

Mapping the scholarly landscape: a bibliometric exploration of school head leadership competency

Josephine Ambon¹, Bity Salwana Alias², Azlin Norhaini Mansor³

¹Faculty of Education, Universiti Kebangsaan Malaysia, Selangor, Malaysia

²Centre of Leadership and Educational Policy, Faculty of Education, Universiti Kebangsaan Malaysia, Selangor, Malaysia

³Centre for Shaping Advanced and Professional Education, Universiti Kebangsaan Malaysia, Selangor, Malaysia

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ABSTRACT

This bibliometric study examines the trends and contributions in school head leadership competencies from 2015 to 2024, using data from Scopus and employing VOSviewer. The research aims to provide a comprehensive overview of the scholarly literature on leadership competencies in the range of a school head. The methodology involves a thorough bibliometric process, including the organization, coordination, and analysis of bibliographic data from peer-reviewed academic journals. The specific methods used to define the research area are mapping of important contributors and co-authorship patterns, document co-citation analysis, and keyword frequency analysis. Preliminary results indicate a peak in publications up to 2023, with a notable decline in 2024. The study highlights significant international collaborations, with the United States at the core of a global network involving countries like Canada, Australia, and Turkey. Keywords such as “transformational leadership,” “equity,” and “school climate” are prominent, reflecting a broad approach to exploring effective leadership. In conclusion, the field of school head leadership competencies is dynamic, driven by global collaboration and evolving educational challenges. The recent decline in publications signals a need for new research directions. Future studies should explore unexplored areas and integrate technological advancements to enhance school head leadership competencies effectively.

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Corresponding Author:

Bity Salwana Alias

Centre of Leadership and Educational Policy, Faculty of Education, Universiti Kebangsaan Malaysia

43600 Bangi, Selangor, Malaysia

Email: bity@ukm.edu.my

1. INTRODUCTION

In the evolving landscape of educational leadership, the role of school heads has become increasingly pivotal. As the primary orchestrators of school culture and agents of instructional leadership, school heads such as comprising principals, headmasters, and other leadership positions, are instrumental in shaping both educational outcomes and the professional environment [1], [2]. Their competencies, therefore, are critical not only to the management of schools but also to the fostering of educational innovation and improvement [3]. This bibliometric exploration seeks to map the scholarly discourse surrounding school head leadership competencies, highlighting the trends, gaps, and focal points that have shaped the field over recent decades.

First and foremost, the article explores the critical importance of school head leadership competency. School head leadership competency encompasses a broad spectrum of skills and attributes essential for effective school management [4], [5] and instructional leadership [6]–[8]. At its core, these

competencies include strategic vision, interpersonal skills, administrative expertise, and an adeptness at fostering professional development among staff [9]–[11]. The strategic vision involves setting clear goals [12], aligning resources with educational objectives [13], and anticipating future educational challenges and opportunities [14]. Interpersonal skills are crucial for managing relationships within the school and the wider community, crucial for implementing change and nurturing a positive school climate [15]. Moreover, administrative expertise remains a fundamental component of leadership competencies, ensuring that school heads can efficiently manage school operations, comply with educational policies, and optimize resource allocation [16]. Perhaps most significantly, a leader's capability to enhance teacher professional development stands out as a key factor in the broader impact of school leadership on educational outcomes [17]. This includes mentoring teachers, facilitating professional learning communities, and embedding continuous improvement in the school's culture [18].

In addition, the article emphasizes the necessity of leadership competencies in the range of a school head. Recent research has underscored the importance of these competencies in various educational contexts [19], [20]. For instance, studies have shown that effective leadership is directly correlated with improved student achievement reduced teacher turnover, and enhanced school morale [21], [22]. Furthermore, the dynamic nature of educational environments, shaped by technological advancements and changing societal needs, demands that school heads remain adaptable and forward-thinking. This bibliometric analysis aims to provide a comprehensive overview of the scholarly literature on school head leadership competencies. By examining the volume, variety, and vigor of research outputs in this area, the study will identify major themes, seminal works, and emerging trends. Additionally, the analysis will highlight how these competencies have been linked to educational outcomes, policy implications, and the professional development of educators.

In summary, the article intends not only to map the existing scholarly landscape but also to suggest areas for future research and practice. By doing so, it seeks to contribute to the ongoing dialogue on educational leadership and to support the development of leadership competencies that align with contemporary educational demands and future challenges. To ensure that school heads realize their leadership competencies as a catalyst for educational success, policy makers, administrators and teachers must work together to address these issues, therefore, through exploration and understanding of various research perspectives, this study aims to answer six research questions (RQ) as follows:

- RQ1. What are the research trends in school head leadership competencies according to the year of publication?
- RQ2. Who is the top 10 authors that write the most cited articles?
- RQ3. Who is the top 10 authors based on citation by research?
- RQ4. What is the map of co-authorship about the leadership competencies?
- RQ5. What are the popular keywords related to the study?
- RQ6. What are co-authorship countries' collaboration?

2. METHODOLOGY

Bibliometrics is the process of organizing, coordinating, and analyzing bibliographic data from scientific publications [23]–[25]. It includes specific descriptive data like publishing journals, publication year, and major author categorization in addition to more sophisticated methods like document co-citation analysis [26]. To provide a full bibliography and reliable results, a successful literature review requires an iterative process that includes the discovery of appropriate keywords, literature search, and careful analysis. Considering this, the study aimed to concentrate on highly qualified publications since they provide relevant information about the theoretical perspectives influencing the development of the field of study. The study used the SCOPUS database for data gathering to ensure reliability of the data [27], [28]. Furthermore, only papers published in meticulously peer-reviewed academic journals were taken into consideration, with books and lecture notes purposefully left out to ensure the inclusion of high-quality publications [29]. Notably, papers from 2014 to December 2025 were collected for further research thanks to Elsevier's Scopus, which is renowned for its broad coverage.

2.1. Data search strategy

Study employed a screening sequence to determine the search terms for article retrieval. Study was initiated by querying Scopus database with title (("School Head" OR "Principal" OR "School Leader" OR "Headteacher" OR "Headmaster" OR "Headmistress" OR "Educational Manager" OR "School Director" OR "School Administrator" OR "Vice Principal" OR "Deputy Head" OR "Educational Leader") AND ("Leadership Competencies" OR "Leadership Skills" OR "Leadership Qualities" OR "Leadership

Characteristics” OR “Leadership Capacities” OR “Leadership Abilities” OR “Administrative Competencies” OR “Management Skills” OR “Leadership Practices” OR “Leadership Behavior” OR “Leadership Strategy” OR “Leadership Styles”) thereby assembling 2676 articles. Afterwards, the query string was revised so that the search terms “school heads” and “leadership competencies” should be focused on educational context. The final search string (see Table 1), refinement included 1172 articles which was used for bibliometric analysis.

Table 1. The search string used for the systematic review process

Database	Search string
Scopus	TITLE-ABS-KEY ((“School Head” OR “Principal” OR “School Leader” OR “Headteacher” OR “Headmaster” OR “Headmistress” OR “Educational Manager” OR “School Director” OR “School Administrator” OR “Vice Principal” OR “Deputy Head” OR “Educational Leader”) AND (“Leadership Competencies” OR “Leadership Skills” OR “Leadership Qualities” OR “Leadership Characteristics” OR “Leadership Capacities” OR “Leadership Abilities” OR “Administrative Competencies” OR “Management Skills” OR “Leadership Practices” OR “Leadership Behavior” OR “Leadership Strategy” OR “Leadership Styles”)) AND PUBYEAR > 2014 AND PUBYEAR < 2025 AND (LIMIT-TO (SRCTYPE , “j”)) AND (LIMIT-TO (PUBSTAGE , “final”)) AND (LIMIT-TO (SUBJAREA , “SOCT”)) AND (LIMIT-TO (DOCTYPE , “ar”)) AND (LIMIT-TO (LANGUAGE , “English”))
Date of access: June 2024	

A frequent content-related criterion used in the screening process involves categorizing research materials according to the leadership competencies of school head. After 1504 publications were eliminated in the screening stage, 1172 publications were chosen for review (see Table 2) based on the investigation’s exclusion and inclusion criteria. This criterion was selected before any others since helpful guidance can usually be found in research articles. It also includes meta-synthesis, book analyses, book series, and book reviews.

Table 2. The inclusion and exclusion criteria

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline	Between 2015-2024	2014 and earlier
Literature type	Journal (research article)	Journals (systematic review), book, chapter in book, conference proceeding
Publication stage	Final	In press
Subject area	Social sciences	Others

2.2. Data analysis

At Leiden University in the Netherlands, Nees Jan van Eck and Ludo Waltman created the user-friendly bibliometric program VOSviewer [30], [31]. The tool, which is widely used for visualizing and analyzing scientific literature, is particularly good at producing density maps, clustering similar items, and making intuitive network visualizations. Because of its adaptability, researchers can analyze co-authorship, co-citation, and keyword co-occurrence networks, giving them a thorough grasp of the research landscape. The dynamic and efficient study of vast datasets is ensured by the interactive interface and ongoing updates. VOSviewer is an invaluable tool for researchers looking for insights into complex fields of study because of its capacity to compute metrics, customize visualizations, and work with a variety of bibliometric data sources.

VOSviewer’s ability to convert complex bibliometric statistics into readable maps and charts is one of its most remarkable features. The software is excellent at clustering related items, analyzing keyword co-occurrence patterns, and creating density maps, with a focus on network visualization. With its customizable visualizations and ongoing development, VOSviewer stays at the cutting edge of bibliometric analysis, providing comprehensive metrics computation. VOSviewer’s flexibility in handling various bibliometric data sources, including co-authorship and citation networks, makes it an essential tool for researchers looking to gain a deeper understanding of their fields of study.

Big databases containing PlainText formatted data on the publication year, title, author name, journal, citation, and keywords were obtained from the Scopus database between 2015 and December 2024. We then used VOSviewer software version 1.6.20 to analyze these datasets. This software made it easier to analyze and create maps by applying VOS clustering and mapping algorithms. As a substitute for the multidimensional scaling (MDS) method, VOSviewer concentrates on placing objects in low-dimensional areas so that the distance between any two objects correctly represents their similarity and relatedness [31]. VOSviewer and the MDS methodology are comparable in this way [32]:

$$\frac{AS_{ij}}{W_{ij}} \propto C_{ij}$$

which is “proportional to the ratio between the expected number of co-occurrences of i and j under the assumption that co-occurrences of i and j are statistically independent and the observed number of co-occurrences of i and j ” [31]. Thus, after lowering the weighted total of the squared distances between each pair of items, VOSviewer arranges the items in the shape of a map with the aid of this index. Appio *et al.* [32] state that the normalization of LinLog/modularity was used. Additionally, patterns based on mathematical correlations were discovered and studies including keyword co-occurrence, citation analysis, and co-citation analysis were carried out by applying visualization techniques through VOSviewer to the data set. Thus, after lowering the weighted total of the squared distances between each pair of items, VOSviewer arranges the items in the shape of a map with the aid of this index. Appio *et al.* [32] state that the LinLog/modularity normalization was used. Additionally, patterns based on mathematical correlations were discovered and studies including keyword co-occurrence, citation analysis, and co-citation analysis were carried out by applying visualization techniques through VOSviewer to the data set. Keyword co-occurrence analysis [33] is a useful tool for examining the evolution of a research subject over time and may successfully discover hot themes across many domains.

3. RESULTS AND FINDINGS

3.1. What are the research trends in school head leadership competencies according to the year of publication?

Figure 1 shows the yearly publishing trends of publications related to the leadership competencies of school heads from 2015 to 2024. The data demonstrates a significant rise in publications that peaks in 2023 and then sharply decreases in 2024, suggesting a potential change in study focus or exhaustion in the issues that are now being studied. This peak in 2023 indicates heightened academic interest and research activity in this area during that year. The subsequent decline could reflect a shift in research priorities or the emergence of new, more pressing educational topics. Understanding these trends can help scholars identify gaps and future directions in the study of school leadership competencies.

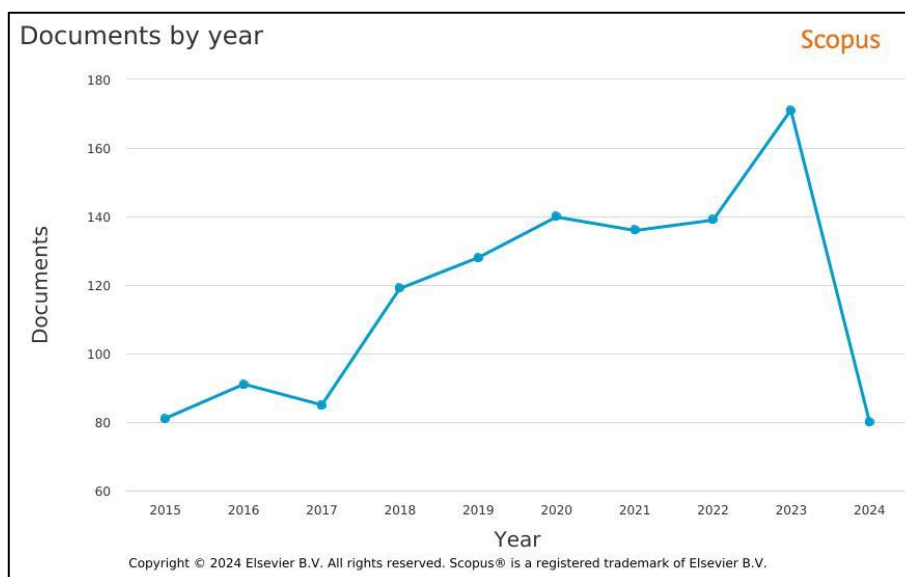


Figure 1. Plotting document publication by years

The publication trends on school head leadership competencies from 2015 to 2024, as shown in the Scopus data, demonstrate a dynamic academic interest in this field. Starting with a modest count in 2015, publications gradually increased, peaking in 2023, indicative of the growing recognition of effective leadership in improving educational outcomes, likely fueled by global educational reforms and the impacts of the COVID-19 pandemic which underscored the need for adept leadership. However, the sharp decrease in 2024 suggests a potential saturation of current research themes or shifts in academic focus, possibly due to external economic or geopolitical influences, signaling a need for future studies to explore new dimensions and contexts of school leadership, adapting to emerging challenges in educational environments worldwide.

This pattern highlights both the evolving nature of educational leadership research and the critical necessity for continuous scholarly examination of leadership competencies in diverse educational settings.

3.2. Who is the top 10 authors that write the most cited articles?

The top 10 writers with the most citations are highlighted in this Figure 2, which shows the most cited publications on school head leadership competencies. It highlights the important contributions made by influential researchers in the subject and how they have influenced the state of knowledge and practices today. This recognition of leading authors underscores the significant impact of their work on both academic research and practical applications in educational leadership. Additionally, it provides a benchmark for emerging scholars to understand the key contributors and seminal works that have shaped the field.

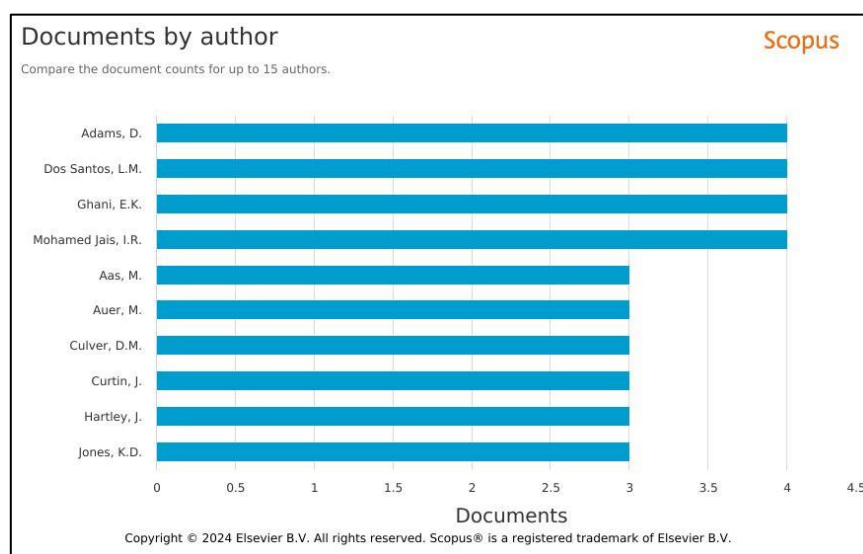


Figure 2. Most cited articles (top 10)

The bibliometric analysis of publications on school head leadership competencies, derived from Scopus data, highlights the contributions of several key authors in this field. Hallinger, P. leads with 17 documents, constituting 1.45% of the total publications, underscoring his significant influence on the discourse around school leadership. Following him, Arifin, I. has contributed 10 papers, making up 0.85% of the literature, indicating a substantial role in shaping the research landscape. Adams, D., Ali, M.F., Bafadal, I., Bellibaş, M.Ş., and Walker, A., each with 9 publications (0.77%), also emerge as prominent contributors, reflecting a diverse array of insights into leadership competencies from various academic perspectives and geographical contexts. Additionally, Aas, M., Arar, K., and Tahir, L.M., each authoring 8 documents (0.68%), further enrich the field, suggesting a robust engagement with the themes of leadership and management in schools. This distribution of publications not only points to a healthy diversity in research contributions but also highlights the global nature of scholarship in educational leadership. The data from Scopus provides a clear view of the authors who are most prolific and influential in the academic exploration of school head leadership competencies, offering a foundational map for understanding key voices and perspectives in this evolving field.

3.3. Who is the top 10 authors based on citation by research?

Table 3 presents the top 10 authors based on the citation count for their research on school head leadership competencies. It provides comprehensive details on the authors, the names of their most often cited works, the year of publication, the title of the source, and the total number of citations obtained. The most important studies in the subject are highlighted in this table, which also shows how much of an influence these studies have had on future research and practice in educational leadership.

The bibliometric analysis on school head leadership competencies highlights key contributions shaping the field. Day, Gu, and Sammons's study leads with 426 citations, emphasizing the impact of transformational and instructional strategies on student outcomes. Harris's article addresses leadership challenges during the COVID-19 crisis, showing the need for powerful leadership in crises, while Liu and Hallinger's research explores the relationship between principal leadership and teacher self-efficacy in China.

Additional significant works include Hallinger's study on the contextual influences on leadership, and Truong, Hallinger, and Sanga's exploration of Confucian values in Vietnamese school leadership. These studies, among others, underscore the diverse aspects of school leadership, from cultural influences on crisis management, highlighting the global and dynamic nature of leadership research in educational settings.

Table 3. Top 10 authors

No.	Authors	Title	Year	Source title	Source title
1	Day <i>et al.</i> [34]	The impact of leadership on student outcomes: how successful school leaders use transformational and instructional strategies to make a difference	2016	Educational Administration Quarterly	426
2	Fackler and Malmberg [35]	Teachers' self-efficacy in 14 OECD countries: teacher, student group, school and leadership effects	2016	Teaching and Teacher Education	126
3	Harris [36]	COVID-19–school leadership in crisis?	2020	Journal of Professional Capital and Community Educational Administration Quarterly	175
4	Liu and Hallinger [37]	Principal instructional leadership, teacher self-efficacy, and teacher professional learning in China: testing a mediated-effects model	2018	Educational Management Administration and Leadership	146
5	Hallinger [38]	Bringing context out of the shadows of leadership	2018	Educational Management Administration and Leadership	344
6	Truong <i>et al.</i> [39]	Confucian values and school leadership in Vietnam: exploring the influence of culture on principal decision making	2017	Educational Management Administration and Leadership	108
7	Grissom <i>et al.</i> [40]	Principal time management skills: explaining patterns in principals' time use, job stress, and perceived effectiveness	2015	Journal of Educational Administration	105
8	Jacobsen and Andersen [41]	Is leadership in the eye of the beholder? a study of intended and perceived leadership practices and organizational performance	2015	Public Administration Review	145
9	Karakose <i>et al.</i> [42]	Examining teachers' perspectives on school principals' digital leadership roles and technology capabilities during the covid-19 pandemic	2021	Sustainability (Switzerland)	124
10	Walker and Hallinger [43]	Synthesis paper: A synthesis of reviews of research on principal leadership in east Asia	2015	Journal of Educational Administration	107

3.4. What is the map of co-authorship about the school head leadership competencies?

A network visualization map of co-authorship among scholars studying school head leadership competencies is shown in this Figure 3. The collaborative links among authors are depicted in the map, where scholars with extensive chains of co-authorship are indicated by noticeable clusters. These clusters highlight the existence of research communities and networks that are actively contributing to the field. By examining these collaborative patterns, one can identify key influencers and potential collaborators, providing insights into the dynamics of academic partnerships and knowledge dissemination in this area.

The VOSviewer co-authorship network map illustrates the collaboration patterns among scholars in the field of school head leadership competencies. In the visualization, Philip Hallinger emerges as a central figure, indicating his prominent role and extensive collaborations within the academic community on this topic. His connections with other key researchers such as Allan Walker and Haiyan Qian suggest a strong collaborative network that spans diverse geographical and institutional contexts, highlighting the global nature of research in educational leadership. Surrounding nodes like Ramazan Canosy, Hanifi Parlar, and Mehmet Şükrü Bellibaş, each connected through various links, represent other significant contributors whose collaborations further enrich the research landscape. This network not only underscores the interconnectedness of researchers but also reflects the collective efforts in advancing understanding and developing competencies in school leadership across different educational systems.

3.5. What are the popular keywords related to the study?

A network visualization map of the co-occurrence of keywords in the literature on school head leadership competencies is shown in this Figure 4. It highlights frequent trends and research focus areas in the topic by emphasizing the most common terms and their relationships. This visualization helps identify the primary themes and concepts that have been extensively studied, providing a comprehensive overview of the field's intellectual structure. Additionally, it reveals emerging topics and potential areas for future research, guiding scholars in exploring new dimensions of school head leadership competencies.

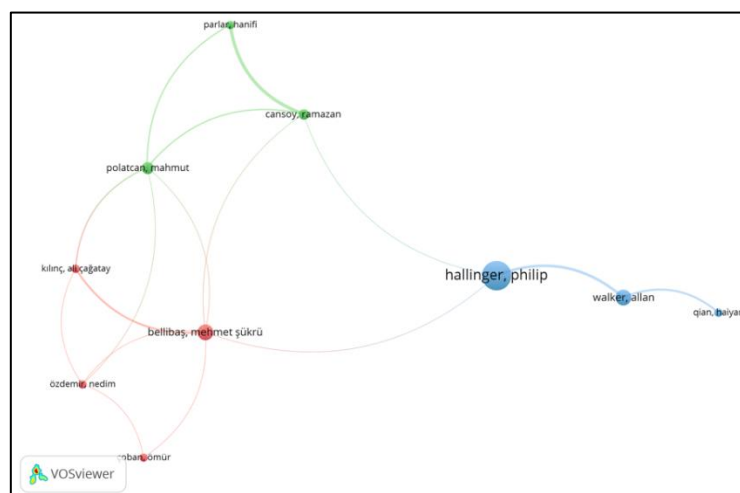


Figure 3. Network visualization map of co-authorship

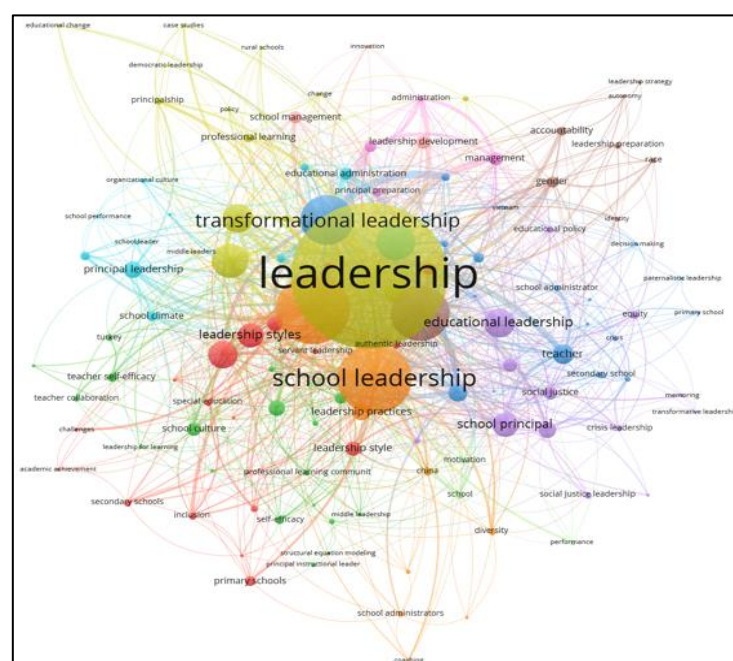


Figure 4. Network visualization map of keywords' co-occurrence

The VOSviewer keyword analysis for research on school head leadership competencies reveals a rich and interconnected landscape of thematic focus areas within the field. Central to this network is “leadership,” prominently linked with “transformational leadership,” “educational leadership,” and “school leadership,” highlighting the diverse aspects of leadership theory being explored in educational contexts. The network also prominently features “school principal” and “school climate,” indicating a strong focus on the roles of individual leaders and the environments they cultivate. Other significant keywords such as “leadership styles,” “professional learning,” and “teacher collaboration” suggest a broad examination of how leadership impacts teaching dynamics and educational outcomes. Notably, terms like “social justice” and “equity” reflect contemporary concerns in education, emphasizing the growing importance of inclusive and equitable leadership practices. This keyword map underscores the multifaceted nature of school leadership research, encompassing various styles, effects on stakeholder engagement, and the broader educational ecosystem, thereby guiding future inquiries into effective leadership strategies towards academic and societal challenges.

3.6. What are co-authorship countries' collaboration?

Figure 5 illustrates how writers from various countries have collaborated internationally to research the leadership competencies of school heads. The global network of research partnerships is represented visually, with larger connections signifying nations that have made greater contributions and have greater connections to the area. This map underscores the importance of international collaboration in advancing understanding and practice in educational leadership. It also highlights the diverse geographical perspectives contributing to the field, which can enrich the development of globally informed leadership competencies.

The VOSviewer visualization of co-authorship based on country collaboration for research on school head leadership competencies clearly demonstrates a global discourse, with the United States at the core of this network, indicating its central role in the field. Surrounding the United States, countries such as Canada, Australia, Turkey, and Indonesia also show significant collaborative ties, highlighting their substantial contributions to the body of knowledge on this topic. This network suggests not only a strong interconnection between these countries in advancing educational leadership research but also the diverse perspectives and methodologies that enrich the field. The links to smaller nodes like South Africa, Israel, and Hong Kong further reflect the international reach and collaborative nature of this research area, illustrating how educational leadership is a universally relevant issue that benefits from a wide-ranging international input and expertise.

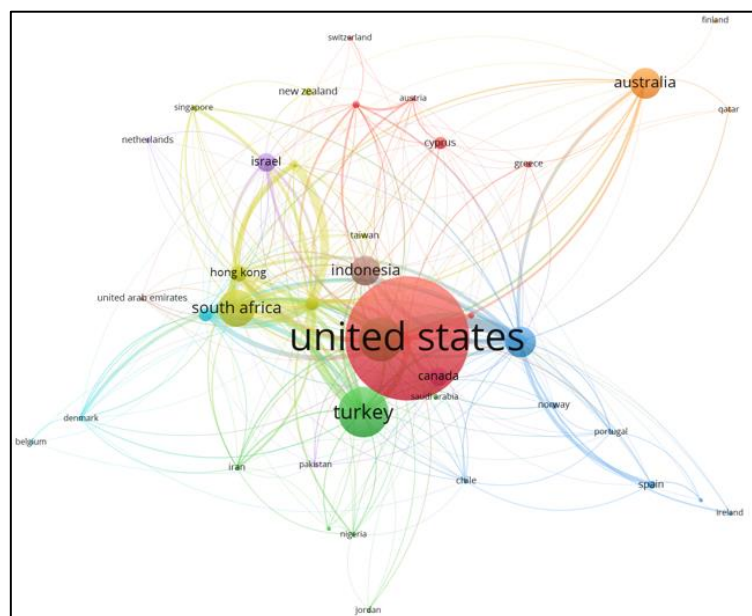


Figure 5. The countries whose authors collaborate on school head leadership competencies

4. DISCUSSION

The bibliometric analysis of school head leadership competencies illuminates significant trends and collaborative efforts that have shaped the academic landscape over recent years. Publications peaked in 2023, likely influenced by global educational reforms and the urgent leadership needs highlighted by the COVID-19 pandemic, with a notable decline in 2024 suggesting shifts or saturation in research themes. This pattern reflects the dynamic nature of educational research, where trends often evolve in response to changing societal needs and technological advancements [44], [45]. This trend underscores the evolving nature of school leadership studies and the ongoing need to adapt and innovate within this field. Understanding these trends is crucial for scholars and practitioners alike as it highlights areas that require further exploration and potential gaps in the current body of knowledge [46], [47]. Key figures such as P. Hallinger dominate in both productivity and influence, reflecting their central role in developing and disseminating knowledge on effective leadership practices. This peak aligns with global educational reforms and the impacts of the COVID-19 pandemic, which underscored the need for adept leadership [48], [49]. The diversity of contributions from top-cited authors like Day, Gu, Sammons, and Harris enriches the field, highlighting crucial areas such as the impact of leadership on educational outcomes and crisis management. These contributions are not only academic but also practical, offering insights that can inform leadership

practices in diverse educational settings. Moreover, the VOSviewer analysis reveals powerful international collaborations and a wide array of keywords characterizing the research focus, from “transformational leadership” to “equity” and “school climate”. These terms suggest a broad examination of leadership’s impact on educational environments and outcomes.

The global co-authorship networks, with the United States at the core and extensive ties to countries like Canada, Australia, Turkey, and Indonesia, illustrate the field’s international reach and the collaborative nature of this research. This collaboration is essential for tackling complex educational challenges [50] and fostering a comprehensive understanding of leadership competencies [51]. Such collaborations are essential for a comprehensive understanding of leadership competencies that are effective across various cultural and educational systems. The analysis highlights significant international collaborations, with the United States at the core of a global network involving countries like Canada, Australia, and Turkey. The prominence of keywords such as “transformational leadership”, “equity”, and “school climate” reflects a broad approach to exploring effective leadership in diverse educational settings. These keywords are crucial for understanding how leadership practices impact school environments and [34], [52], [53]. This extensive collaboration is critical for developing a holistic understanding of leadership competencies that can be universally applied. The emphasis on terms like “equity” and “school climate” indicates a growing focus on creating inclusive and supportive educational environments. These findings underscore the dynamic and universally relevant nature of research in school head leadership competencies.

5. CONCLUSION

In conclusion, the field of school head leadership competencies is characterized by its dynamic nature and the global collaboration that fuels its expansion. As educational challenges evolve, so too must the competencies of school leaders. The bibliometric analysis underscores the necessity for ongoing research to adapt leadership models to contemporary educational needs and societal changes. Future studies should focus on unexplored areas and innovative leadership practices that can drive effective change in diverse educational landscapes, ensuring that leadership competencies remain responsive to the ever-changing global educational.

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REFERENCES




- [1] P. Campbell, M. Chaseling, W. Boyd, and B. Shipway, “The effective instructional leader,” *Professional Development in Education*, vol. 45, no. 2, pp. 276–290, Mar. 2019, doi: 10.1080/19415257.2018.1465448.
- [2] T. M. Kin, O. A. Kareem, K. Musa, A. M. Ghouri, and N. R. Khan, “Leading sustainable schools in the era of education 4.0: identifying school leadership competencies in Malaysian secondary schools,” *International Journal of Management in Education*, vol. 14, no. 6, pp. 580–610, 2020, doi: 10.1504/ijmie.2020.110690.
- [3] F. K. Şemin, “Competencies of principals in ensuring sustainable education: teachers’ views,” *International Journal of Evaluation and Research in Education*, vol. 8, no. 2, pp. 201–212, Jun. 2019, doi: 10.11591/ijere.v8i2.18273.
- [4] J. K. Koskie, C. Sang, and V. Ngeno, “Relationship between head teachers’ leadership competencies and effective school management in public primary schools in Narok county, Kenya,” *Global Journal of Educational Research*, vol. 19, no. 1, pp. 21–38, Jul. 2020, doi: 10.4314/gjedr.v19i1.6.
- [5] B. S. Alias and A. N. Mansor, “School human resource management in Malaysia,” *Jour of Adv Research in Dynamical & Control Systems*, vol. 10, no. 12, pp. 1361–1365, 2018.
- [6] D. Adams, E. Devadason, R. Periasamy, and K. C. S. Lee, *Instructional leadership: placing learning to the fore*, vol. 1. Kuala Lumpur, 2018.
- [7] J. M. Alig-Mielcarek, “A model of school success: instructional leadership, academic press, and student achievement The Ohio State University,” The Ohio State University, 2003. [Online]. Available: <https://econtent.hogrefe.com/doi/10.1024/0301-1526.32.1.54>
- [8] N. I. M. M. Isa, A. N. Mansor, J. L. A. Wahab, and B. S. Alias, “Principals’ instructional leadership towards teachers’ self-efficacy,” *International Journal of Engineering & Technology*, vol. 7, no. 3.30, pp. 449–452, Aug. 2018, doi: 10.14419/ijet.v7i3.30.18349.
- [9] S. Asiyah, B. B. Wiyono, N. Hidayah, and A. Supriyanto, “The effect of professional development, innovative work and work commitment on quality of teacher learning in elementary schools of Indonesia,” *Eurasian Journal of Educational Research*, vol. 2021, no. 95, pp. 227–246, Sep. 2021, doi: 10.14689/EJER.2021.95.13.
- [10] G. Muyunda, “Continuous professional development: perceptions of secondary school teachers in Zambia,” *Electronic Journal of Education, Social Economics and Technology*, vol. 3, no. 1, pp. 1–7, Apr. 2022, doi: 10.33122/ejeset.v3i1.47.
- [11] N. Mukan, H. Yaremko, Y. Kozlovskiy, V. Ortynskiy, and O. Isayeva, “Teachers’ continuous professional development: australian experience,” *Advanced Education*, vol. 6, no. 12, pp. 105–113, Jun. 2019, doi: 10.20535/2410-8286.166606.

- [12] S. H. Mughal, M. M. Asad, and D. Adams, "Goals of the national mathematics curriculum of Pakistan: educators' perceptions and challenges toward achievement," *International Journal of Educational Management*, vol. 35, no. 1, pp. 159–172, Jan. 2021, doi: 10.1108/IJEM-04-2020-0203.
- [13] S. P. Kawuryan, S. A. Sayuti, Aman, and S. I. A. Dwiningrum, "Teachers quality and educational equality achievements in indonesia," *International Journal of Instruction*, vol. 14, no. 2, pp. 811–830, Apr. 2021, doi: 10.29333/iji.2021.14245a.
- [14] L. Schrum, D. S. Niederhauser, and N. Strudler, "Competencies, challenges, and changes: a US perspective on preparing twenty-first century teachers and leaders," in *Competencies in Teaching, Learning and Educational Leadership in the Digital Age: Papers from CELDA 2014*, Cham: Springer International Publishing, 2016, pp. 17–32, doi: 10.1007/978-3-319-30295-9_2.
- [15] D. J. Ross and J. A. Cozzens, "The principalship: essential core competencies for instructional leadership and its impact on school climate," *Journal of Education and Training Studies*, vol. 4, no. 9, pp. 162–176, Jul. 2016, doi: 10.11114/jets.v4i9.1562.
- [16] R. Mestry, "School management teams' instructional leadership role in closing the achievement gap in impoverished schools," *Africa Education Review*, vol. 16, no. 6, pp. 94–110, Nov. 2019, doi: 10.1080/18146627.2018.1464696.
- [17] D. Kemethofer, C. Weber, S. Brauckmann-Sajkiewicz, and P. Pashiardis, "Examining the trident: how data from the PISA study can be used to identify associations among context, school leadership and student outcomes," *Journal of Educational Administration*, vol. 61, no. 2, pp. 162–177, Feb. 2023, doi: 10.1108/JEA-02-2022-0030.
- [18] Y. J. A. Khasawneh, R. Alsarayreh, A. A. Al Ajlouni, H. M. Eyadat, M. N. Ayasrah, and M. A. S. Khasawneh, "An examination of teacher collaboration in professional learning communities and collaborative teaching practices," *Journal of Education and e-Learning Research*, vol. 10, no. 3, pp. 446–459, Jul. 2023, doi: 10.20448/jelr.v10i3.4841.
- [19] I. W. Tasrim and M. M. Gamar, "Leadership competencies: a school leader evaluation," *Istawa : Jurnal Pendidikan Islam*, vol. 7, no. 1, pp. 1–17, Mar. 2021, doi: 10.24269/ijpi.v6i1.3107.
- [20] T. M. Kin, O. A. Kareem, S. Layang, and P. D. Makmur, "Principals' change leadership competencies: a study in malaysian high performing secondary school," *Journal of Education and Practice*, vol. 4, no. 27, pp. 101–117, 2013.
- [21] I. Dekawati and A. Istianah, "The influence of principal's leadership and teacher professional toward students' learning achievements," *Educational Administration Research and Review*, vol. 2, no. 2, pp. 77–85, Jan. 2020, doi: 10.17509/earr.v2i2.22477.
- [22] P. Korzynski, A. K. Kozminski, A. Baczynska, and M. Haenlein, "Bounded leadership: an empirical study of leadership competencies, constraints, and effectiveness," *European Management Journal*, vol. 39, no. 2, pp. 226–235, Apr. 2021, doi: 10.1016/j.emj.2020.07.009.
- [23] J. L. Alves, I. B. Borges, and J. De Nadae, "Sustainability in complex projects of civil construction: bibliometric and bibliographic review," *Gestao e Producao*, vol. 28, no. 4, pp. 1–21, 2021, doi: 10.1590/1806-9649-2020v28e5389.
- [24] A. Verbeek, K. Debackere, M. Luwel, and E. Zimmermann, "Measuring progress and evolution in science and technology - I: the multiple uses of bibliometric indicators," *International Journal of Management Reviews*, vol. 4, no. 2, pp. 179–211, Jun. 2002, doi: 10.1111/1468-2370.00083.
- [25] D. S. Assyakur and E. M. Rosa, "Spiritual leadership in healthcare: a bibliometric analysis," *Jurnal Aisyah : Jurnal Ilmu Kesehatan*, vol. 7, no. 2, pp. 355–362, May 2022, doi: 10.30604/jika.v7i2.914.
- [26] Y. C. J. Wu and T. Wu, "A decade of entrepreneurship education in the Asia Pacific for future directions in theory and practice," *Management Decision*, vol. 55, no. 7, pp. 1333–1350, Aug. 2017, doi: 10.1108/MD-05-2017-0518.
- [27] A. Al-Khoury et al., "Intellectual capital history and trends: a bibliometric analysis using Scopus database," *Sustainability (Switzerland)*, vol. 14, no. 18, pp. 1–22, Sep. 2022, doi: 10.3390/su141811615.
- [28] G. di Stefano, M. Peteraf, and G. Veronay, "Dynamic capabilities deconstructed: a bibliographic investigation into the origins, development, and future directions of the research domain," *Industrial and Corporate Change*, vol. 19, no. 4, pp. 1187–1204, Aug. 2010, doi: 10.1093/icc/dtq027.
- [29] D. Gu, T. Li, X. Wang, X. Yang, and Z. Yu, "Visualizing the intellectual structure and evolution of electronic health and telemedicine research," *International Journal of Medical Informatics*, vol. 130, pp. 1–11, Oct. 2019, doi: 10.1016/j.ijmedinf.2019.08.007.
- [30] N. J. van Eck and L. Waltman, "Citation-based clustering of publications using CitNetExplorer and VOSviewer," *Scientometrics*, vol. 111, no. 2, pp. 1053–1070, May 2017, doi: 10.1007/s11192-017-2300-7.
- [31] N. J. van Eck and L. Waltman, "Software survey: VOSviewer, a computer program for bibliometric mapping," *Scientometrics*, vol. 84, no. 2, pp. 523–538, Aug. 2010, doi: 10.1007/s11192-009-0146-3.
- [32] F. P. Appio, F. Cesaroni, and A. Di Minin, "Visualizing the structure and bridges of the intellectual property management and strategy literature: a document co-citation analysis," *Scientometrics*, vol. 101, no. 1, pp. 623–661, Oct. 2014, doi: 10.1007/s11192-014-1329-0.
- [33] Y. Zhao and J. Zhang, "Consumer health information seeking in social media: a literature review," *Health Information and Libraries Journal*, vol. 34, no. 4, pp. 268–283, Dec. 2017, doi: 10.1111/hir.12192.
- [34] C. Day, Q. Gu, and P. Sammons, "The impact of leadership on student outcomes," *Educational Administration Quarterly*, vol. 52, no. 2, pp. 221–258, Apr. 2016, doi: 10.1177/0013161X15616863.
- [35] S. Fackler and L. E. Malmberg, "Teachers' self-efficacy in 14 OECD countries: teacher, student group, school and leadership effects," *Teaching and Teacher Education*, vol. 56, pp. 185–195, May 2016, doi: 10.1016/j.tate.2016.03.002.
- [36] A. Harris, "COVID-19 – school leadership in crisis?," *Journal of Professional Capital and Community*, vol. 5, no. 3–4, pp. 321–326, 2020.
- [37] S. Liu and P. Hallinger, "Principal instructional leadership, teacher self-efficacy, and teacher professional learning in China: testing a mediated-effects model," *Educational Administration Quarterly*, vol. 54, no. 4, pp. 501–528, Oct. 2018, doi: 10.1177/0013161X18769048.
- [38] P. Hallinger, "Bringing context out of the shadows of leadership," *Educational Management Administration and Leadership*, vol. 46, no. 1, pp. 5–24, Jan. 2018, doi: 10.1177/1741143216670652.
- [39] T. D. Truong, P. Hallinger, and K. Sanga, "Confucian values and school leadership in Vietnam," *Educational Management Administration and Leadership*, vol. 45, no. 1, pp. 77–100, Jan. 2017, doi: 10.1177/1741143215607877.
- [40] J. A. Grissom, S. Loeb, and H. Mitani, "Principal time management skills: explaining patterns in principals' time use, job stress, and perceived effectiveness," *Journal of Educational Administration*, vol. 53, no. 6, pp. 773–793, 2015, doi: 10.1108/JEA-09-2014-0117.
- [41] C. B. Jacobsen and L. B. Andersen, "Is leadership in the eye of the beholder? A study of intended and perceived leadership practices and organizational performance," *Public Administration Review*, vol. 75, no. 6, pp. 829–841, Nov. 2015, doi: 10.1111/puar.12380.




- [42] T. Karakose, H. Polat, and S. Papadakis, "Examining teachers' perspectives on school principals' digital leadership roles and technology capabilities during the covid-19 pandemic," *Sustainability (Switzerland)*, vol. 13, no. 23, pp. 1–20, 2021, doi: 10.3390/su132313448.
- [43] A. Walker and P. Hallinger, "Synthesis paper: a synthesis of reviews of research on principal leadership in east asia," *Journal of Educational Administration*, vol. 53, no. 4, pp. 554–570, 2015, doi: 10.1108/JEA-05-2015-0038.
- [44] J. P. Spillane and J. B. Diamond, *Distributed leadership in practice*. Teachers College Press, 2007.
- [45] V. M. J. Robinson, C. A. Lloyd, and K. J. Rowe, "The impact of leadership on student outcomes: an analysis of the differential effects of leadership types," *Educational Administration Quarterly*, vol. 44, no. 5, pp. 635–674, Dec. 2008, doi: 10.1177/0013161X08321509.
- [46] A. Harris, *Distributed school leadership: developing tomorrow's leaders*, Routledge, 2013, doi: 10.4324/9780203607909.
- [47] H. Goode, L. Drysdale, and D. Gurr, "What we know about successful school leadership from Australian cases and an open systems model of school leadership," *Education Sciences*, vol. 13, no. 11, Nov. 2023, doi: 10.3390/educsci13111142.
- [48] P. Hallinger and S. Huber, "School leadership that makes a difference: international perspectives," *School Effectiveness and School Improvement*, vol. 23, no. 4, pp. 359–367, Dec. 2012, doi: 10.1080/09243453.2012.681508.
- [49] K. Leithwood, A. Harris, and D. Hopkins, "Seven strong claims about successful school leadership revisited," *School Leadership & Management*, vol. 40, no. 1, pp. 5–22, Jan. 2020, doi: 10.1080/13632434.2019.1596077.
- [50] H. V. T. Dinh *et al.*, "Professional learning communities in Vietnamese primary schools in the educational reform context: forms and challenges," *European Journal of Educational Research*, vol. 12, no. 1, pp. 551–565, Jan. 2023, doi: 10.12973/eu-jer.12.1.551.
- [51] A. K. Killion, J. O. Michel, and J. K. Hawes, "Toward identifying sustainability leadership competencies: insights from mapping a graduate sustainability education curriculum," *Sustainability (Switzerland)*, vol. 14, no. 10, pp. 1–18, May 2022, doi: 10.3390/su14105811.
- [52] M. Galdames-Calderón, "Distributed leadership: School principals' practices to promote teachers' professional development for school improvement," *Education Sciences*, vol. 13, no. 7, pp. 1–14, Jul. 2023, doi: 10.3390/educsci13070715.
- [53] S. S. Vikaraman, A. N. Mansor, M. Y. M. Nor, B. S. Alias, and V. Gurusamy, "Ethical leadership practices and trust among public school leaders in Malaysia," *Asian Journal of University Education*, vol. 17, no. 3, pp. 174–191, 2021.

BIOGRAPHIES OF AUTHORS






Josephine Ambon    is a Ph.D. candidate who is currently in her 2nd year at Universiti Kebangsaan Malaysia (UKM). She is studying educational management and administration. She is passionate about raising the quality of teaching and learning for teachers, their development in schools, and the roles of school heads to manage schools effectively. Josephine's research interests lie in the school leader's competency, the teacher's quality in teaching and learning, the teacher's professional development, and leadership. She can be contacted at email: josephineanakambon78@gmail.com or p121270@siswa.ukm.edu.my.



Bity Salwana Alias    is an associate professor and chairman for the Research Center of Leadership and Educational Policy at the Faculty of Education, Universiti Kebangsaan Malaysia. She holds a Ph.D. and master's degree in educational administration from Universiti Kebangsaan Malaysia, a bachelor's degree in business administration from International Islamic University, a diploma in International Trade from Sultan Zainal Abidin Religious College, and a diploma in education from Kuala Lumpur Technical College, Malaysia. Started to work as a teacher in 1995, then as assistant director at the Ministry of Education Malaysia in 2009 and finally started to serve at UKM in 2018 as a lecturer until now. Her area of study is educational leadership, management, and policy, with the main goal to ensure quality, equity, unity and integrity in education for all. She can be contacted at email: bity@ukm.edu.my.



Azlin Norhaini Mansor    received her Ph.D. in educational administration from Universiti Kebangsaan Malaysia (UKM), master of education and bachelor of science (biology) from New York State University at Albany, New York, USA. She was a teacher (1987-1997), an assistant director at Educational Planning and Research Division, Ministry of Education Malaysia, (1997-2010) and a senior lecturer at Matriculation Division, Ministry of Education (2010-2012) before appointed as a senior lecturer in UKM in 2012 till now. She is currently an associate professor and a member of Centre for Shaping Advanced and Professional Education (UKMShape). Her publications and research interest includes educational leadership, educational management, policy evaluation, and various fields involving teaching and learning. She can be contacted at email: azlinmansor@ukm.edu.my.