

International Journal of Educational Leadership and Management

Volume 13, Issue 2, 16th July 2025, Pages 92-112

Online First Published: 10th July, 2025

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<http://dx.doi.org/10.17583/ijelm.17382>

Transformational Leadership in Schools: A Bibliometric and Content Analysis (2000-2024)

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Abstract

While transformational leadership has been extensively studied in educational contexts, systematic bibliometric mapping of its knowledge evolution remains unexplored in school-setting research. This review, using VOSviewer bibliometric analysis methods combined with content analysis, used an analytical framework combining bibliometric clustering and qualitative content interpretation, which was conducted on 540 Web of Science articles from 2000 to 2024. The basic articles revealed by co-citation analysis constitute the core knowledge base; Co-word analysis shows that the research focuses on school organisational behaviour, school improvement, leadership quality and teacher psychology. Further, combined with the content analysis, it is found that significant research gaps remain on cross-cultural applicability and technology empowerment. The researchers integrate transformational leadership change in schools and propose a synergistic application of transformational leadership and technology support approaches to address diversity challenges in a globalised education system.

Keywords

Transformational leadership, bibliometric, VOSviewer, content analysis

To cite this article: Le, J., Hamid, A. H. A., & Mansor, A. N (2025). Transformational leadership in schools: A bibliometric and content analysis (2000-2024). *International Journal of Educational Leadership and Management*, 13(2) pp. 92-112.
<http://dx.doi.org/10.17583/ijelm.17382>

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International Journal of Educational Leadership and Management

Volumen 13, Número 2, 16 de julio, 2025, Páginas 92-112

Publicado en Online First: 10 de julio de 2025

© Autor(s) 2025

<http://dx.doi.org/10.17583/ijelm.17382>

Liderazgo Transformacional en las Escuelas: Un Análisis Bibliométrico y de Contenido (2000-2024)

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Resumen

Si bien el liderazgo transformacional se ha estudiado ampliamente en contextos educativos, el mapeo bibliométrico sistemático de su evolución del conocimiento aún no se ha explorado en la investigación en entornos escolares. Esta revisión, que utiliza métodos de análisis bibliométrico de VOSviewer en combinación con análisis de contenido, empleó un marco analítico que combina la agrupación bibliométrica y la interpretación cualitativa del contenido, y se realizó en 540 artículos de Web of Science entre 2000 y 2024. Los artículos básicos revelados por el análisis de cocitación constituyen la base de conocimiento central; el análisis de co-palabras muestra que la investigación se centra en el comportamiento organizacional escolar, la mejora escolar, la calidad del liderazgo y la psicología docente. Además, en combinación con el análisis de contenido, se observa que persisten importantes lagunas de investigación sobre la aplicabilidad intercultural y el empoderamiento tecnológico. Los investigadores integran el cambio de liderazgo transformacional en las escuelas y proponen una aplicación sinérgica de los enfoques de liderazgo transformacional y apoyo tecnológico para abordar los desafíos de la diversidad en un sistema educativo globalizado.

Palabras clave

Liderazgo transformacional, bibliometría, VOSviewer, análisis de contenido

Cómo citar este artículo: Le, J., Hamid, A. H. A., y Mansor, A. N (2025). El liderazgo transformacional en las escuelas: Un análisis bibliométrico y de contenido (2000–2024). *International Journal of Educational Leadership and Management*, 13(2) pp. 92-112. <http://dx.doi.org/10.17583/ijelm.17382>

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As highlighted in the United Nations Sustainable Development Goal 4 (SDG 4), pursuing quality education has become a priority in education policy discussions (Smith & Heyward, 2024). Accelerating social transformation in the 21st century requires students to prepare for the future (Reimers, 2020). With the introduction of accountability, schools are no longer just centres of knowledge dissemination (Pan & Chen, 2021). They must also be transformed to adapt to changing educational ecology and social expectations (Karadag, 2020). In this dynamic environment, effective school leadership is a key driver for driving needed change, improving the quality of education and achieving sustainable development (Turan et al., 2024). The core of transformational leadership, proposed by Bass, is to motivate followers to transcend their interests by stimulating their intrinsic motivation (Bass & Avolio, 1994). As well as working towards common organisational goals (Li & Karanxha, 2024), this leadership style guides members to develop a sense of identity and intrinsic commitment to the organisation (Sliwka et al., 2024). Moreover, this leadership paradigm has been recognized as an important tool for addressing current educational challenges due to its unique value-creation mechanisms (Sliwka et al., 2024; Vermeulen et al., 2022).

The transformational leadership theory was initially widely used in management and organisation (Li & Liu, 2022). Subsequently, it has been widely used in education and shows good interdisciplinary applicability (Kwan, 2020; Mouazen & Hernández-Lara, 2023). Research has generally confirmed that transformational leadership in schools can be achieved by establishing a shared vision, providing intellectual stimulation (Ismail et al., 2021), personalizing care, and demonstrating idealized influence (Bass & Avolio, 1994; Zhang & Liu, 2023). Motivate teachers to make extra efforts to improve organisational effectiveness and educational quality in schools (Mouazen & Hernandez-Lara, 2023; Zadok et al., 2024a). Its mechanism is reflected in promoting teacher professional development (Bellibaş et al., 2021; Turan et al., 2024), optimizing organisational climate (Kılınç et al., 2023), fostering a culture of collaboration and innovation (Kılınç et al., 2024; Sliwka et al., 2024), and ultimately achieve sustainable school development (Leithwood & Jantzi, 2000; Menon, 2023; Vermeulen et al., 2022).

Leithwood emphasizes the role of transformational leadership in improving problem-solving in educational reform and establishes an interpretative framework for applying this theory in education (Leithwood & Jantzi, 2000; Li & Karanxha, 2024). However, research also notes that the impact of these transformative leadership behaviours on school effectiveness varies across cultural contexts (Karadag, 2020; Menon, 2023). Although the existing literature summarizes the role of transformational leadership (Li & Liu, 2022), there is still a significant gap in the comprehensive understanding of this theory in the school context (Mouazen & Hernandez-Lara, 2023). The core problem is that previous review studies are too broad and cover the development and application of transformational leadership in multiple fields, such as business, healthcare, and education (Li & Karanxha, 2024).

There is a lack of in-depth focus on the unique operational needs of school organisations, the specific challenges they face, and the particular manifestation and impact mechanisms of transformational leadership within them (Toprak et al., 2023). This neglect of the particularity of the school context leads to the lack of a systematic and integrated understanding of the current status, core issues, and future direction of transformational leadership development in

schools (Affandie & Churiyah, 2022). This generalized perspective limits the ability to apply transformational leadership theory more effectively to address pressing issues facing schools today. Therefore, there is an urgent need for a comprehensive, school-specific review to bridge this knowledge gap and validate and advance transformational leadership's value in contemporary educational contexts.

To address the research gap mentioned above, this review will use a combination of bibliometrics and content analysis to systematically analyse 540 articles on "transformational leadership in schools" in the Web of Science database from 2000 to 2024. By combining the two research methods, this study can not only objectively reveal the development trend of this field through bibliometrics but also deeply understand the research trend of transformational leadership in the school context and the specific gaps in the current research through content analysis. In this way, this study aims to contribute to the academic literature a well-structured and in-depth comprehensive view of the current state of research on transformational leadership in schools. This makes up for the lack of school context in the existing literature, but more importantly, it will identify the key issues that have not been solved in the current research and the areas that have not been fully explored and provide specific and feasible directions for future research.

Therefore, this review aims to systematically comb through and analyse the research findings in the field of transformational leadership in schools from 2000 to 2024 and address the following two research questions:

RQ1: Based on bibliometric analysis, what are the most prominent trends in research on transformational leadership in school?

RQ2: Based on content analysis, what are the gaps in current research on transformational leadership in schools, and how will future research address these gaps?

Literature Review

Transformational leadership, which breaks through the traditional bureaucratic management model, has been widely recognised in educational management as a theoretical paradigm to mobilise organisational members' needs and inherent potential (Li & Karanxha, 2024). Bass systematises transformative leadership into a model containing four core dimensions, making it widely used in organisational research (Li & Karanxha, 2024). Among them, the first dimension of idealised influence in schools is the degree to which school leaders set an example to practice educational equity and improve educational quality (Zadok & Benoliel, 2023). Inspirational motivation emphasises the intrinsic motivation of school leaders through setting high goals and inspiring followers (Madjid & Samsudin, 2021). Intellectual stimulation can be understood as transformational leaders in schools who encourage teachers or students to build knowledge and skills and solve problems through innovative thinking (Kılınç et al., 2024). Individual consideration is expressed in schools as the sensitivity of leaders to the individual needs and values of teachers (Khan et al., 2022). Similarly, Leithwood and Jantzi (2000) further divided the dimensions of transformative leadership, including vision identification, modeling,

goal acceptance, individualised support, intellectual stimulation and high-performance expectations (Leithwood & Jantzi, 2000).

Many empirical studies consistently reveal the positive impact of transformational leadership in schools (Kılınç et al., 2023). At the school level, transformational leadership is a key driver of a positive, collaborative school culture (Velarde et al., 2022). It is closely linked to organisational effectiveness and the ability of the school to change (Kırkıç & Balcı, 2021; Zadok & Benoliel, 2023). For teachers, leaders' transformational behaviours are significantly positively correlated with teachers' job satisfaction, sense of organisational commitment (Metaferia et al., 2023), career happiness and intrinsic motivation (Ma & Marion, 2021; Zadok et al., 2024a). Some empirical studies, through long-term observation and case analysis of many schools, point out that teachers with transformational leadership actively introduce new teaching concepts and methods and transform schools from traditional conservative teaching culture to a culture of active exploration and innovation (Shava & Heystek, 2021; Velarde et al., 2022). The influence on students is usually embodied in the indirect path, that is, transformational leadership through optimising teachers' teaching quality, shaping a positive school atmosphere, and then indirectly promoting students' learning engagement (Leithwood et al., 2020). The mediating role of teachers is crucial (Bellibaş et al., 2021).

In addition, other studies have shown that the effectiveness of transformational leadership does not occur in isolation, and studies often involve mediating effects (Berkovich & Bogler, 2021; Leithwood et al., 2020). Its mechanism is mainly involved in psychological and organisational aspects. Psychologically, it enhances teachers' sense of psychological empowerment and organisational identity by satisfying their sense of efficacy or trust (Mansor et al., 2021; Polatcan et al., 2023). Organisationally, it promotes collaboration and shapes a shared vision (To et al., 2023). However, contextual factors also significantly mediate the effect, including macroscopic cultural background differences (Velarde et al., 2022). For example, researchers have emphasized the influence of collectivist and individualistic cultures on leadership behaviour preferences (Karadag, 2020; Sezgin et al., 2024; Shengnan & Hallinger, 2021). This is because transformative leadership responds differently to leadership behaviours in the social context of high power distance and collectivist cultural norms (Karadag, 2020; Shengnan & Hallinger, 2021).

Despite the impact of transformational leadership, there are still criticisms and challenges in theory and practice that cannot be ignored (Li & Karanxha, 2024). There are also inconsistent research results on the influence of the dimensions of its core constructs. For example, in high-stakes accountability, power initiatives easily manipulate transformational leadership, negatively impacting teacher leadership development (Mohammed Amer, 2020). The applicability of transformational leadership in specific cultures and situations is also an ongoing topic of discussion in academia (Li & Karanxha, 2024).

Methodology

Web of Science (WoS) database contains information that reflects the high level of global research results and can provide researchers with the most representative data (Birkle et al.,

2020). This review chooses the Web of Science database as the article search platform. To ensure the article's relevance, the author uses the Topic search (TS) function. Searching for a specific topic in a large database is complex, so using a topic search method can help researchers with specialized knowledge search and mining tasks (Zhao et al., 2024). The search terms selected for this review apply to articles published between 2000 and 2024 and cover the most relevant articles on transformational leadership in schools. Articles obtained from the initial search may contain unrelated articles, especially in the nursing and business fields. Therefore, to ensure that the articles analysed are closely related to the research topic, all results are manually screened by the authors after searching according to the search formula (Gaur & Kumar, 2018). A total of 540 records were manually verified one by one according to the relevance of title, keyword and abstract. The process and criteria for selecting articles in this review are shown in Table 1.

Table 1

Search String, Inclusion, and Exclusion Criteria

Time Period	2000 to 2024
Search Field	Topic
Search Keywords	“transformational leadership” OR “transformational leaders” AND “school” OR “classroom” OR “teacher” OR “student”
WoS Database	ALL
Citation Topics	ALL
Document Type	Journal
Languages	English

Bibliometric Analysis

Bibliometrics is the quantitative analysis of research content in a certain field or stage through various statistical methods, and the change and development trend of research is reflected through performance analysis and visualization (Pan et al., 2018). In this review, VOSviewer is chosen as the research software with significant advantages in knowledge graph construction. First, the algorithm supports co-citation network analysis of large-scale article data (Gaviria-Marin et al., 2019). Secondly, the modular clustering function can visually present the research hotspots and knowledge structure of transformational leadership in schools (Gaviria-Marin et al., 2019). The above technical characteristics effectively solve the spatial limitations of traditional literature review and provide an empirical basis for answering research question 1. In addition, from the perspective of research development and the law of knowledge accumulation, academic research is essentially a process of knowledge accumulation and iterative updating (Lim et al., 2022). To maintain the continuity of research evolution, the knowledge base consists of a series of co-cited articles (Lim et al., 2022). Thus, VOSviewer software can be used to accurately identify core article clusters and their diachronic associations in transformational leadership in schools through co-citation analysis (Martín-Martín et al., 2021). Regarding semantic network construction, co-word analysis can reveal the

research field's core themes and research frontiers (Feng et al., 2017). First, a co-occurrence matrix is constructed by keyword co-occurrence, and then multiple topic clusters are formed by cluster analysis to reveal the research theme (Feng et al., 2017).

Content Analysis

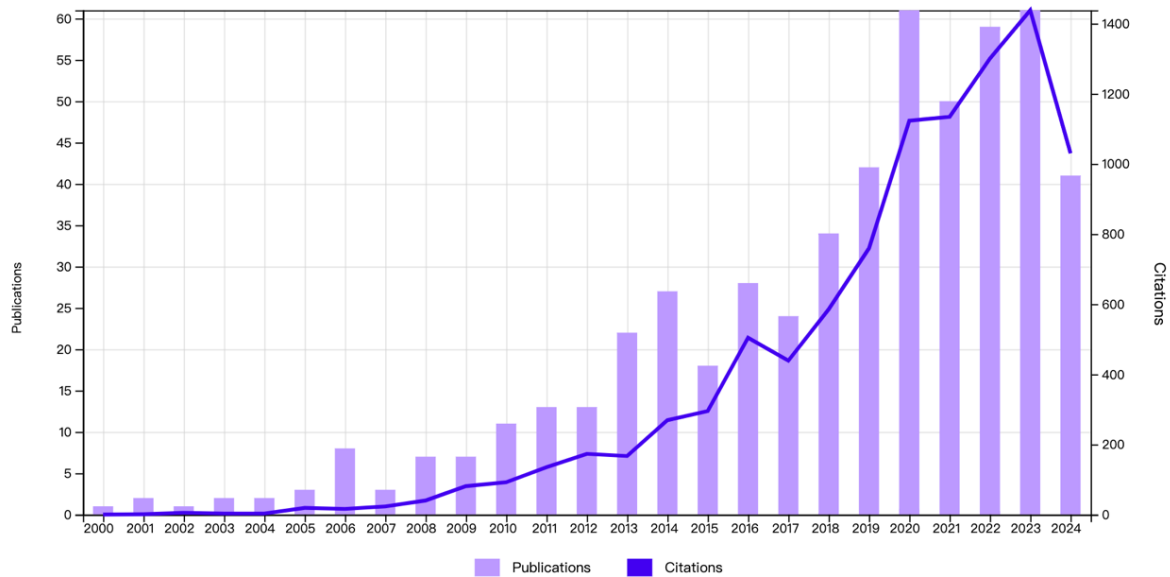
Content analysis methods can be used to analyse written documentary material as an analysis of text and material, from the text's literal meaning to the core idea behind the text (Gaur & Kumar, 2018). While the bibliometrics analysis outlines the overall trend of a particular study, it does not provide detailed information about what is being studied. Therefore, based on bibliometric analysis and content analysis, this review further analysed the changes in researchers' understanding of transformational leadership and its application in practice over time, systematically sorted out the shortcomings of existing research, and proposed directions for future research.

Findings and Discussion

This section focuses on descriptive statistics and visual graph analysis and discusses the 540 articles retrieved using VOSviewer software, conducting co-citation and co-word analyses. The results of the bibliometric performance analysis reveal the field's basic information, which, combined with visualisation tools, can help researchers initially grasp the field's trend (Pan et al., 2018). In addition, based on the results of the bibliometric analysis, this review is divided into three phases. Finally, the research focus and gaps of each stage are illustrated by the content analysis.

Performance Analysis and Discussion (RQ1)

Publication Trends and Descriptive Analysis

Figure 1*Time Trend of the Publications*

Note. The x-axis represents the publication year. The left Y-axis shows the number of publications; the right Y-axis shows the number of citations.

One of the most significant indicators of research development is the quantity of scholarly publications and the trend of publications over time (Durieux & Gevenois, 2010). The Web of Science (WOS) database records the trend in the number of publications per year for the 540 articles analysed. Figure 1 illustrates published articles' trends and corresponding citations from 2000 to 2024. The growth pattern of Figure 1 reflects the growing academic interest in transformational leadership research within schools. Figure 1 reveals relatively few published and referenced articles between 2000 and 2009. The number of articles and citations for transformational leadership research gradually increased in 2010. After 2015, this growth became particularly noticeable. Since 2017, research has entered a period of rapid growth and peaked in 2020 at nearly 60 articles. With almost 1,400 citations in 2020, the number also rose dramatically. The number of articles remains high despite a slight citation drop in 2021. The evolution of the research on transformational leadership in schools from its early experimental stage to its current flourishing is readily seen. The development of the field from 2000-2024 can be broadly categorised into three phases. The first phase was from 2000 to 2009 when relatively few articles were available. The second phase was from 2010 to 2017, which saw an overall upward trend in the number of articles and a developmental phase. The third phase is 2018 to 2024, the period of accelerated development in which the number of articles and citations peaked. The total amount of research on transformational leadership within schools is high, and international attention is increasing, providing a broad scope of research for researchers.

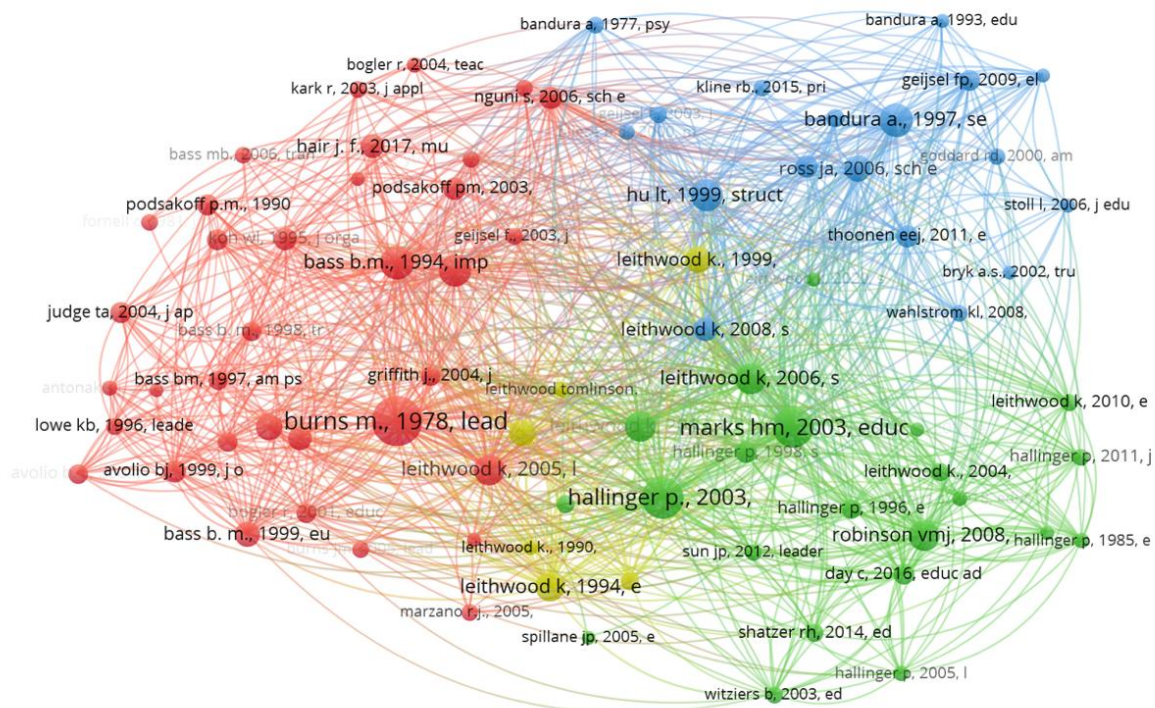


Table 2*Top 10 Key Articles According to the Number of Co-citations*

Rank	Articles	Citations	Journal
1	Marks, H. M., & Printy, S. M. (2003). Principal leadership and school performance: An integration of transformational and instructional leadership. <i>Educational Administration Quarterly</i> , 39(3), 370-397.	88	Educational Administration Quarterly
2	Hallinger, P. (2003). Leading educational change: Reflections on the practice of instructional and transformational leadership. <i>Cambridge Journal of education</i> , 33(3), 329-352.	89	Cambridge Journal of Education
3	Leithwood, K., & Jantzi, D. (2006). Transformational school leadership for large-scale reform: Effects on students, teachers, and their classroom practices. <i>School effectiveness and school improvement</i> , 17(2), 201-227.	60	School Effectiveness and School Improvement
4	Robinson, V. M., Lloyd, C. A., & Rowe, K. J. (2008). The impact of leadership on student outcomes: An analysis of the differential effects of leadership types. <i>Educational Administration Quarterly</i> , 44(5), 635-674.	57	Educational Administration Quarterly
5	Leithwood, K., & Jantzi, D. (2005). A review of transformational school leadership research 1996–2005. <i>Leadership and policy in schools</i> , 4(3), 177-199.	57	Leadership and Policy in Schools
6	Leithwood, K., & Sun, J. (2012). The nature and effects of transformational school leadership: A meta-analytic review of unpublished research. <i>Educational Administration Quarterly</i> , 48(3), 387-423.	57	Educational Administration Quarterly
7	Leithwood, K., & Jantzi, D. (2000). The effects of transformational leadership on organisational conditions and student engagement with school. <i>Journal of Educational Administration</i> , 38(2), 112-129.	49	Journal of Educational Administration
8	Ross, J. A., & Gray, P. (2006). Transformational leadership and teacher commitment to organisational values: The mediating effects of collective teacher efficacy. <i>School effectiveness and school improvement</i> , 17(2), 179-199.	46	School Effectiveness and School Improvement
9	Nguni, S., Slegers, P., & Denessen, E. (2006). Transformational and transactional leadership effects on teachers' job satisfaction, organisational commitment, and organisational citizenship behaviour in primary schools: The Tanzanian case. <i>School effectiveness and school improvement</i> , 17(2), 145-177.	38	School Effectiveness and School Improvement
10	Thoonen, E. E., Slegers, P. J., Oort, F. J., Peetsma, T. T., & Geijsel, F. P. (2011). How to improve teaching practices: The role of teacher motivation, organisational factors, and leadership practices. <i>Educational Administration Quarterly</i> , 47(3), 496-536.	36	Educational administration quarterly

From the perspective of topic distribution, the first three articles focus on the mechanism of transformational school leadership on organisational effectiveness. Among them, Leithwood's team (2006) found through empirical research that this leadership model can effectively improve teachers' professional practice level and promote students' academic achievement through mediating variables (Leithwood & Jantzi, 2006). This finding aligns with the longitudinal study conducted by Marks et al. (2003), who pointed out that transformational leadership alone could not directly improve student achievement and suggested a synergistic effect with teaching leadership (Marks & Printy, 2003). In the top 10 most-cited articles, discussions from other perspectives can be found in addition to exploring school performance. For example, Robinson's 2008 study, ranked fourth, addresses the differences between different leadership styles through mixed research methods (Robinson et al., 2008). This provides evidence for understanding the adaptability of transformational leadership in different educational contexts in schools. Besides, it is worth noting that the Nguni team (2006) ranked 9th in the cross-cultural research based on the educational scene in Tanzania and verified the applicability difference of the leadership theory in the multicultural environment through the structural equation model, expanding the application dimension of the theory (Nguni et al., 2006).

These articles have one thing in common. They all highlight how transformational leadership can directly or indirectly improve student achievement, teacher effectiveness, and school performance in educational Settings. This provides rich theoretical resources and useful guidance for future research on transformational leadership in schools. In addition, the co-cited network analysis presents two significant commonalities. On the one hand, it focuses on the role of mediating variables in the leadership transmission process. On the other hand, it is committed to solving the problem of situational adaptability in theoretical implementation. These research results provide evidence to support school management practice and, more importantly, construct the theoretical framework of leadership research.

Analysis of Keyword Co-occurrence

Based on the VOSviewer visual analysis platform (citation threshold is 10), this review constructed the keyword co-occurrence network map results of 540 articles (Figure 3). Keyword co-occurrence networks can help researchers identify the distribution of research topics (Feng et al., 2017). The top 10 keywords are shown in Table 3, and as shown in Table 3, "transformational leadership" ranks as the core node with 380 co-occurrence frequency and 1590 association strength. This was followed by "performance", which came in second with 136 appearances and a total link strength of 715, indicating the importance of performance in transformational leadership research. Other keywords such as "school leadership," "teacher," and "job satisfaction" are also prominently featured on the web. These nodes form a close connection, confirming the pivotal position of performance enhancement in the research framework.

Table 4*Analysis of Keyword Co-occurrence*

Cluster No and colour	Cluster label	Number of keywords	Representative Keywords
1 (Red)	Organisational behaviour	23	“attitudes”, “behaviour”, “consequences”, “charismatic leadership”, “empowerment”, “creativity”, “framework”, “innovation”, “model”, “moderating role”, “organisational commitment”, “organisatons”, “perceptions”, “performance”, “personality”, “psychological empowerment”, “reform”, “satisfaction”, “scale”, “school”, “self-determination theory”, “transformational leadership”, “transactional leadership”
2 (Green)	School Improvement	17	“achievement”, “communities”, “context”, “distributed leadership”, “educational leadership”, “efficacy”, “impact”, “improvement”, “instructional leadership”, “principal”, “principal leadership”, “professional-development”, “school leadership”, “student outcomes”, “student-achievement”, “teacher leadership”, “transformational school leadership”
3 (Blue)	Leadership Qualities	14	“challenges”, “community”, “culture”, “education”, “educational leadership”, “emotional intelligence”, “gender”, “leadership”, “motivation”, “school improvement”, “school principals”, “student”, “teachers”, “validity”
4 (Yellow)	Teachers' Psychological	14	“beliefs”, “burnout”, “climate”, “collaboration”, “collective efficacy”, “collective teacher efficacy”, “commitment”, “job satisfaction”, “mediating role”, “member exchange”, “schools”, “self-efficacy”, “support”, “teacher”

Keyword frequency itself can not reflect the distribution of core topics and the relationship between keywords, so it must be analysed in conjunction with constructing a keyword co-occurrence network (Van Eck & Waltman, 2014). Keyword co-occurrence networks can reveal some relationship between keywords through network graphs (Feng et al., 2017). The higher the correlation of keywords in the map, and the closer the distance between keywords, a cluster will be formed (Van Eck & Waltman, 2014). Based on the representation of clusters in the co-occurrence network, the core topic of the study can be appropriately described (Feng et al., 2017). Four different clusters in the study were effectively revealed through node distribution density and clustering feature Table 4. Articles with similar content are grouped in these clusters, which are organized by organisations related to a common topic (Van Eck & Waltman, 2014). Specifically, the red cluster (23 nodes) focuses on the influence path of transformational leadership on school organisational behaviour and commitment; Green clustering (17 nodes)

explains the transformation mechanism of leadership into teaching improvement; Blue cluster (14 nodes) shows the dynamic correlation between leadership characteristics and school culture construction; Yellow cluster (14 nodes) reveals the motivational effect of leadership on teachers' psychology and job engagement. As shown in Figure 3, there is significant interpenetration among the clusters. This suggests that theoretical research develops in-depth toward the application level and provides a transferable analytical framework for organisational change research (Velarde et al., 2022a).

Content Analysis and Discussion (RQ2)

The central focus of much of the current research exploring transformational leadership in schools has been on principals, leaning toward models in which principals influence teachers through motivation and support (Bellibaş et al., 2021). School change agents are not isolated or homogeneous groups of one type or another but a collection of subjects that together form the symbiosis of school change (Zadok & Benoliel, 2023). Focusing too much on the authority influence model of individual principals (Bellibaş et al., 2021), this single-dimensional research paradigm makes it difficult to explain the complex ecology of educational organisational change. Effective school reform should be a symbiotic network composed of multiple agents. However, the existing articles are still insufficient to discuss the function mechanism of teachers as collaborative leaders (Zadok et al., 2024b). Therefore, future research should focus on realising the joint effect of transformational leadership in schools and exploring the collaborative mechanism of leadership has become an urgent research direction (Li & Liu, 2022).

Besides, the theoretical basis and model of existing studies are still dominated by the classical transformational leadership theory proposed by Bass et al. (Li & Karanxha, 2024). Although Leithwood et al. adapted the model to the school environment, it is not easy to fully cover the diversity of needs and complexity of role interactions in school organisations in practical applications (Cansoy et al., 2022). This suggests that researchers must establish a new theoretical framework integrating multiple agents' needs and systematically exploring mediating variables' transmission paths (Wilson Heenan et al., 2024). An appropriate causal model can describe how transformational leadership affects outcomes through various mediating variables and identify relevant regulators (Cansoy et al., 2022). Researchers need to theorize further and explore the mediating mechanisms and moderators of transformational leadership to establish a complete causal model (Li & Karanxha, 2024). Besides, it is worth noting that the cultural adaptability of traditional measurement tools has attracted academic attention (Mouazen & Hernández-Lara, 2023). Researchers can introduce and develop more dynamic and flexible quantitative tools, but their applicability in the digital age still needs to be continuously validated (Mouazen & Hernández-Lara, 2023).

Additionally, the relationship between transformational leadership and students' academic achievement presents significant heterogeneity (Kwan, 2020). The researchers used different research methods and models to analyse, but the results were inconsistent (Li & Karanxha, 2024). Some studies have found that transformational leadership directly or indirectly impacts

student achievement (Boberg & Bourgeois, 2016). However, some studies have found no significant direct effects (Kwan, 2020). Moreover, the limitations of this perspective are also of concern, with the current articles focusing excessively on the measurement of cognitive outcomes (Li & Karanxha, 2024). Researchers often treat academic achievement as a proxy variable for general learning outcomes (Mohammed Amer, 2020). However, the focus cannot be on achievement alone (Mohammed Amer, 2020). There is a gap between the test results and the composite competence dimension emphasised by the PISA framework (Pan & Chen, 2021), so it is necessary to build a multidimensional achievement indicator system (Mutohar et al., 2021).

There is a significant geographical imbalance in cross-cultural comparative studies. In discussions among many researchers, there is considerable consensus that leadership practices vary by culture (Karadag, 2020). A systematic review by Karadag (2020) reveals an obvious tendency of Western-centrism in this field, and there is a serious lack of attention to the cultural background of Eastern collectivism. Most current studies focus on Western developed countries, and more in-depth comparative studies are needed on transformational leadership practices under different cultural backgrounds (Sun et al., 2017). In Eastern countries with a strong collectivist culture, the style of influence of leaders tends to be more cooperative and relationship-oriented than personal motivation (Wang & Ho, 2020). Such cultural sensitivity requires future studies to establish a complete analytical framework (Nguyen et al., 2019). and decode the interaction mechanism between cultural variables and leadership behaviour through multi-case studies (Kılınç et al., 2020).

Finally, digital transformation poses new challenges to leadership theory (Banerjee et al., 2021). However, with the continuous progress of technological innovation, the current research on transformational leadership in response to digital transformation has not been fully explored (Connolly et al., 2023). Although some scholars have begun to focus on the relationship between technology adoption and leadership, a systematic research framework has not yet emerged (Berkovich & Hassan, 2023). How to effectively promote the integration of school teaching and digital resources through transformational leadership has become an urgent practical problem to be solved (Berkovich & Hassan, 2023). Therefore, constructing a theoretical model of "digital transformational leadership" and the revelation of technological mediating effects through hybrid methods have become a key path to breaking through the existing research bottleneck (Mouazen & Hernández-Lara, 2023).

Implications

This review objectively reveals this field's development trend and frontier through systematic bibliometric and content analysis. First, the key node articles focus on the dual-path model of leadership effectiveness, which is mainly achieved directly through performance improvement and indirectly through teacher empowerment. This solidifies the basis for applying relevant leadership theories in educational contexts. Secondly, identified four major research trends: organisational behaviour optimisation, school improvement, leadership traits, and teacher psychology. The knowledge structure and theoretical focus of the field are described

systematically. Finally, the research gaps revealed by the content analysis, especially the lack of model integration, point to the future direction of integrating transformational leadership with other leadership theories to build a more comprehensive theoretical framework.

In addition, the research results have direct guiding value for educational practice. School leaders should actively practice transformational leadership, especially the key mechanism of teacher empowerment, to improve teacher effectiveness and overall school performance. Policymakers can consider transformational leadership as an evidence-based school improvement strategy and support it in leadership standards and training programs. Besides, the study suggests that educational practitioners need to consider how to flexibly apply and adapt transformational leadership practices in an increasingly complex and technological environment.

Limitations

There are several limitations to this review. First, bibliometric analysis focuses on revealing publication and citation patterns with limited insight into individual studies' quality and specific details. In addition, the depth of content analysis is limited, which fails to exhaust all research gaps. Given the above limitations, future studies should deepen the integration of theoretical models and explore the synergistic effects of transformational leadership and other leadership styles. Strengthen the empirical research on transformational leadership in different school contexts and cross-cultural backgrounds to test the universality of the theory. It is also necessary to explore the combination of transformational leadership and educational technology and study the path of technology empowerment.

Conclusion

Through bibliometric analysis, this review reveals that transformational leadership can improve school performance, teacher effectiveness and student academic achievement directly and indirectly. Co-cited network analysis shows that key node articles focus on the dual path of leadership effectiveness, which is realised directly through performance improvement and indirectly through teacher empowerment. The co-occurrence of keywords reveals four key trends in school transformational leadership research: organisational behaviour optimisation, school improvement, leadership traits and teacher psychology. In addition, this review uses content analysis to integrate knowledge of transformational leadership in specific school contexts, identifying research gaps that previous studies have overlooked. The results of this study provide a practical reference for educational administrators to effectively use transformational leadership in the school environment to improve management effectiveness and adaptability. Future research must explore model integration, application in different cultural and technological contexts, and interaction with other leadership models.

Acknowledgements

All the authors contributed significantly to this paper's conceptualisation, analysis, and writing.

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