in nurturing positive school climates, orchestrating change, and fostering collaborative relationships within the educational community. The data collection process commenced by retrieving 1048 articles using the keyword "teacher leadership." To rigorously analyze this wealth of information, a variety of tools were employed, including Microsoft Excel for frequency analysis, data visualization, and Harzing's Publish or Perish for citation metrics and in-depth analysis. By dissecting the existing body of literature, this paper seeks to enhance our comprehension of the multifaceted dimensions of teacher leadership, offering valuable insights to both researchers and practitioners. The study encompasses an array of bibliometric indicators, encompassing language, subject area, publication year-based research trends, prominent countries of contribution, influential institutions, active source titles, citation patterns, authorship characteristics, and keyword distributions. The results underscore a significant upswing in teacher leadership literature from 2014 to 2023, with the United States emerging as the primary contributor to educational leadership research, closely followed by Turkey. In conclusion, this bibliometrics analysis provides a comprehensive panorama of teacher leadership research spanning the years 2014 to 2023. The discerned trends and identified research gaps present valuable insights for researchers, educators, and policymakers, offering a platform for the continued advancement of teacher leadership as a potent instrument for enhancing educational outcomes and nurturing professional development in the 21st century.

Keywords: Bibliometrics, Citation Analysis, ScopusDatabase, TeacherLeadership

1. Introduction

In the realm of education, the concept of teacher leadership has garnered increasing attention and recognition in recent years. Teachers, traditionally considered the implementers of educational policies and practices, are now

seen as valuable contributors to the process of educational reform and improvement. The shift toward acknowledging the pivotal role that teachers play in shaping the educational landscape has led to a surge in research, discussion, and inquiry surrounding the subject of teacher leadership. This transition in perception has prompted an academic exploration, spanning from 2014 to 2023, to uncover the evolving landscape of teacher leadership research through the lens of bibliometrics.

This study embarks on a comprehensive journey into the body of literature concerning teacher leadership, scrutinizing the academic discourse, and endeavouring to quantify the scholarly contributions in the field. Through a meticulous bibliometric analysis, this research aims to reveal trends, detect research gaps, and draw implications for future research and practice within the dynamic sphere of teacher leadership.

This paper provides a comprehensive overview of contemporary research on principal leadership in the field of education. From fostering a climate of collaboration to navigating the challenges posed by modern pedagogy, principal leadership is a dynamic force that must adapt to the evolving needs of students and the ever-shifting landscape of education.

The subsequent sections of this paper are organized as follows. Firstly, a literature review provides an overview of bibliometric analysis and previous studies on teacher leadership papers. Secondly, the methods employed in this study are presented, covering various aspects of the research. The subsequent analysis and findings section present the results obtained from the documents retrieved from the Scopus database. The conclusion section encompasses a summary, limitations, and recommendations for future research.

Moreover, this article identifies potential areas for future research, recognizing that research trends often influence curriculum development and redesign. Consequently, it presents a bibliometric analysis of teacher leadership research, addressing three primary research questions (RQs): (RQ1): How has research on teacher leadership advanced, and what are the trends in its distribution pattern? (RQ2): What specific keyword areas have garnered considerable focus in studies related to the teacher leadership? (RQ3): Who are the main contributors to research on teacher leadership, and what collaborative efforts have characterized their contributions? In this way, the paper contributes to a deeper understanding of the importance of teacher leadership and its impact on educational leadership, guiding future research and promoting collaboration within the field.

2. Method & Material

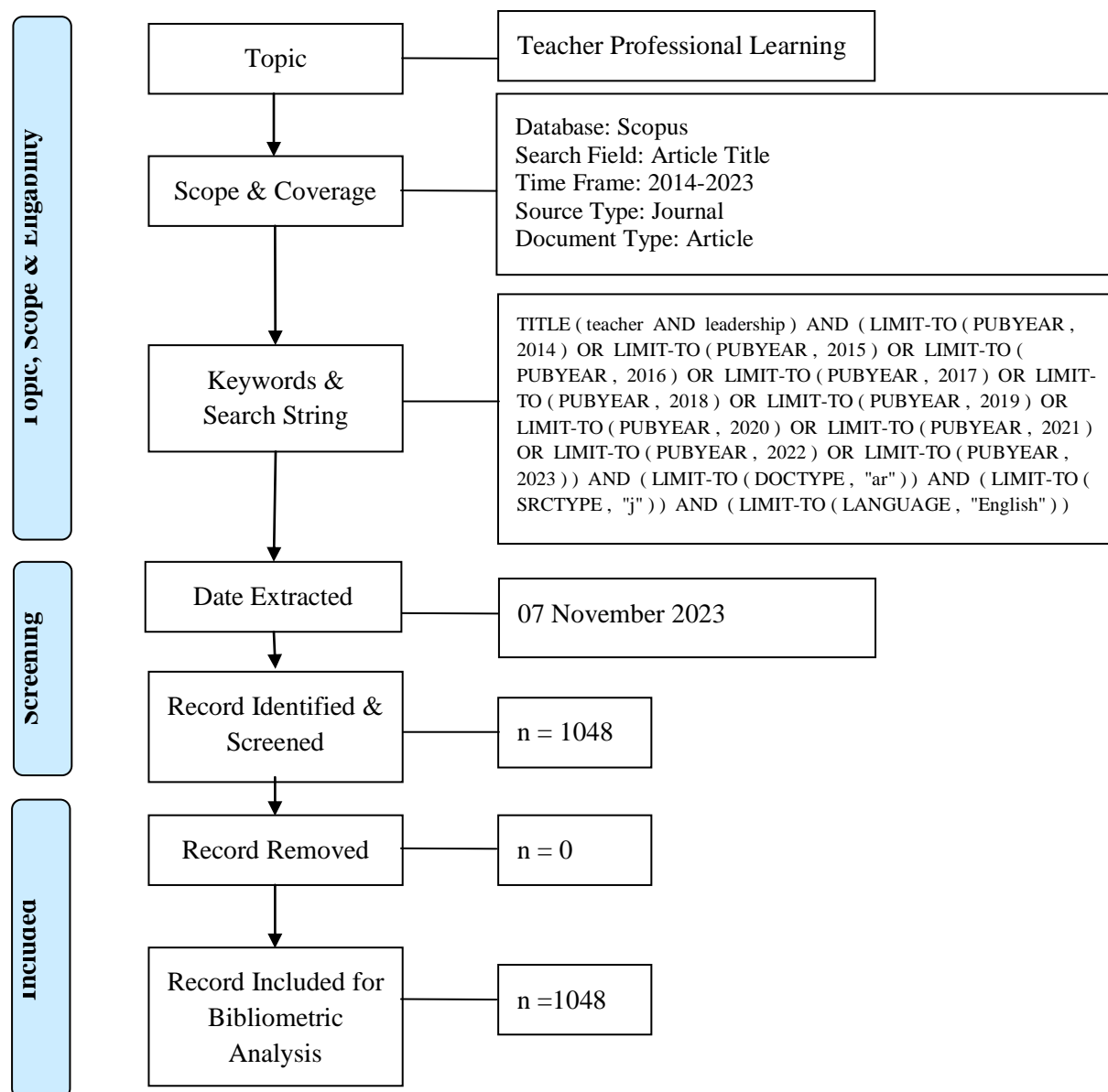
To address the research inquiries of this study, various facets of the literature on teacher were scrutinized. The investigation encompassed an examination of the evolution and dissemination of teacher leadership, with a focus on analyzing the language used in documents and identifying research trends across publications over time. Noteworthy findings from significant contributions in teacher leadership research included key data points, such as the top countries contributing to publications, the most influential institutions, active source titles, and citation and authorship analysis.

The primary aim of this study was to gain a more profound understanding of the research trends in teacher leadership, particularly concerning its international scope and collaborative endeavours. However, it is imperative to acknowledge that the current data necessitates careful scrutiny by researchers to provide meaningful recommendations for future studies in this research domain.

In the pursuit of rigor and transparency in this bibliometrics analysis of teacher leadership research spanning the years 2014 to 2023, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology was employed as a guiding framework as PRISMA is a widely recognized and accepted methodology primarily designed for systematic reviews and meta-analyses. Although bibliometric analyses typically differ from systematic reviews in their nature, PRISMA's structured approach provides a systematic and organized methodology for data collection and analysis in our context (Zakaria et al. 2021; Moher et al. 2009) and The Scopus search engine was employed, utilizing the search term "teacher leadership." Subsequently, the search results underwent refinement using Scopus subject filters, taking into account the search field, time frame, source type, and document type to eliminate irrelevant papers. The initial search

produced a total of 1800 documents (refer to Fig. 1). After evaluating the abstracts of all identified documents, further exclusions were applied based on topical relevance. Following the screening process, the final database comprised 1048 documents specifically related to teacher leadership.

Figure 1. Flow diagram of the search strategy



(Moher et al., 2009; Zakaria et al., 2021)

Utilizing data extracted from the Scopus database, the research design centered on the analysis of bibliometric characteristics of documents, encompassing elements such as languages, subject areas, and research trends categorized by publication year. The investigation also delved into the identification of the most influential countries, institutions, and journals within the domain of educational leadership. The majority of the findings were represented in the form of percentages and frequencies.

Data Extraction and Data Cleaning

In the course of this analysis, the study applied specific search terms, denoted as "teacher leadership*," within article titles, abstracts, and keywords. Wildcard symbols were used to replace multiple characters, following the approach outlined by Ahmi in 2021. Articles that included any of these designated terms in their title, abstract, or keywords were chosen for bibliometric examination, resulting in the acquisition of a total of 1,800 documents. The Scopus database was selected as the primary repository for conducting searches and retrieving documents due to its precision in generating citation search results and its extensive coverage across diverse fields of study. The data utilized in this research is current as of November 7, 2023.

The search strategy involved the use of the keywords "teacher leadership" with the expectation that these keywords would be present in the articles' keyword list, abstracts, and titles. However, special emphasis was not placed on the titles of the publications, as some research articles in laboratory experiments did not explicitly feature the keywords "teacher leadership" in their titles, despite their relevance to the research field and study objectives. The Scopus search engine was harnessed for the retrieval of articles pertaining to teacher leadership, with Scopus subject filters applied to fine-tune the search. The search primarily encompassed journals and articles published between 2014 and 2023, sourced from the Scopus database. This time frame allowed for the identification of the earliest studies published within the past decade.

The review specifically targeted papers and journals, with restrictions in place concerning document and source categories. The parameters governing the study's scope and coverage were established with consideration of aspects such as the search field, time frame, source type, and document type, with the aim of excluding irrelevant papers.

The data extraction and cleaning process can be summarized as follows: The search criteria included articles with titles containing "teacher" and "leadership" and limited to specific publication years from 2014 to 2023, document type "article," source type "journal," and language "English." Following the screening process, a final database was curated, comprising 1,048 documents relevant to teacher leadership.

Furthermore, Harzing's "Publish or Perish" tool was utilized to fetch and assess scholarly citations. The evaluation of publication impact, which encompassed citation counts, impact per publication, and citation per publication, was carried out by employing "Publish or Perish." Microsoft Excel was utilized for creating editable tables and figures. It's important to highlight that all the software tools employed are widely acknowledged and commonly applied in the analysis of bibliometric data.

Findings

The data analysis was organized in alignment with the research questions (RQs). To respond to RQ1, we investigated the publication pattern within the field, taking into account the languages in which the documents were published and the research trends over different publication years. The pertinent data was computed using percentages and cumulative percentages, derived from the data extracted from the Scopus database.

RQ1: How has research on teacher leadership advanced, and what are the trends in its distribution pattern?

Table 1 presents the findings, which highlight that English overwhelmingly dominated the language of publication, accounting for the entire 1048 publications related to teacher leadership research. Typically, articles published in English hold a significant advantage in terms of visibility within the scientific community's journals, primarily because English serves as the universal lingua franca in the field of leadership. Turkish emerged as the second most prevalent language among the publications, featuring in 10 documents, constituting 0.95% of the total. In contrast, Spanish contributed to a smaller portion of the publications, with only 3 documents, making up 0.29% of the total. Interestingly, despite the initial intention to confine the research language to English exclusively, four documents were prepared in dual languages, leading to their appearance in Bosnian, Chinese, Portuguese, and Serbian. However, the proportion of papers authored in these languages remained notably low, accounting for 0.40% or less of the total. As a consequence, the total number of

publications expanded to 1065 (as indicated in Table 1), surpassing the overall number of publications between 2014 and 2023 (as noted in Table 2).

Table 1. Languages

Language	Total Publications (TP)*	Percentage (%)
English	1048	100.00
Turkish	10	0.95
Spanish	3	0.29
Bosnian	1	0.10
Chinese	1	0.10
Portuguese	1	0.10
Serbian	1	0.10
Total	1065	100.00

*One document has been prepared in dual languages

Table 2 furnishes a comprehensive overview of the evolution of publications in the realm of Teacher Leadership Research over time. This comprehensive presentation encompasses various metrics that effectively gauge the impact and productivity of the research. Notably, the proportion of cited publications, although subject to fluctuations, has consistently maintained a reasonably high level, particularly in the earlier years. This pattern signifies that a substantial portion of the publications is receiving citations, underscoring their relevance and research quality. Furthermore, the Citations per Cited Publication (CCP) values have exhibited variations, yet they generally sustain a notable level, especially during the initial years, such as 2014, 2015, and 2016. These values signify that the cited publications are attracting a considerable number of citations, contributing significantly to the field's overall impact. Additionally, the h-index exhibits a consistent upward trajectory, indicating a growing influence within the field and the presence of a core set of highly cited publications. Simultaneously, the g-index also shows a continuous ascent, reflecting the overall productivity and impact of the research. The h-index, recognized as a standard measure for evaluating

scientific performance, has been seamlessly integrated into major bibliographic databases like Scopus and Web of Science, emphasizing its widespread utility in assessing scholarly contributions (Van Eck, N. J., & Waltman, 2017).

Table 2. Number of Teacher Leadership Research Publications by Year

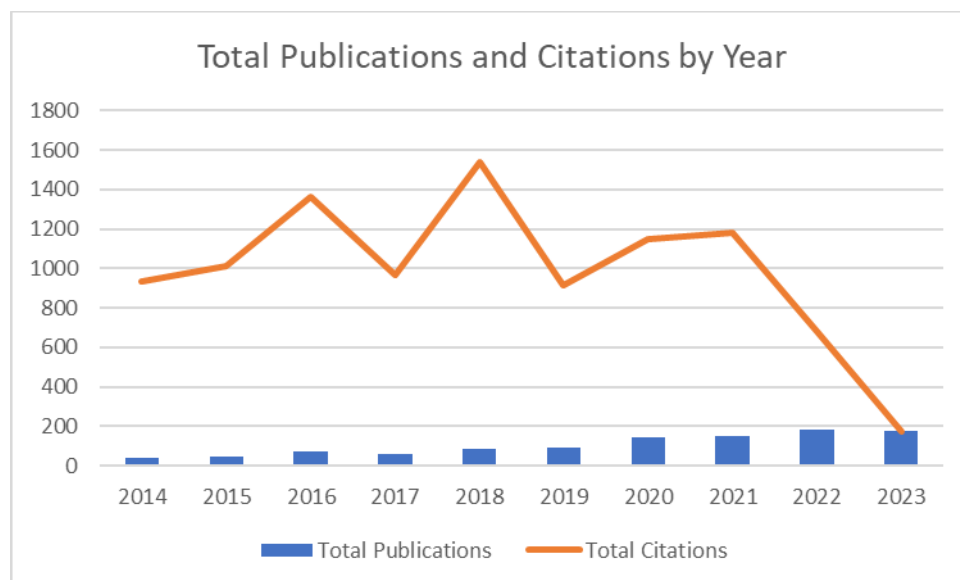
Year	TP	NCP	TC	PCP	CCP	h	g
2014	42	41	934.00	22.24	22.78049	18	29
2015	47	44	1011.00	21.51	22.98	18.00	31
2016	69	63	1363.00	19.75	21.63	20.00	34
2017	57	49	969.00	17.00	19.78	18.00	29
2018	86	79	1540.00	17.91	19.49	24.00	35
2019	89	75	914.00	10.27	12.19	16.00	26
2020	144	121	1147.00	7.97	9.48	18.00	25
2021	152	131	1180.00	7.76	9.01	17.00	28

2022	185	134	678.00	3.66	5.06	12.00	17
2023	177	54	171.00	0.97	3.17	15.00	29
Total	1048	791	9907.0	129.04	124.56	176.00	283.00

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; PCP=proportion of cited publications; CCP=citations per cited publication; h=h-index; and g=g-index.

Regarding the patterns of publication, the data reveals a dynamic landscape with fluctuations in different years. Some years exhibit a significant upsurge in publications, such as 2020 and 2021, while others witness a decrease, as seen in 2019 and 2022. This fluctuation in the number of publications can be attributed to various factors, including evolving research interests and the availability of funding. The steady growth from 42 publications in 2014 to 177 in 2023 underscores the field's increasing research output, reflecting a growing interest in Teacher Leadership Research. Conversely, the trends in citations do not necessarily mirror the publication trends. Although the number of citations generally increases over the years, there are instances where years with a higher number of publications have lower citation counts, as observed in 2020. This discrepancy may be attributed to variations in the impact of individual articles and the time it takes for research to gain recognition and accumulate citations. The overall upward trajectory in total citations, reaching 9907.0 in the most recent year, highlights the increasing impact and influence of research in the field of Teacher Leadership. However, it's worth noting that the citation volume of articles on teacher leadership has exhibited a slow decline, starting from 2021 and continuing through 2023 (as depicted in Figure 2). This shift in citation trends might be influenced by evolving research dynamics, including changes in the topics and areas of focus within the field.

Figure 2 Total Publications and Citations by Year



RQ2: What specific keyword areas have garnered considerable focus in studies related to the teacher leadership?

The second research question (RQ) in this study centres on the identification of primary topic areas through the examination of subject areas, top keywords analysis, metrics and cited articles. Table 4 presents an overview of the distribution of publications within the realm of Teacher Leadership Research across a spectrum of subject areas, along with the corresponding percentages. The subject areas with the most substantial shares of total publications include Social Sciences (90.27%), Business, Management, and Accounting (28.82%), Arts and

Humanities (14.79%), and Psychology (8.30%). These areas collectively exert a dominant influence on the landscape of Teacher Leadership Research, underscoring the significant impact of social sciences and management principles in the context of educational leadership. Conversely, subject areas such as Physics and Astronomy, Materials Science, Immunology and Microbiology, and Earth and Planetary Sciences each constitute a minor fraction of the total publications, representing a mere 0.10%. These particular subject areas exhibit limited presence within the realm of teacher leadership research. Furthermore, the data reveals that Teacher Leadership Research adopts an interdisciplinary approach, extending its purview to encompass subject areas such as Computer Science (3.53%), Environmental Science (3.24%), Engineering (3.15%), Medicine (1.81%), and Energy (1.72%). This broadening of horizons signifies the diverse facets and interdisciplinary nature of Teacher Leadership Research, enabling an all-encompassing exploration of teacher leadership's influence on various fields. Moreover, Teacher Leadership Research transcends into additional domains, including Economics, Econometrics, and Finance (1.53%), Health Professions (1.24%), Biochemistry, Genetics, and Molecular Biology (0.95%), Mathematics (0.95%), and Pharmacology, Toxicology, and Pharmaceutics (0.95%). These subject areas indicate the adaptability of teacher leadership research to multiple perspectives, spanning economic, health, and scientific dimensions. In summary, the results displayed in Table 4 delineate a multifaceted landscape of subject areas within Teacher Leadership Research. While certain domains wield a dominant presence, others signify more specialized or less-explored spheres. This diversity accentuates the interdisciplinary character of the field and its potential to impact a wide array of educational and leadership facets.

Table 4. Subject Area

Subject Area	Total Publications (TP)	Percentage (%)
Social Sciences	946	90.27
Business, Management and Accounting	302	28.82
Arts and Humanities	155	14.79
Psychology	87	8.30
Computer Science	37	3.53
Environmental Science	34	3.24
Engineering	33	3.15
Medicine	19	1.81
Energy	18	1.72
Economics, Econometrics and Finance	16	1.53
Health Professions	13	1.24
Biochemistry, Genetics and Molecular Biology	10	0.95
Mathematics	10	0.95
Pharmacology, Toxicology and Pharmaceutics	10	0.95
Multidisciplinary	7	0.67
Agricultural and Biological Sciences	6	0.57
Neuroscience	5	0.48
Nursing	5	0.48

Chemical Engineering	2	0.19
Decision Sciences	2	0.19
Earth and Planetary Sciences	1	0.10
Immunology and Microbiology	1	0.10
Materials Science	1	0.10
Physics and Astronomy	1	0.10

The table displays the most frequently occurring author keywords in teacher leadership research, along with the total number of publications (TP) and their respective percentages within the dataset. "Teacher Leadership" is the most prevalent keyword, appearing in 163 publications, accounting for 15.55% of the total publications. "Leadership" closely follows with 156 publications (14.89%), highlighting the broad focus on leadership in the field. "Transformational Leadership" is mentioned in 94 publications (8.97%), emphasizing the interest in leadership styles. "Instructional Leadership" and "Distributed Leadership" both signify the importance of various leadership approaches and are found in 63 (6.01%) and 62 (5.92%) publications, respectively. Other notable keywords include "Teacher" (55, 5.25%), "Teachers" (52, 4.96%), and "Professional Development" (49, 4.68%), demonstrating the focus on educators and their development. Additionally, "School Leadership" (48, 4.58%), "Job Satisfaction" (36, 3.44%), and "China" (34, 3.24%) represent other key themes in teacher leadership research. These keywords collectively illustrate the core concepts and areas of interest in the field, offering a comprehensive view of the research landscape. In summary, Table 5 reveals a balance between highly prevalent keywords related to leadership, school principals, and leadership styles and a wide range of specialized or context-specific keywords. This variety of keywords reflects the comprehensive nature of teacher leadership research, with a central focus on leadership in education and the various dimensions associated with it.

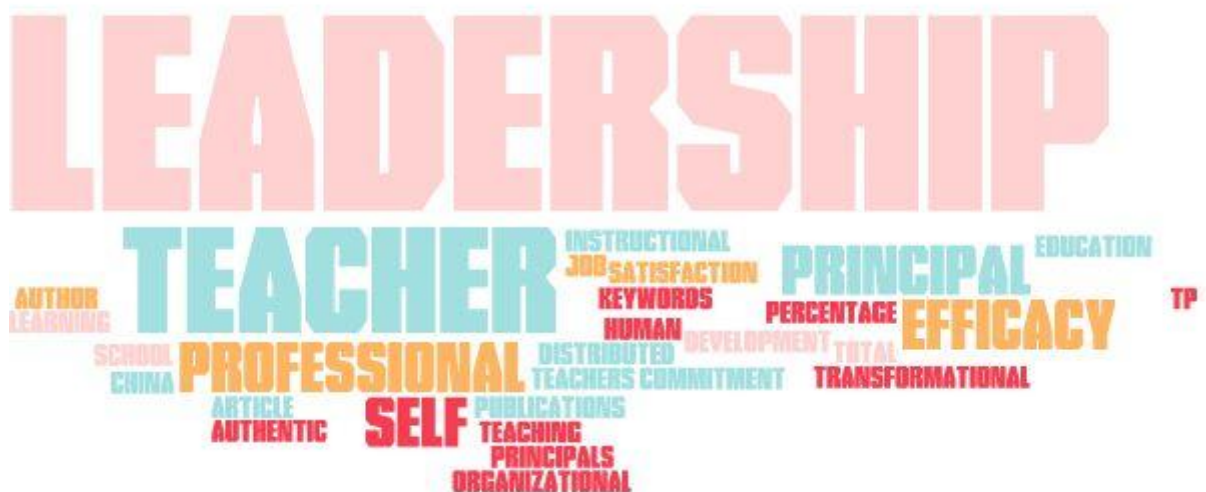
Table 5. Top Keywords

Author Keywords	Total Publications (TP)	Percentage (%)
Teacher Leadership	163	15.55
Leadership	156	14.89
Transformational Leadership	94	8.97
Instructional Leadership	63	6.01
Distributed Leadership	62	5.92
Teacher	55	5.25
Teachers	52	4.96
Professional Development	49	4.68
School Leadership	48	4.58
Job Satisfaction	36	3.44
China	34	3.24
Human	31	2.96
Principal Leadership	29	2.77

Teacher Self-efficacy	28	2.67
Teaching	28	2.67
Education	26	2.48
Article	25	2.39
Authentic Leadership	23	2.19
Principals	23	2.19
Organizational Commitment	22	2.10
Principal	22	2.10
Self-efficacy	20	1.91
Teacher Professional Learning	20	1.91

For the keyword analysis, this study initially employed Microsoft Word (ProWritingAid) to create a word cloud based on author keywords, allowing for a maximum of 100 words. The resulting word cloud is depicted in Figure 3 and showcases the top 100 words or partial keywords extracted from published articles concerning teacher leadership. The size of each word within the cloud corresponds to its frequency of appearance in the articles. Beyond the primary keyword used for document title searches, the word cloud highlights other emerging keywords such as "instructional," "job satisfaction," "principal," "efficacy," "education," "organizational," and "professional." While certain keywords may appear relatively smaller in size, they remain significant in addressing the subject of principal leadership research. It's crucial to emphasize that all the words featured in Figure 3 are indicative of trending terms linked to principal leadership research. Consequently, these keywords provide insights into potential focal areas for future research within the teacher leadership field.

Figure 3 Word cloud of the author keywords



Citation analysis functions as a systematic tool to evaluate the impact and calibre of research papers, providing a straightforward computational method (Aristodemou & Tietze, 2018; Hou et al., 2018). Table 6 presents citation metrics that shed light on the impact and scholarly engagement in Teacher Leadership Research. Harzing's Publish or Perish software was employed to identify the citation metrics for the data extracted from the Scopus database. The brief description encompasses the number of citations, citations per year, citations per work, and citations per author. Over the period from 2014 to 2023, 1,048 papers received a total of 9,907 citations. This translates to an average of 1,100.78 citations per year, demonstrating the sustained relevance of the research. On average, each paper garnered 9.45 citations, underlining their individual impact. Authors, on the other hand, received an average of 4,626.51 citations, showcasing their cumulative scholarly influence. Collaboration was also a key feature, with authors contributing to an average of 502.85 papers and each paper involving an average of 2.72 authors. Furthermore, the h-index stood at 45, signifying the presence of 45 papers, each with at least 45 citations, while the g-index, at 63, indicated the existence of 63 papers with a minimum of 63 citations, affirming the substantial research recognition and impact in this academic domain.

Table 6. Citations Metrics

Metrics	Data
Publication years	2014-2023
Citation years	10 (2014-2023)
Papers	1048
Citations	9907
Cites_Year	1100.78
Cites_Paper	9.45
Cites_Author	4626.51
Papers_Author	502.85
Authors_Paper	2.72
h_index	45
g_index	63

Table 7 showcases the top 20 highly cited articles on Teacher Leadership, providing valuable insights into the most influential research in this domain. These articles have significantly impacted the field and garnered substantial attention from scholars. The top-cited article, "A theoretical and empirical analysis of the roles of instructional leadership, teacher collaboration, and collective efficacy beliefs in support of student learning" by Goddard et al. in 2015, amassed 181 citations, indicating its profound influence. Other notable contributions include "How teacher leaders influence others and understand their leadership" by Fairman and Mackenzie (2015), "Principal Instructional Leadership, Teacher Self-Efficacy, and Teacher Professional Learning in China: Testing a Mediated-Effects Model" by Liu and Hallinger (2018), and "The Effect of Instructional Leadership and Distributed Leadership on Teacher Self-efficacy and Job Satisfaction: Mediating Roles of Supportive School Culture and Teacher Collaboration" by Y. Liu et al. (2021), each with over 100 citations. These articles encompass a wide range of topics and have significantly contributed to the advancement of Teacher Leadership research.

Table 7. Top 20 Highly cited articles on Teacher Leadership

No.	Authors	Article Title	Year	Cites	Cites per Year
1	(Goddard, R., Goddard, Y., Sook Kim, E., & Miller, 2015)	A theoretical and empirical analysis of the roles of instructional leadership, teacher collaboration, and collective efficacy beliefs in support of student learning	2015	181	22.63
2	(Fairman, J. C., & Mackenzie, 2015)	How teacher leaders influence others and understand their leadership	2015	119	14.88
3	(S. Liu & Hallinger, 2018)	Principal Instructional Leadership, Teacher Self-Efficacy, and Teacher Professional Learning in China: Testing a Mediated-Effects Model	2018	114	22.8
4	(Y. Liu et al., 2021)	The Effect of Instructional Leadership and Distributed Leadership on Teacher Self-efficacy and Job Satisfaction: Mediating Roles of Supportive School Culture and Teacher Collaboration	2021	108	54
5	(Fackler, S., & Malmberg, 2016)	Teachers' self-efficacy in 14 OECD countries: Teacher, student group, school and leadership effects	2016	107	15.29
6	(Evans, 2014)	Leadership for professional development and learning: Enhancing our understanding of how teachers develop	2014	99	11
7	(Andriani, S., Kesumawati, N., & Kristiawan, 2018)	The influence of the transformational leadership and work motivation on teachers' performance	2018	92	18.4
8	(Karakose et al., 2021)	Examining teachers' perspectives on school principals' digital leadership roles and technology capabilities during the covid-19 pandemic	2021	91	45.5
9	(S. Liu et al., 2016)	Supporting the professional learning of teachers in China: Does principal leadership make a difference?	2016	91	13
10	(Collie, 2021)	COVID-19 and Teachers' Somatic Burden, Stress, and Emotional Exhaustion: Examining the Role of Principal Leadership and Workplace Buoyancy	2021	84	42
11	(Torres, 2019)	Distributed leadership, professional collaboration, and teachers' job satisfaction in U.S. schools	2019	84	21
12	(Hopkins, M., Spillane, J. P., Jakopovic, P., &	Infrastructure redesign and instructional reform in mathematics: Formal structure and	2014	83	9.22

	Heaton, 2013)	teacher leadership			
13	(Hallinger et al., 2018)	Do beliefs make a difference? Exploring how principal self-efficacy and instructional leadership impact teacher efficacy and commitment in Iran	2018	82	16.4
14	(Hartinah, S., Suharso, P., Umam, R., Syazali, M., Lestari, B., Roslina, R., & Jermisittiparsert, 2020)	Teacher's performance management: The role of principal's leadership, work environment and motivation in Tegal City, Indonesia	2020	78	26
15	(Shapira-Lishchinsky, O., & Tsemach, 2014)	Psychological Empowerment as a Mediator Between Teachers' Perceptions of Authentic Leadership and Their Withdrawal and Citizenship Behaviors	2014	77	8.56
16	(Whitworth, B. A., & Chiu, 2015)	Professional Development and Teacher Change: The Missing Leadership Link	2015	76	9.5
17	(Zheng et al., 2019)	Exploring the relationships among instructional leadership, professional learning communities and teacher self-efficacy in China	2019	73	18.25
18	(Dou, D., Devos, G., & Valcke, 2017)	The relationships between school autonomy gap, principal leadership, teachers' job satisfaction and organizational commitment	2017	73	12.17
19	(Orphanos, S., & Orr, 2014)	Learning leadership matters: The influence of innovative school leadership preparation on teachers' experiences and outcomes	2014	73	8.11
20	(Sebastian et al., 2017)	Examining integrated leadership systems in high schools: connecting principal and teacher leadership to organizational processes and student outcomes	2017	72	12

RQ3: Who are the main contributors to research on teacher leadership, and what collaborative efforts have characterized their contributions?

Furthermore, this investigation aimed to examine the characteristics of scientific collaborations in teacher leadership research, focusing on research question RQ3. To accomplish this objective, the study scrutinized (a) the primary contributors to publications by country, (b) the most influential institutions, (c) the journal with the highest activity, (d) authorship analysis.

Table 8 provides an overview of the top five countries that have made significant contributions to publications in the field of Teacher Leadership. The United States leads with 195 publications, 161 cited publications, and a total of 2,415 citations. Turkey follows closely with 101 publications, 77 cited publications, and 761 citations. China and Indonesia both share the third position with 86 publications each, with China having 60 cited publications and 823 citations, while Indonesia has 46 cited publications and 487 citations. Malaysia is in the fifth position with 79 publications, 60 cited publications, and 525 citations. These countries have actively contributed to the research in Teacher Leadership, with the United States having the highest citation count, highlighting its significant impact in this field. These results emphasize the worldwide importance of research on

teacher leadership, transcending various geographical regions. The distribution of publications across the top countries is visualized in Figure 4.

Table 8. Top 5 Countries contributed to the publications

Country	TP	NCP	TC	PCP	CCP	h	g
United States	195	161	2415	12.38	15.00	26	42
Turkey	101	77	761	7.53	9.88	15	23
China	86	60	823	9.57	13.72	14	26
Indonesia	86	46	487	5.66	10.59	11	20
Malaysia	79	60	525	6.65	8.75	13	18

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; PCP=proportion of cited publications; CCP=citations per cited publication; h=h-index; and g=g-index.

Figure 4 Countries contributed to the articles on Teacher Leadership

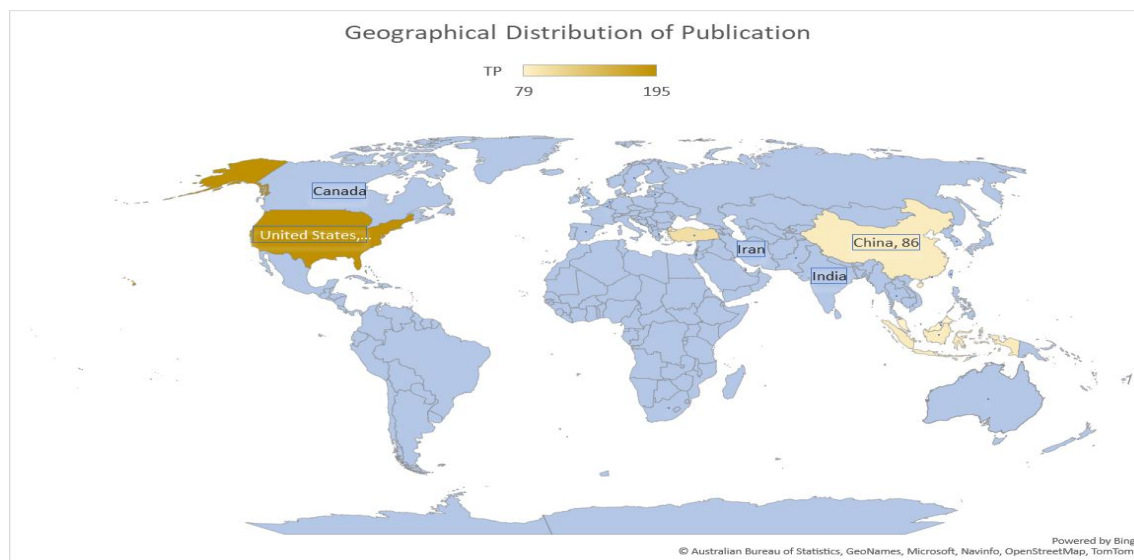


Table 9 summarizes the most influential academic institutions that have contributed significantly to the field, each having a minimum of twelve publications. These institutions span various countries and have demonstrated their research impact. Among the top twelve affiliations, each of which has contributed a minimum of 12 articles, Malaysia is prominently represented by three influential institutions that lead in publication contributions. These institutions include Universiti Utara Malaysia, Universiti Malaya, and Universiti Sains Malaysia.

Table 9. Most influential institutions with minimum of twelve publications

Affiliation	Country	TP	NCP	TC	PCP	CCP	h	g
The Education University of Hong Kong	China	22	19	364	16.55	19.16	10	19
Universiti Utara Malaysia	Malaysia	20	16	149	7.45	9.31	7	11
University of Johannesburg	South Africa	19	16	574	30.21	35.88	11	19

Universiti Malaya	Malaysia	18	14	132	7.33	9.43	6	11
Karabük Üniversitesi	Turkey	18	16	193	10.72	12.06	8	13
Chulalongkorn University	Thailand	15	14	568	37.87	40.57	10	15
Chinese University of Hong Kong	Hong Kong	14	12	193	13.79	16.08	9	13
Adiyaman Üniversitesi	Turkey	13	11	203	15.62	18.45	8	13
Southwest University	China	13	12	154	11.85	12.83	7	12
Universiti Sains Malaysia	Malaysia	12	9	118	9.83	13.11	7	10
Mahidol University	Thailand	12	12	477	39.75	39.75	9	12
East China Normal University	China	12	9	184	15.33	20.44	4	12
Central Connecticut State University	China	12	9	207	17.25	23.00	7	12

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; PCP=proportion of cited publications; CCP=citations per cited publication; h=h-index; and g=g-index.

Table 10 presents a compilation of the most active journals in the realm of teacher leadership and educational management, accompanied by various pertinent metrics. Additionally, this research highlights a catalogue of the nine foremost active journals, each featuring a minimum of 20 publications on teacher leadership research. Each row in the table corresponds to an individual journal, with the "Source Title" column containing the journal's name, "TP" signifying the total number of publications, and "TC" representing the total number of citations received. The "Publisher" column specifies the publishing company responsible for the journal. The other columns in the table furnish significant metrics for assessing the journals' influence and impact within the academic community. Notably, the "Cite Score" serves as a measure of the average number of citations received by a journal's articles, where a higher Cite Score typically indicates a more substantial impact. Of note, "Teaching and Teacher," published by Elsevier, boasts the highest Cite Score within the list, signalling a significant impact and extensive citation of its articles, with a total citation count of 689. In contrast, "Research in Educational Administration and Leadership," published by Dokuz Eylül University, exhibits the lowest Cite Score (0.7) among the listed journals, reflecting a relatively lower impact, accompanied by a total citation count of 48. Furthermore, "Educational Management Administration and Leadership" possesses the highest Total Publication count (78), underscoring a notable number of publications in the field of educational management and leadership. Published by SAGE, it maintains a substantial total citation count of 1370, signifying extensive academic activity and influence. Additionally, three journals share the same Total Publication count (23), namely "Journal of Educational Administration," "Leadership and Policy in Schools," and "Professional Development in Education." Although they exhibit a relatively lower TP compared to the top two journals, they maintain a presence with a respectable number of publications, suggesting comparable academic activity.

Table 10. Most Active Journals

Source Title	TP	TC	Publisher	Cite Score	SJR 2021	SNIP 2021
Educational Management Administration and Leadership	78	1370	SAGE	6	1.079	1.807
International Journal of Leadership in Education	72	677	Taylor & Francis	3.1	0.519	0.89

International Journal of Educational Management	31	448	Emerald Publishing	3.6	0/493	1.01
Journal Of Educational Administration	23	421	Emerald Publishing	3.6	0.975	1.536
Leadership And Policy in Schools	23	179	Taylor & Francis	2.4	0.598	0.886
Professional Development in Education	23	110	Taylor & Francis	5.4	0.985	1.668
Teaching And Teacher Education	22	689	Elsevier	6.5	1.616	2.474
School Leadership and Management	21	258	Taylor & Francis	6.4	1.37	2.363
Research In Educational Administration and Leadership	20	48	DokuzEylul University	0.7	0.201	0.378

Notes: TP=total number of publications

Moreover, Table 11 presents a comprehensive roster of the most prolific authors who have made noteworthy contributions to the field of Active Engagement in Teacher Leadership. Notably, P. Hallinger, who is associated with Mahidol University in Thailand, emerges as the most prolific author on this list. Remarkably, P. Hallinger boasts an impressive h-index of 16 and has authored 22 articles, all of which have garnered citations, resulting in a notable citation per cited publication (CCP) of 41.59. Additionally, a group of authors affiliated with Karabük Üniversitesi in Turkey, namely A.Ç. Kılınç, M. Polatcan, and M.Ş. Bellibaş, collectively exhibit a substantial number of publications (TP) and maintain a commendable proportion of cited publications (PCP). Furthermore, an author hailing from Malaysia, L.M. Thien, who is associated with Universiti Sains Malaysia, showcases 10 publications featuring a high proportion of cited publications and an impressive h-index of 6, underscoring their significant academic influence. Introduced by Hirsch in 2005, the h-index has attracted international attention due to its ability to compress both the volume and influence of a researcher's body of work into a single integer (Bornmann, L., & Daniel, 2005).

Table 11. Most Productive Authors

Author's Name	Affiliation	Country	TP	NCP	TC	PCP	CCP	h	g
Hallinger, P.	Mahidol University	Thailand	22	22	915	41.59	41.59	16	22
Kılınç, A.Ç.	Karabük Üniversitesi	Turkey	13	10	115	8.85	11.50	5	10
Polatcan, M.	Karabük Üniversitesi	Turkey	13	10	114	8.77	11.40	6	10
Bellibaş	Karabük Üniversitesi	Turkey	12	12	286	23.83	23.83	8	12
Liu, P.	University of Manitoba	Canada	12	10	72	6.00	7.20	5	8
Thien, L.M	Universiti Sains Malaysia	Malaysia	10	9	85	8.50	9.44	6	9
Devos, G.	Universiteit Gent, Ghent	Belgium	9	9	232	25.78	25.78	6	9
Liu, S.	East China Normal University	China	9	9	406	45.11	45.11	8	9
Liu, Y.	University of North Carolina	United States	9	9	311	34.56	34.56	8	9

	Wilmington								
Raman.A	Universiti Utara Malaysia	Malaysia	8	8	86	10.75	10.75	6	8
Yin, H.	Chinese University of Hong Kong	Hong Kong	8	7	168	21.00	24.00	6	8

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; PCP=proportion of cited publications; CCP=citations per cited publication; h=h-index; and g=g-index.

3. Conclusion

Between 2014 and 2023, this investigation conducted a bibliometric analysis to review publications related to research on teacher leadership. The Scopus database served as the primary source for bibliometric data, encompassing a total of 1048 publications. In response to Research Question 1 (RQ1), which aimed to explore the distribution pattern of research in teacher leadership, it became evident that English was the predominant language. The results indicated a continuous growth in the publication of journals on this topic. Nonetheless, it is important to highlight that there has been a gradual decrease in the citation rates of articles related to teacher leadership, commencing in 2021 and persisting through 2023. This alteration in citation patterns could be attributed to changing research dynamics, potentially influenced by shifts in the subject matter and research priorities within the field.

Addressing Research Question 2 (RQ2), the analysis sought to identify the key areas discussed in the research. The findings revealed that the subject domains that contribute the largest proportions of the overall publications comprise Social Sciences (90.27%), Business, Management, and Accounting (28.82%), Arts and Humanities (14.79%), and Psychology (8.30%). The keyword most commonly employed is "Teacher Leadership," which appears in 163 publications, making up 15.55% of the entire corpus. "Leadership" closely follows, present in 156 publications (14.89%), emphasizing the overarching focus on leadership within the field. Additionally, "Transformational Leadership" is referenced in 94 publications (8.97%), highlighting the specific interest in diverse leadership approaches. This implies a change in the direction of research trends in teacher leadership, moving from an emphasis on pedagogy to a heightened focus on management aspects. Harzing's Publish or Perish software was employed to analyze citation metrics, revealing a total of 9907 citations over a decade. On average, this equated to 1,200.78 citations annually and 9.45 citations per paper. Notably, Goddard, R. et. al (2015) study gained recognition as the most prolific in the field. His article, titled "A theoretical and empirical analysis of the roles of instructional leadership, teacher collaboration, and collective efficacy beliefs in support of student learning" received a significant number of citations, totalling 181.

Furthermore, Research Question 3 (RQ3) delved into major contributors in teacher leadership research, encompassing countries, institutions, journals, and authorship analysis. The results pertaining to RQ3 revealed that the United States played a central role as the network hub in teacher leadership research, collaborating with countries such as Turkey, China, Indonesia and Malaysia. Such collaborations between countries are essential for knowledge and technology transfer, particularly in the context of teacher leadership research. The Education University of Hong Kong emerged as the leading institution in teacher leadership research, contributing 22 publications. China takes the lead as the country with the greatest representation of affiliated universities in teacher leadership research, with four notable affiliations, including The Education University of Hong Kong, Southwest University, East China Normal University, and Central Connecticut State University. Following closely is Malaysia, with three affiliations, which encompass Universiti Malaya, Universiti Sains Malaysia, and Universiti Utara Malaysia.

Recognizing the constraints of this study is of paramount importance. To begin, the reliance on the Scopus database and specific keywords potentially led to the omission of pertinent documents available in other databases. Furthermore, the examination was confined to a subset of the literature within a predetermined timeframe, owing to the expansive and multifaceted nature of teacher leadership concepts. In addition, the

study's temporal scope, spanning from 2014 to 2023, may not encompass the most recent advancements in the field, potentially resulting in the oversight of emerging trends and recent publications. Recommendations for future studies include exploring alternative analysis and counting methods, replicating the study using alternative databases such as Web of Science, and addressing educational gaps in leadership development. It's important to note that the utilization of Harzing's Publish or Perish software for citation analysis may introduce limitations tied to its data sources and coverage, as variations in its database coverage can affect the precision of citation metrics. Despite these limitations, this study offers valuable insights into current trends and publications in teacher leadership research. Each indicator helps advance our understanding of this evolving field and, in turn, aids in developing more effective teacher development strategies.

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