Bibliometric Analysis of Teacher Leadership Using VOSviewer

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Abstract:

This article aims to identify publications on the teacher leadership theme comprehensively. The publication data is from articles, reviews, and English and comes from the Scopus database from 1993 to 2022. The keyword used in the data search is "teacher leadership." The investigation found 753 documents later used as the basis for conducting Bibliometric studies. This Bibliometric analysis method uses Vosviewer software. All data is classified by trend; country; organization; source; author, relationship between authors; and teacher leadership research hotspots which were then analyzed using the Vosviewer software. The main findings of the study include: the trend of teacher leadership publication continues to increase, and the future direction of teacher leadership research will concern two domains, namely: new word/phrase domains connected to teacher leadership, such as COVID, leadership style, self-efficacy, diversity, school principal, evidence, professional learning, community; and domain teacher leadership research processes or methods such as mix-method, instrument, questionnaire, and data processing. The findings of this study can be used as one of the materials for making decisions related to improving teacher leadership publications.

Keywords: *Teacher Leadership, Bibliometric, Vosviewer, Leadership Style*

Abstrak:

Artikel ini bertujuan untuk mengidentifikasi publikasi bertema kepemimpinan guru secara lebih komprehensif. Data publikasi berasal dari artikel jurnal, review (ulasan), dan berbahasa Inggris dan berasal dari database Scopus dari tahun 1993 hingga 2022. Kata kunci yang digunakan dalam pencarian data adalah "teacher leadership." Hasil pencarian menemukan 753 dokumen yang kemudian digunakan sebagai dasar untuk melakukan analisis Bibliometrik. Metode analisis Bibliometrik ini menggunakan perangkat lunak Vosviewer. Semua data diklasifikasikan berdasarkan tren; negara; organisasi; sumber; pengarang, hubungan antar pengarang; dan hotspot penelitian kepemimpinan guru yang kemudian dianalisis menggunakan perangkat lunak Vosviewer. Temuan utama penelitian ini meliputi: tren publikasi kepemimpinan guru terus meningkat, dan arah penelitian kepemimpinan guru ke depan akan menyangkut dua domain, yaitu: domain kata/frasa baru yang terhubung dengan kepemimpinan

guru, seperti covid, gaya kepemimpinan, efikasi diri, keragaman, kepala sekolah, bukti, pembelajaran profesional, komunitas; dan domain proses atau metode penelitian kepemimpinan guru seperti mix-method, instrumen, kuesioner, dan pengolahan data. Temuan penelitian ini dapat dijadikan salah satu bahan untuk pengambilan keputusan terkait peningkatan publikasi kepemimpinan guru.

Kata Kunci: *Kepemimpinan Guru, Bibliometrik, VOSviewer, Gaya Kepemimpinan*

INTRODUCTION

Effective leadership has been widely accepted as critical in realizing school improvement (Nguyen et al., 2020). Studies from the international literature show that influential leaders have a significant effect on school effectiveness (Kızıloğlu, 2021; Yalçınkaya et al., 2021). In addition, leadership affects teacher professionalism (Warisno & Hidayah, 2022) and quality of learning (Winingsih & Sulistiono, 2020). However, the principal's leadership does not directly affect student achievement (Shen et al., 2020a; Wu et al., 2020). However, the leadership qualities of the principal are essential in determining teachers' motivation (Jamilus et al., 2022) in carrying out classroom instruction (Yalçınkaya et al., 2021), and teacher leadership affects student motivation and achievement (Webber & Nickel, 2021). Literature studies on the relationship between principal and teacher leadership in realizing school improvement and teaching have been widely published. The literature study results show that effective leadership, including teacher leadership, significantly affects learning achievement (Cosenza, 2015; Wan et al., 2020).

Teachers' challenges are getting more demanding, and teachers need leadership competence (Kaminskienė et al., 2021). As part of school citizens, teachers play an essential role in developing a world-class education system and creating a better quality of education (Brandisauskiene et al., 2019). To promote excellence in teaching, teachers must present themselves in terms of leadership (Hamzah et al., 2016). Teachers need to understand that leadership does not just rest on the shoulders of school administrators. However, leadership at the school level is the responsibility of all school residents, including teachers, who need to have high leadership competence (Zhang et al., 2021). It can be felt that most teachers do not yet see themselves as leaders (Cheng & Szeto, 2016; Killion et al., 2016). A long time ago, leadership was only for teachers with unique positions and responsibilities, such as principal and vice principal (Dajani et al., 2020). Even though teachers are leaders who do not focus on teaching and learning in schools only (Schott et al., 2020), teachers have responsibilities outside of school, such as knowing their students' progress when they are out of school (Hamzah et al., 2016). Therefore, the better the teacher's leadership, the better the student's academic performance (Shurr et al., 2022). This means teachers, principals, and all education stakeholders must properly understand teacher leadership.

Teacher leadership is the behaviour of teachers in the development of school institutions, profession, and cooperation with colleagues (İBİŞ & Çalişkan, 2021). Teacher leadership refers to the behaviour of a teacher who can reflect, collaborate, and learn techniques and learning community (Sampaleng et al.,

2021). There have been many research findings on teacher leadership, but few analyses have been conducted comprehensively through bibliometric analysis from the Scopus database. For example, most empirical studies show that teacher leadership positively affects a teacher's professional behaviour, brings positive changes, and reduces school stress (Kaminskienė et al., 2021). Other research shows that teacher leadership is closely related to professional competence (Berestova et al., 2020) and improving the collectivity of work in schools (Eckert, 2019). Teacher leadership brings profit to schools and students (Lee-Piggott, 2014), has a massive role in improving student achievement (Gningue et al., 2022), and affects teacher performance (Rachmah & Putrawan, 2018). In addition, other studies have found that teacher leadership depends on other variables, such as learning communities (Lee & Ip, 2021), the authority of the principal (Berestova et al., 2020; Harris & Munjis, 2003), how much competence and self-efficacy of teachers (Zhang et al., 2021), the level of organizational learning that occurs in schools (Rashid & Mansor, 2018), and depending on the culture in the school (Liu, 2021). Regarding teacher leadership, there is a lack of exploration and a collective view of the body of knowledge. Even if efforts are made through a systematic literature review, there is no mention of how the study relates to other fields; alternatively, how the investigation is connected through the university's global network, types of publications, author keyword trends and keyword trends from abstracts.

This article will examine a collection of publications on teacher leadership mainly for two reasons. First, the author considers exploring teacher leadership related to scientific history. According to Hamzah et al. (2016), teacher leadership has three historical stages: instead, when it only has responsibilities in schools; second, when the teacher is asked to have responsibilities outside the classroom; and third, when the teacher has to decide on something related to education on his initiative. Teacher leadership development can open the perspective of actors and education experts to appropriately position teachers and teacher leadership. Second, the authors consider teacher leadership's exploration of polarization, direction, and prediction of future trends because teacher leadership research has its context (Liu, 2021). Therefore bibliometric analysis usually serves its purpose for scholastic researchers, scholars, and educators to understand the latest literature on the topic under study (Martins et al., 2022). Third, the author considers the exploration of teacher leadership vital because it relates to needs. There has always been a need to conduct a cross-time analysis because there have been many environmental changes, such as COVID-19, social inequality, market turmoil, and political unrest in different parts of the world (O'Brien et al., 2022). Therefore, this analysis can help map the publication of calm teacher leadership, especially for researchers in Indonesia, where the author lives.

The knowledge and development of teacher leadership are critical to understanding. Knowledge of teacher leadership can help decision-makers and researchers determine their positions according to their needs. In the context of meeting these needs, comprehensive research has yet to explain teacher leadership using Vosviewer. Therefore, the novelty of this research is that it seeks to answer some critical questions about teacher leadership. Question 1 (Q1) What

are the trends in teacher leadership research publications? Q2: Which country/region has the most publications in teacher leadership? Q3: Which research organizations have a significant influence in the area of teacher leadership? Q4: Which author is the most productive in teacher leadership, and what is the level of cooperation among authors? Q5: What is the future direction of teacher leadership research?

RESEARCH METHODS

Teacher leadership publication data is sourced from the Scopus database. At the time of the study, researchers used the following search strategy: title-abs-key ("teacher leadership") and found 985 documents. Then the researcher performs the following procedure: title-abs-key ("*teacher leadership*") and (limit-to (pubyear , *2022*) or limit-to (pubyear , *2021*) or limit-to (pubyear , *2020*) or limit-to (pubyear , *2019*) or limit-to (pubyear , *2018*) or limit-to (pubyear , *2017*) or limit-to (pubyear , *2016*) or limit-to (pubyear , *2015*) or limit-to (pubyear , *2014*) or limit-to (pubyear , *2013*) or limit-to (pubyear , *2012*) or limit-to (pubyear , *2011*) or limit-to (pubyear , *2010*) or limit-to (pubyear , *2009*) or limit-to (pubyear , *2008*) or limit-to (pubyear , *2007*) or limit-to (pubyear , *2006*) or limit-to (pubyear , *2005*) or limit-to (pubyear , *2004*) or limit-to (pubyear , *2003*) or limit-to (pubyear , *2002*) or limit-to (pubyear , *2001*) or limit-to (pubyear , *2000*) or limit-to (pubyear , *1999*) or limit-to (pubyear , *1998*) or limit-to (pubyear , *1997*) or limit-to (pubyear , *1996*) or limit-to (pubyear , *1995*) or limit-to (pubyear , *1994*) or limit-to (pubyear , *1993*)), and the author found 958 documents. Then the researcher did another restriction with (limit-to (doctype, "*ar*") or limit-to (doctype, "*re*")) and (limit-to (language, "*English*")), which ended by finding 753 documents. Finally, based on these 753 articles, researchers conducted a study on teacher leadership.

Microsoft Excel 2016 and VOSviewer software are used to store and analyze data. The information recorded in the data is as follows: *publication year, publication number, publication country/region, publication organization, journal title, author, number of times cited, and H-index*. Conducting bibliometric analysis requires software that can provide good visualization. VOSviewer, a Java software, can be freely downloaded and used for bibliometric analysis (Yang et al., 2022). VOSviewer can create maps from bibliographic data and visualize and unearth intrinsic meanings (Han & Gong, 2021; Zhao et al., 2022). This study used VOSviewer to visualize and analyze co-citation with publishers and authors and co-occurrence with keywords (Chang et al., 2022; Luckyardi et al., 2022). The VOSviewer app was chosen because it has three types of mapping visualizations (Dubyna et al., 2022). The mapping visualizes the network, overlay, and density (Soegoto et al., 2022).

RESULTS AND DISCUSSION

General Information. The publication of teacher leadership obtained through the keyword "teacher leadership" on the Scopus database brought 985 documents. After being limited by publication year between 1993 and 2022, 958 documents were obtained. Then it is restricted again based on documents derived from scientific articles, review-type writings, and English; the researcher obtained 753 documents.

Publications and Research Interests. The author sorts the product year of publication of teacher leadership articles into five rankings. 2022 is ranked the first or most productive year with 120 articles. The year 20 21, with 105 articles, ranked second, and the year 2018, with 86 articles, ranked third. The year 2020, with 85 articles, ranked fourth, and 2016 ranked 5th with 71 articles (Figure 1). Publications about teacher leadership in the form of articles at the Scopus indexing institution are classified as getting enough attention from researchers. This situation is indicated by the data on the number of publications of teacher leadership articles from year to year, which has generally increased.
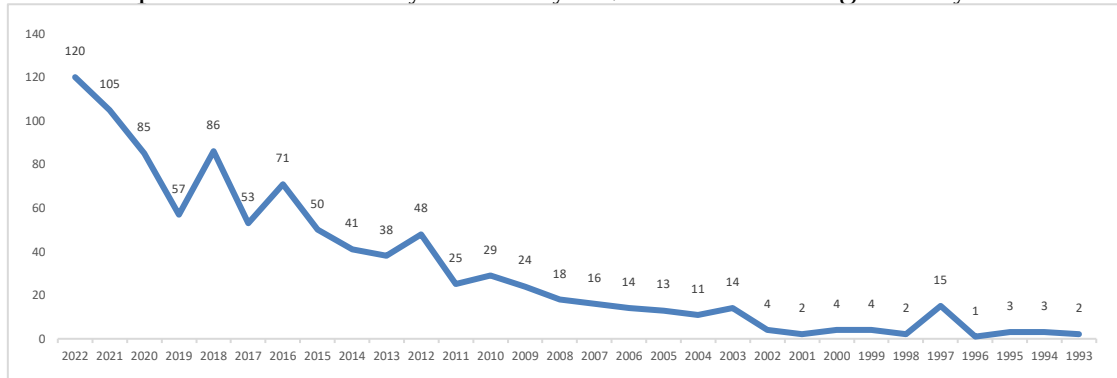

Figure 1. Teacher leadership Publications Per Year

Country. The United States (US) publishes most of the articles on teacher leadership with 338 documents, followed by the United Kingdom (50 documents), Canada (41 documents), Hong Kong (33 documents), China (32 documents), and Australia (31 documents). From this data, the US is very dominant in publications with the theme of teacher leadership. For the Southeast Asian region, Malaysia contributed 20 teacher leadership publications and became the most productive country in the area. Indonesia followed with ten documents, and Singapore with eight documents. Teacher leadership research from the US was cited 5671 times, ranking first from all countries/regions, followed by the United Kingdom (1409 times) and Canada (482 times). In contrast, teacher leadership publications from Malaysia were cited 97 times, Singapore 170 times, and Indonesia 46 times.
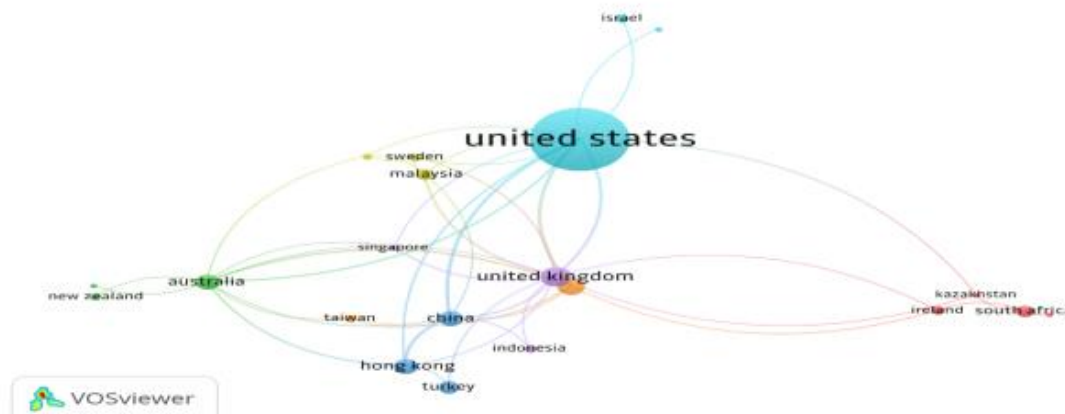

Figure 2. Distribution of Teacher Leadership Publications

In the regional context, the theme of teacher leadership in Indonesia is still relatively new. This can be seen in the results of the VOSviwer mapping (Figure 3). Based on figure 3, the yellow teacher leadership publication shows that it only appeared in the 2020s. Yellow is also seen in China, Spain, Malaysia, Kazakhstan, and Israel. Therefore, education researchers in the region can choose the theme of teacher leadership as an alternative to the theme of scientific publications.
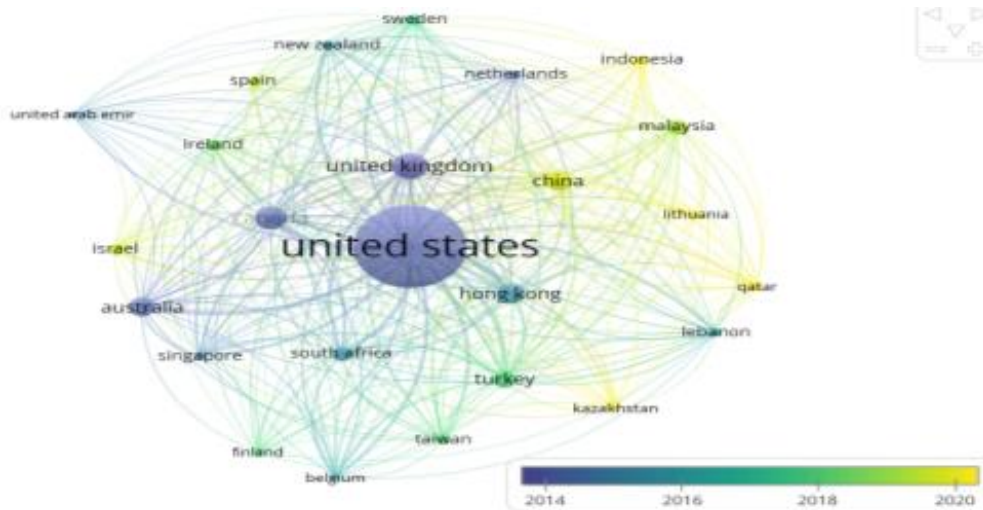

Figure 3. The Novelty of Teacher Leadership Publication Distribution

Institute of Publications. 4 institutions are most productive in publishing the theme of teacher leadership. Oakland University, Rochester, United States, is the most prolific institution for posting teacher leadership (5 publications, 58 citations). Although most prolific, the university lost in citations by Vanderbilt University, Nashville, United States. Next are Michigan State University, United States (4 publications, 35 citations); the University of Kentucky, Lexington, United States (4 publications, 24 Citations); and Vanderbilt University, Nashville, United States (4 publications and 177 citations).

Table 1. Teacher leadership publication institutions

No.	Organizations	Document	Citations
1	Oakland University, Rochester, United States	5	58
2	Michigan State University, United States	4	35
3	The University of Kentucky, Lexington, United States	4	24
4	Vanderbilt University, Nashville, United States	4	177

Authors. Based on the category of the author's last six documents about teacher leadership, the authors found seven authors with the most productive, as many as 10. The seven authors are Frost D (10 documents, 277 citations), Mangin M.M (7 documents, 244 citations), Grant C. (7 documents, 133 Citations), and Berg J.H (7 documents, 34 Citations. The authors of the six documents are Harris A. (6 documents, 801 citations), Eckert J. (6 documents, 87 citations), and Sawalhi R. (6 documents, 11 citations). Based on these data, Harris A. is the author who gets the most citations on the theme of teacher leadership, even though he only has six documents.

No	Author	Documents	Citations
1	Frost G.	10	277
2	Mangin M.M	7	244
3	Grant C.	7	133
4	Berg J.H	7	34
5	Harris A.	6	801
6	Eckert J.	6	87
7	Sawalhi R.	6	11

From the context of the authors of the teacher leadership theme, we can classify it based on the age of the publication. We categorize as old, medium, and young or new. Based on these classifications (see Figure 4, yellow indicates young, and blue indicates old/senior). Based on figure 4, Sawalhi R., Chaaban Y., Liu Y., and Rushton G.T. are among the young/new authors. Meanwhile, Frost D., and Harris A., are old/old authors.

Source. Based on the criteria of at least 15 documents, researchers found nine journals that were productive in publishing the theme of teacher leadership (Table 2). First, the International Journal of Leadership in Education is prolific, with 49 documents and 420 citations. Next, Professional development in education (37 documents, 574 citations), School Leadership and Management (30 documents, 1021 citations), Educational Management Administration and Leadership (29 documents, 686 citations), Educational Administration Quarterly (18 documents, 959 citations), International Journal of Educational Management (16 documents, 224 citations), Teaching and Teacher Education (16 documents, 589 citations), Educational Leadership (16 documents, 110 citations), and Research in Educational Administration and Leadership (15 documents, 36 citations).
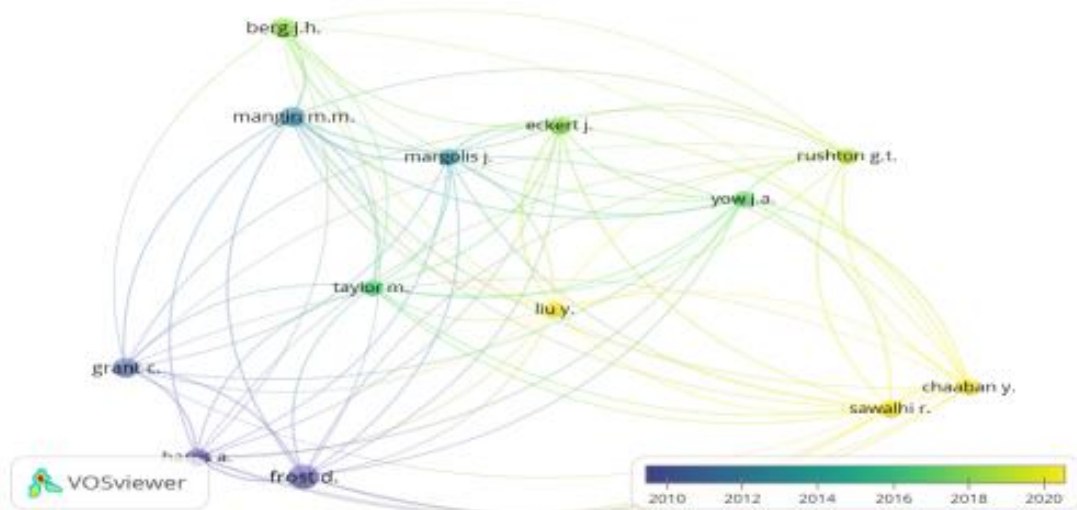

Figure 4. Teacher Leadership Authors By Year

No.	Source	Document	Citation
1	International Journal of Leadership in Education	49	420
2	Professional development in education	37	574
3	School Leadership and Management	30	1021
4	Educational Management Administration and Leadership	29	686
5	Educational Administration Quarterly	18	959
6	International Journal of Educational Management	16	224
7	Teaching and Teacher Education	16	589
8	Educational Leadership	16	110
9	Research in Educational Administration and Leadership	15	36

Title-Based Maps. Based on the construction of VOSviewer, the theme of teacher leadership is based on the article's title and then connected to 27 words/phrases. The twenty-seven words/phrases are then divided into four clusters. The first cluster contains items: evidence, implication, instructional leadership, policy, possibility, and review. The second cluster includes items: case, challenge, lesson, opportunity, and professional learning. The third cluster contains items: case studies, distributed leadership, professional learning, and teaching. The fourth cluster contains grains; classroom, reflection, voice, and way. The fifth cluster contains items: change, covid, and equity. The sixth cluster has social justice, teacher education, and teacher leaders. Finally, the seventh cluster contains items: community and systematic review. Suppose the construction map on Vosviewer uses Overlay Visualization (note the yellow and year colors). In that case, the new items appear in the context of the publication of the teacher leadership theme: evidence, covid, professional learning, and community (Figure 5).
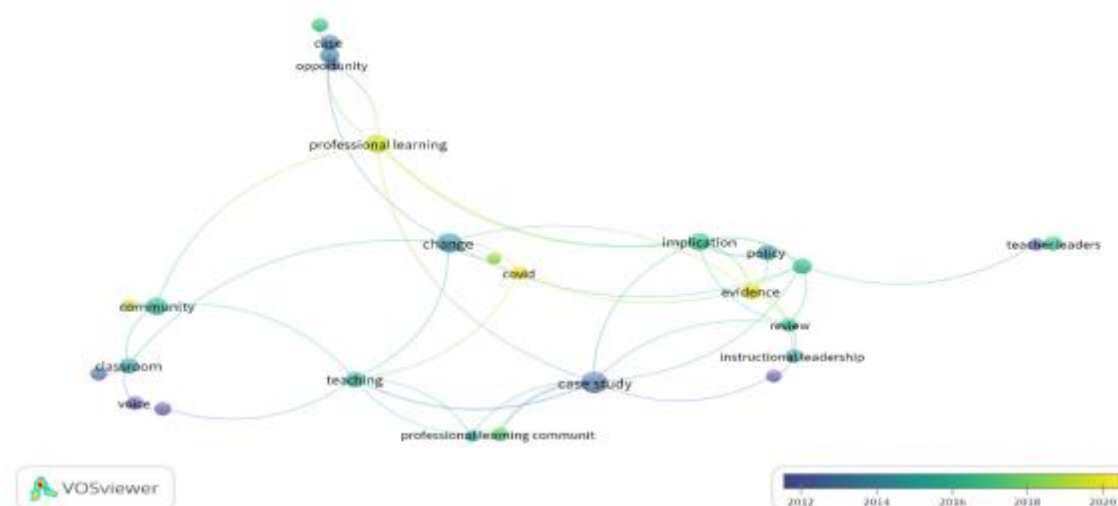

Figure 5. Bibliometric Map Based on Titles

Abstract-Based Maps. If based on keywords on the abstract, then the teacher leadership theme is connected to 201 words/phrases. The 201 words/phrases are connected to 5 clusters. These clusters show that there are differences in focus in teacher leadership publications. If you use Overlay Visualization on Vosviewer, the 201 items can be included in old and new

things/phrases in the context of teacher leadership publications. Words/phrases that have long been connected to teacher leadership (figure 4, see the year and dark blue) such as pedagogy, teacher education, teacher practice, social justice, schooling, leadership skills, etc. The words/phrases that are relatively new and are connected to teacher leadership (Figure 6, see the year and yellow) include covid, leadership style, self-efficacy, diversity, and school principal.
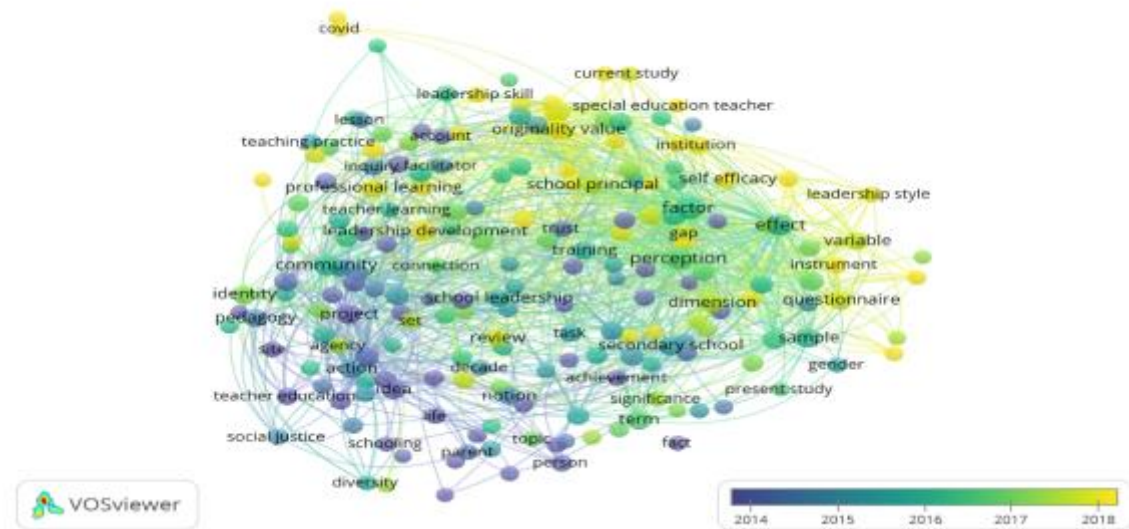

Figure 6. Bibliometric Map Based on Abstract

Publications about teacher leadership in the form of articles, reviews, and English on the Scopus indexing database were unevenly distributed. This theme is still dominated by publication institutions and journal institutions from the United States (US). The difference in productivity between the United States and the publication institutions outside of it is noticeable. In the theme of teacher leadership for 20 years, the United Kingdom produced 50 documents, Canada 41 documents, Hong Kong 33 documents, China 32 documents, and Australia 31 documents. Compare that to the United States, which produced 338 documents. This fact shows that researchers of teacher leadership outside the United States need to be more active and collaborative, so this theme is evenly distributed across different regions and countries. There must be efforts to increase teacher leadership studies' number, quality, and equity because this theme is closely related to educational progress (Ahmad, 2020; Sinha & Hanuscin, 2017; Zhang et al., 2021).

Teacher leadership publications in articles, reviews, and English for the past 20 years at the Scopus indexing agency have increased from year to year. This fact indicates that the theme of teacher leadership will remain a concern for Education researchers (Angelle & DeHart, 2011; Cheng & Szeto, 2016; Isbianti, 2017). Why is the theme of teacher leadership so exciting and will continue to exist in the future? First, teachers' ability to influence and improve learning outcomes depends on teacher leadership competencies (Hallinger et al., 2019; Ilma Nafia & Suyatno, 2020; Rachmah & Putrawan, 2018; Walker, 2021). Second, most teachers are still focused on teaching, not on the ability to lead and make

decisions inside and outside the kelas (Lowery-Moore et al., 2016; Muijs & Harris, 2007). Third, the competence of teacher leadership depends on many factors, so the improvement depends on other variables such as education and training (Harris & Jones, 2019; Lee-piggott, 2014; Pan & Chen, 2021). Based on these findings, researchers must continue exploring and looking for other variables to improve teacher leadership competence.

This research found that teacher leadership publications can be classified into two domains: new words/phrases connected to teacher leadership and the research process or method. In the new word/phrase domain, publications about teacher leadership can be linked to words/phrases such as Covid, leadership style, self-efficacy, diversity, school principal, evidence, professional learning, and community. In the domain of research processes or methods, teacher leadership publications can be deepened through more comprehensive research methods such as mix-method, instrument updates, research questionnaires, and data processing quality. Developing publications in the domain of "words /phrases" and "research methods" on teacher leadership can increase the quantity and quality of teacher leadership publications. If teacher leadership is carried out correctly, things related to the quality of education also grow, such as learning outcomes (Lotter et al., 2020), learning achievements (Kaminskienė et al., 2022; Shen et al., 2020b), and quality of education (Langdon Warren, 2021).

CONCLUSION

Publications about teacher leadership in articles, reviews, and English on the Scopus indexing agency received significant attention from international researchers.   In the future, the theme of teacher leadership will continue to increase for three reasons: First, the ability of teachers to improve learning outcomes depends on the leadership competence of the teacher himself;   second, future teachers must be able to make decisions inside and outside the classroom; third, because it is crucial, research on variables that can improve teacher leadership will continue to emerge. Publications on the theme of future teacher leadership will be related to new words/phrases connected to teacher leadership and their research processes or methods.

Based on these conclusions, this study recommends that researchers continue exploring teacher leadership. Exploring this theme is oriented towards strengthening teacher leadership competencies, exploring as many variables as possible that can improve teacher leadership, and exploring various research methods that can explain teacher leadership as clearly as possible.

Strengths and limitations of research. The advantage is that Vosviewer can map more detail about teacher leadership publications, including institutional productivity, authors, author networks, countries, and topics studied. These advantages make it easier for other researchers to position themselves in teacher leadership publications. In addition to these advantages, this study has limitations, including bibliometric analysis that may not always reflect the actual situation. At the same time, newly published publications were not cited due to the short publication time. As a result, some non-English publications were not included in this study, which may lead to inaccurate conclusions.

AKCNOWLEGMENT

REFERENCES

Ahmad, J. (2020). Leadership Agility for Pandemic COVID-19: Study of The Principal's Role in Implementing "Teach from Home" Policy. *International Journal of Advanced Science and Technology*, *29*(5), 11317–13210.

Angelle, P. S., & DeHart, C. A. (2011). Teacher perceptions of teacher leadership: Examining differences by experience, Degree, and position. *NASSP Bulletin*, *95*(2), 141–160. https://doi.org/10.1177/0192636511415397

Berestova, A., Gayfullina, N., & Tikhomirov, S. (2020). Leadership and functional competence development in teachers: World experience. *International Journal of Instruction*, *13*(1), 607–622. https://doi.org/10.29333/iji.2020.13139a

Brandisauskiene, A., Cesnaviciene, J., & Bruzgeleviciene, R. (2019). Teacher Leadership In Lithuania:Are Teachers Prepared To Cooperate? *Management (Croatia)*, *24*(Special Issue), 123–136. https://doi.org/10.30924/mjcmi.24.si.8

Chang, L., Watanabe, T., Xu, H., & Han, J. (2022). Knowledge Mapping on Nepal's Protected Areas Using CiteSpace and VOSviewer. *Land*, *11*(7). https://doi.org/10.3390/land11071109

Cheng, A. Y. N., & Szeto, E. (2016). Teacher leadership development and principal facilitation: Novice teachers' perspectives. *Teaching and Teacher Education*, *58*, 140–148. https://doi.org/10.1016/j.tate.2016.05.003

Cosenza, M. N. (2015). Affirming the Teacher Leader Model Standards. *Issues in Teacher Education*, *24*(2), 79–99.

Dubyna, M., Popelo, O., Kholiavko, N., Zhavoronok, A. (2022). Mapping the Literature on Financial Behavior: a Bibliometric Analysis Using the VOSviewer Program. *WSEAS Transactions on Business and Economics*, *19*, 231–246. https://doi.org/10.37394/23207.2022.19.22

Eckert, J. (2019). Teacher Leadership Development : Tracking One District ' s Progress Over Three Years. *Education Policy Analysis Archives*, *27(42)*, 1–20.

Gningue, S. M., Peach, R. (2022). The Relationship between Teacher Leadership and School Climate: Findings from a Teacher-Leadership Project. *Education Sciences*, *12*(11), 749. https://doi.org/10.3390/educsci12110749

Hallinger, P. (2019). Does principal leadership make a difference in teacher professional learning? A comparative study China and Thailand. *Compare*, *49*(3), 341–357. https://doi.org/10.1080/03057925.2017.1407237

Hamzah, N. (2016). Teacher Leadership Concept: A Review of Literature. *International Journal of Academic Research in Business and Social Sciences*, *6*(12), 185–189. https://doi.org/10.6007/ijarbss/v6-i12/2483

Han, L., & Gong, Z. (2021). Visual Analysis of Construction Waste Research Based on VOSviewer. *E3S Web of Conferences*, *237*, 1–6. https://doi.org/10.1051/e3sconf/202123704016

Harris, A., & Jones, M. (2019). Teacher leadership and educational change. *School Leadership and Management*, *39*(2), 123–126. https://doi.org/10.1080/13632434.2019.1574964

Harris, A., & Munjis, D. (2003). Teacher Leadership : Principles and Practice Teacher Leadership : principles and practice Alma Harris and Daniel Muijs. *National College for School Leadership*, *January 2003*.

İBİŞ, Y., & Çalişkan, Ö. (2021). Examination of Teachers' Perceptions and Expectations About Teacher Leadership Roles. *Milli Egitim*, *50*(230), 423–444. https://doi.org/10.37669/milliegitim.691513

Ilma Nafia, Z., & Suyatno, S. (2020). The effect of teachers' leadership on students' motivation in al-Islam Tambakbayan elementary school. *Universal Journal of Educational Research*, *8*(5), 1907–1915. https://doi.org/10.13189/ujer.2020.080527

Isbianti, P. (2017). The Factors of Teacher Leadership Behaviors on Sport Class. *Advances in Social Science, Education and Humanities Research (ASSEHR)*, *66*(Yicemap), 418–422. https://doi.org/10.2991/yicemap-17.2017.75

Jabr Dajani, D., Katz-Berger, H., King, M. B., Lang, L., Levy, A., & Pulvermacher, Y. (2020). Teacher Leadership Development: Building Bridges not Borders between Israeli Jewish and Palestinian Educators. *Journal of Research in International Education*, *19*(2), 120–136. https://doi.org/10.1177/1475240920954858

Jamilus, J., Murtadlo, G., Pahmi, P., Indriani, D., & Jasiah, J. (2022). Leadership and Principal Motivation on Teacher Performance at Madrasah. *AL-Tanzim: Jurnal Manajemen Pendidikan Islam*, *6*(1), 511–519. https://doi.org/10.33650/al-tanzim.v6i2.3294

Kaminskienė, L., Jurgilė, V., & Žydžiūnaitė, V. (2022). Teacher Leadership within the Learning Co-creation with Students: School Administration Attitudes. *European Journal of Contemporary Education*, *11*(2), 408–422. https://doi.org/10.13187/ejced.2022.2.408

Kaminskienė, L., Žydžiūnaitė, V., & Juozaitienė, R. (2021). Relationship Between Factors of Teachers' Leadership: Positive Attitudes, Professional Activeness, and Stress At School. *Management (Croatia)*, *26*(2), 197–210. https://doi.org/10.30924/mjcmi.26.2.11

Killion, J., Harrison, C., Colton, A. (2016). A systemic approach to elevating teacher leadership. *Learning Forward*, *November*, 1–24.

Kızıloğlu, M. (2021). The Impact of School Principal's Leadership Styles on Organizational Learning : Mediating Effect of Organizational Kültürünün Arabuluculuk Etkisi Theoretical Background Theory of Leadership Transformational Leadership and Organizational Learning. *Bmij*, *9*, 822–834.

Langdon Warren, L. (2021). The Importance of Teacher Leadership Skills in the Classroom. *Education Journal*, *10*(1), 8. https://doi.org/10.11648/j.edu.20211001.12

Lee-piggott, R. (2014). When Teachers Lead : An Analysis of Teacher Leadership in One Primary School. *Caribbean Curriculum*, *22*(1), 105–132.

Lee, D. H. L., & Ip, N. K. K. (2021). The Influence of Professional Learning Communities on Informal Teacher Leadership in A Chinese Hierarchical School Context. *Educational Management Administration and Leadership*. https://doi.org/10.1177/1741143220985159

Liu, Y. (2021). Contextual influence on formal and informal teacher leadership. *International Journal of Educational Research Open*, *2–2*(October 2020), 100028. https://doi.org/10.1016/j.ijedro.2020.100028

Lotter, C., Yow, J. A., Lee, M., Zeis, J. G., & Irvin, M. J. (2020). Rural teacher leadership in science and mathematics. *School Science and Mathematics*, *120*(1), 29–44. https://doi.org/10.1111/ssm.12383

Lowery-Moore, H., Latimer, R., & Villate, V. (2016). The Essence of Teacher Leadership: A Phenomenological Inquiry of Professional Growth. *International Journal of Teacher Leadership*, *7*(1), 1–16.

Luckyardi, S., Hurriyati, R., Disman, D., & Dirgantari, P. D. (2022). The Influence of Applying Green Marketing Mix by Chemical Industries; VOSviewer Analysis. *Moroccan Journal of Chemistry*, *10*(1), 73–90. https://doi.org/10.48317/IMIST.PRSM/morjchem-v10i1.31754

Martins, J., Gonçalves, R. (2022). A Bibliometric Analysis and Visualization of E-Learning Adoption Using VOSviewer. *Universal Access in the Information Society*, *0123456789*. https://doi.org/10.1007/s10209-022-00953-0

Muijs, D., & Harris, A. (2007). Teacher Leadership in Action: Three Case Studies of Contrasting Schools. *Educational Management Administration and Leadership*, *35*(1), 111–134.

Nguyen, D. (2020). A Review of The Empirical Research on Teacher Leadership (2003–2017): Evidence, Patterns and Implications. *Journal of Educational Administration*, *58*(1), 60–80. https://doi.org/10.1108/JEA-02-2018-0023

O'Brien, S., McNamara, G., O'Hara, J. (2022). Teacher Leadership in School Self-Evaluation: An Approach to Professional Development. *Irish Educational Studies*, 1–16. https://doi.org/10.1080/03323315.2022.2135568

Pan, H. L. W., & Chen, W. Y. (2021). How Principal Leadership Facilitates Teacher Learning through Teacher Leadership: Determining The Critical Path. *Educational Management Administration and Leadership*, *49*(3), 454–470. https://doi.org/10.1177/1741143220913553

Rachmah, N., & Putrawan, I. M. (2018). Teachers Leadership and Trust: Its Effect on Teachers Performance. *International Journal of Scientific and Research Publications*, *8*(1), 1–5.

Rashid, R. A., & Mansor, M. (2018). The Influence of Organizational Learning on Teacher Leadership. *International Journal of Academic Research in Business and Social Sciences*, *8*(4). https://doi.org/10.6007/ijarbss/v8-i4/4236

Sampaleng, D., Patras, Y. E. (2021). Analisis Perilaku Kepemimpinan Guru Indonesia di Era Pandemi Covid 19 Menggunakan Rasch. *Jurnal Konseling dan Pendidikan*, *9*(2), 201. https://doi.org/10.29210/162700

Schott, C., van Roekel, H., & Tummers, L. G. (2020). Teacher Leadership: A Systematic Review, Methodological Quality Assessment and Conceptual Framework. *Educational Research Review*, *31*(June), 100352. https://doi.org/10.1016/j.edurev.2020.100352

Shen, J., Wu, H., Reeves, P., Zheng, Y., Ryan, L., & Anderson, D. (2020a). The association between teacher leadership and student achievement: A meta-analysis. *Educational Research Review*, *31*(October 2019), 100357. https://doi.org/10.1016/j.edurev.2020.100357

Shen, J., Wu, H., Reeves, P., Zheng, Y., Ryan, L., & Anderson, D. (2020b). The Association between Teacher Leadership and Student Achievement: A Meta-Analysis. *Educational Research Review*, *31*(August), 100357. https://doi.org/10.1016/j.edurev.2020.100357

Shurr, J., Bouck, E. C., & McCollow, M. (2022). Examining Teacher and Teacher Educator Perspectives of Teacher Leadership in Extensive Support Needs. *Teacher Education and Special Education*, *45*(2), 160–179. https://doi.org/10.1177/08884064211001455

Sinha, S., & Hanuscin, D. L. (2017). Development of Teacher Leadership Identity: A Multiple Case Study. *Teaching and Teacher Education*, *63*, 356–371. https://doi.org/10.1016/j.tate.2017.01.004

Soegoto, E. S., Luckyardi, S., Rafdhi, A. A., & Oktafiani, D. (2022). Computational Analysis of Waste Management and Entrepreneur using VosViewer application. *Moroccan Journal of Chemistry*, *10*(3), 542–552. https://doi.org/10.48317/IMIST.PRSM/morjchem-v10i3.33142

Walker, M. J. (2021). Teacher Leadership in Professional Development Schools. *Teacher Development*, *25*(3), 389–392. https://doi.org/10.1080/13664530.2021.1918861

Wan, S. W. Y., Tse, Y. S. (2020). 'Who Can Support Me?': Studying Teacher Leadership in A Hong Kong Primary School. *Educational Management Administration and Leadership*, *48*(1), 133–163. https://doi.org/10.1177/1741143218792910

Warisno, A., & Hidayah, N. (2022). Investigating Principals' Leadership to Develop Teachers' Professionalism at Madrasah. *Al-Tanzim: Jurnal Manajemen Pendidikan Islam*, *6*(1), 603–616. https://doi.org/10.33650/al-tanzim.v6i2.3570

Webber, C. F., & Nickel, J. (2021). Sustainable Teacher Leadership. *Research in Educational Administration and Leadership*, *6*(1), 277–311. https://doi.org/10.30828/real/2021.1.9

Winingsih, L. H., & Sulistiono, A. A. (2020). Factors Influencing The Principal's Leadership and Its Impact on Learning Quality and Learning Outcome. *Journal of Educational and Social Research*, *10*(2), 143–156. https://doi.org/10.36941/jesr-2020-0034

Wu, H., Gao, X., & Shen, J. (2020). Principal Leadership Effects on Student Achievement: A Multilevel Analysis Using Programme for International Student Assessment 2015 Data. *Educational Studies*, *46*(3), 316–336. https://doi.org/10.1080/03055698.2019.1584853

Yalçınkaya, S. (2021). The Effect of Leadership Styles and Initiative Behaviors of School Principals on Teacher Motivation. *Sustainability (Switzerland)*, *13*(5), 1–19. https://doi.org/10.3390/su13052711

Yang, Y., Qu, G., & Hua, L. (2022). Research Status, Hotspots, and Evolution Trend of Decision-Making in Marine Management Using VOSviewer and CiteSpace. *Mathematical Problems in Engineering*, *2022*. https://doi.org/10.1155/2022/8283417

Zhang, M., Tian, J., Ni, H., & Fang, G. (2021). Exploring Teacher Leadership and the Factors Contributing to It: An Empirical Study on Chinese Private Higher Education Institutions. *SAGE Open*, *11*(1). https://doi.org/10.1177/21582440211002175

Zhao, Q., Cheah, K. S. L., & Jin, X. (2022). A Bibliometric Review of Career Education from Contemporary Literature with Vosviewer and Biblioshiny. *Journal of Curriculum and Teaching*, *11*(8), 259. https://doi.org/10.5430/jct.v11n8p259