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# Global Trends and Knowledge Structure of Educational Transformational Leadership: A Scopus-Based Bibliometric Analysis from 2016 to 2026

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## Article Info

### Article history:

Received 2026-04-13

Revised 2026-05-31

Accepted 2026-06-10

### Keywords:

Educational transformational leadership

Bibliometric analysis

Sustainability in education

## ABSTRACT

The increasing complexity of educational systems, driven by digital transformation, globalization, and sustainability demands, has made educational transformational leadership a critical research area. The rapid growth of publications, however, has led to fragmented knowledge, limiting a comprehensive understanding of its intellectual structure and thematic evolution. This study conducts a bibliometric analysis of 372 Scopus-indexed documents (comprising journal articles and review articles) published between 2016 and 2026, retrieved using a structured search query targeting the term “transformational leadership” in the title, abstract, and keywords fields. Using performance analysis and science mapping with VOSviewer and Microsoft Excel, the study examines publication trends, key contributors, citation patterns, collaboration networks, and conceptual structures. The results reveal a significant rise in publications, especially after 2020, peaking in 2025, indicating growing academic interest. The United States leads in contributions, followed by Indonesia and other Asian countries, reflecting increasing global participation. Thematic evolution shows a shift from traditional focuses on school effectiveness toward emerging themes such as digital transformation, artificial intelligence, teacher well-being, and sustainability. Two primary research clusters are identified through bibliographic coupling analysis using VOSviewer, with limited integration between traditional and contemporary approaches, indicating a conceptual gap. These findings highlight the need for an integrative framework that bridges classical leadership theories with digital and sustainability-oriented perspectives. A key limitation of this study is its reliance on a single database (Scopus), which may exclude relevant studies indexed elsewhere.

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<https://doi.org/10.58421/gehu.v5i3.1403>

## 1. INTRODUCTION

Educational leadership is a key factor in enhancing the quality of teaching and learning, improving school organizational effectiveness, and achieving student learning outcomes. The concept of transformational leadership has become one of the most widely adopted approaches to explain how educational leaders can foster positive change through vision, inspiration, and the empowerment of organizational members [1], [2]. Global developments in education indicate that transformational leadership plays a crucial role not only in improving individual and organizational performance but also in addressing complex challenges such as digitalization, globalization, and sustainability demands [3], [4].

The rapid growth of research on transformative educational leadership over the past decade reflects increasing academic attention to the topic. Bibliometric data show a significant rise in publication output, particularly after 2020, with a peak in 2025. This trend suggests that the field is entering an expansion phase, characterized by greater thematic diversification and increasing complexity of research issues. The research focus has shifted from traditional concerns such as school effectiveness and student outcomes toward broader themes, including digital transformation, artificial intelligence, teacher well-being, and educational sustainability [5], [6].

The growing volume of publications presents challenges in achieving a comprehensive understanding of the knowledge structure within the field. Conventional literature reviews tend to be narrative in nature and are limited in their ability to identify global patterns, interconnections among studies, and longitudinal thematic developments [7]. This complexity necessitates a more systematic, data-driven analytical approach to map research dynamics objectively. Bibliometric analysis offers a robust solution, as it enables the processing of large datasets to identify trends, intellectual structures, and collaborative relationships within a research domain [8], [9].

Several studies have examined transformational leadership in education; however, most have primarily focused on the relationships between leadership variables and outcomes such as performance, job satisfaction, and organizational commitment within specific contexts [10], [11], [12]. Another limitation lies in the lack of a comprehensive global mapping of the field, including publication distribution, contributions by authors and countries, and the evolution of research themes. Furthermore, previous studies have not fully integrated analyses of conceptual and intellectual structures using quantitative bibliometric approaches [13].

Preliminary analysis of the knowledge structure reveals a clear fragmentation between traditional approaches, which focus on organizational effectiveness, and contemporary approaches that emphasize innovation, digital transformation, and global contexts. The limited connectivity between these approaches indicates a significant conceptual gap within the literature. This condition suggests that research development remains partial and has not yet formed a fully integrated theoretical framework [14], [15].

Such conditions necessitate an approach capable of systematically mapping the development of research while simultaneously identifying relationships among key elements within the field. Bibliometric analysis, supported by tools such as VOSviewer, enables

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1 researchers to explore knowledge structures through citation analysis, collaboration networks, and thematic mapping [8], [16]. This approach not only provides descriptive insights but also uncovers hidden patterns in the evolution of the literature.

16  
22 This study aims to provide a comprehensive analysis of the development of research on transformational leadership in education using a bibliometric approach. Specifically, it seeks to identify publication trends, geographical distribution, prolific authors and institutions, core journals, and the conceptual and intellectual structures of the field. In addition, the study explores the evolution of themes and identifies research gaps in the literature.

34 The contribution of this study lies in offering a comprehensive mapping of the field of educational transformational leadership through quantitative analysis and knowledge network visualization. Unlike previous bibliometric studies that focused on narrower sub-topics or shorter timeframes, this study provides a decade-long global analysis that integrates performance metrics, science mapping, and thematic evolution analysis. It enriches the literature by revealing the longitudinal structure and dynamics of the field's development. The study also demonstrates how bibliometric approaches can integrate multiple analytical dimensions in educational leadership research. Practically, the findings provide valuable guidance for researchers and practitioners in determining future research directions and informing educational policy development. The following research questions guide this study: (1) What are the publication trends and geographical distribution of educational transformational leadership research from 2016 to 2026? (2) Who are the most productive and influential authors, institutions, and journals in this field? (3) What are the dominant themes, and how have they evolved over the decade? (4) What conceptual gaps exist in the current knowledge structure?

## 9 2. METHOD

15 This study employs a quantitative bibliometric research design to systematically examine the development of the literature on transformational leadership in education. Bibliometric analysis is widely recognized as an effective approach for analyzing large-scale scientific data, enabling researchers to identify trends, influential works, and the structural relationships within a research field [17]. The present study integrates performance analysis and science mapping to provide both descriptive and relational insights into the literature. Data were retrieved from Scopus using the search query: TITLE-ABS-KEY ("transformational leadership" AND "education"), covering the period from 2016 to 2026. This decade was selected to capture the most recent and rapidly evolving phase of the field. The dataset was limited to journal articles and review articles written in English, and data were retrieved in January 2026. The 2026 data are partial, which may affect publication and citation counts for that year. Data cleaning was performed to standardize author names, institutional names, country names, and keywords prior to analysis. In VOSviewer, a minimum of 2 keyword occurrences was set as the threshold for co-occurrence analysis, and a minimum of 2 documents per author was set as the threshold for co-authorship networks.

28  
10 Performance analysis assesses publication productivity, key contributors, and citation impact using indicators such as total citations and the h-index [18]. Science mapping

techniques, including keyword co-occurrence, co-authorship, citation impact, and bibliographic coupling, are employed to explore the conceptual, intellectual, and collaborative structures of the field [19], [20]. This integrated approach enables a comprehensive understanding of research trends, thematic evolution, and knowledge structures within the domain.

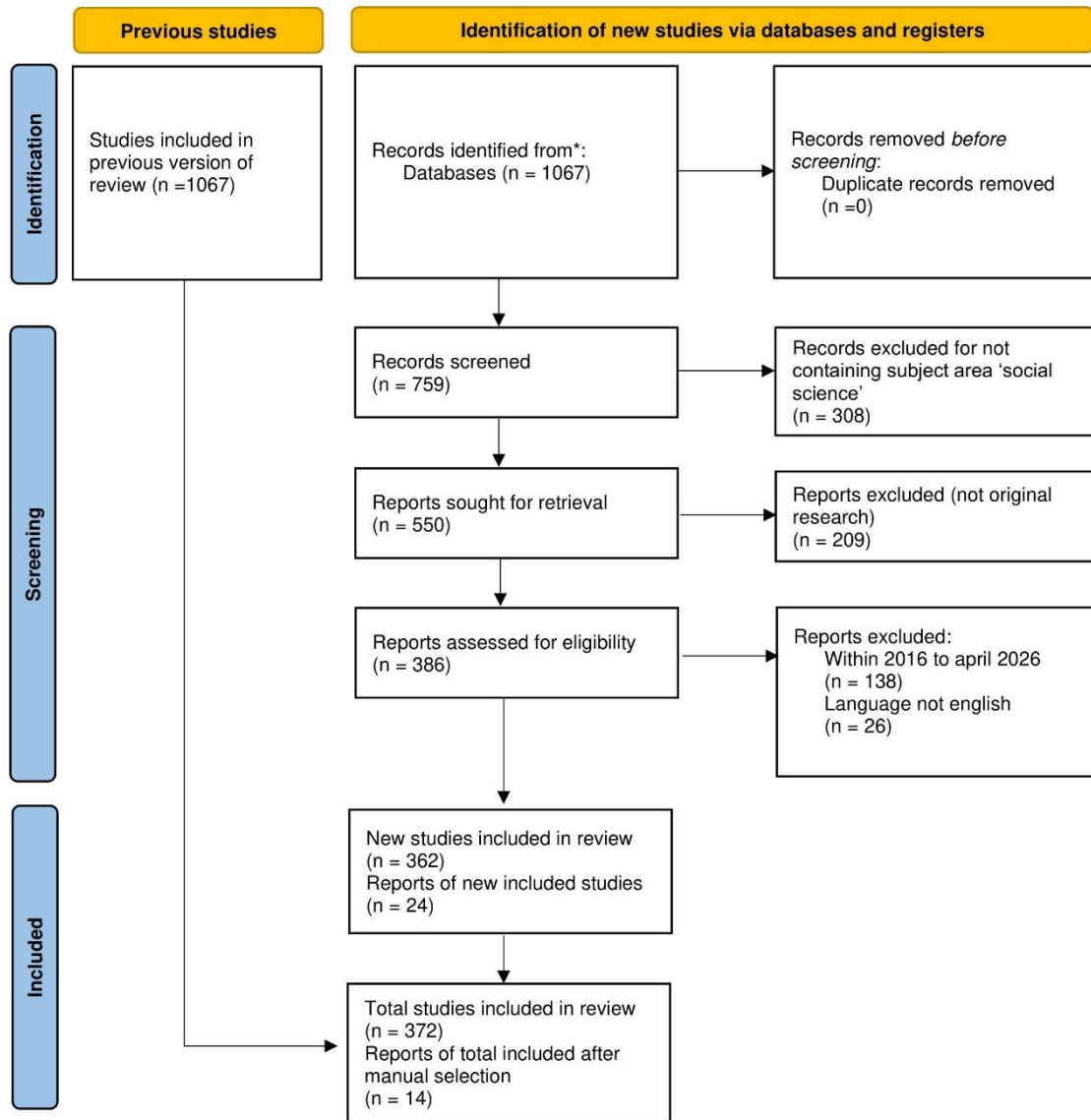


Figure 1. Prism Flow Diagram

### 3. RESULTS AND DISCUSSION

#### 3.1. Results

This section presents the findings of the bibliometric analysis of educational transformational leadership research from 2016 to 2026. The analysis aims to provide a comprehensive overview of the field by examining publication performance, geographical distribution, author productivity, citation impact, and the intellectual and conceptual structure of the literature. By integrating performance analysis and science mapping

techniques, this study not only highlights key trends and influential contributors but also reveals the underlying patterns and relationships that shape the development of research in this domain.

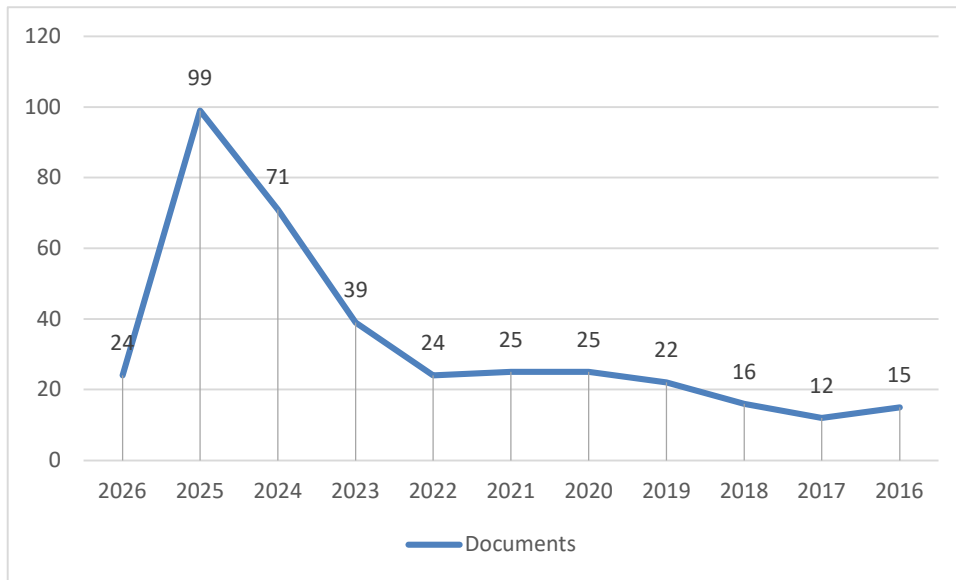


Figure 2. Distribution of Publications by Year

The distribution of publications reveals a significant upward trend in research on educational transformational leadership, particularly since 2020, culminating in a peak of 99 publications in 2025. This increase reflects a strong acceleration in academic interest, likely driven by the need for educational leadership to adapt to global disruptions such as digitalization and the COVID-19 pandemic.

Table 1. Top Eleven Countries with the Most Publications

Country	Documents
United States	50
Indonesia	36
Malaysia	31
United Kingdom	23
China	20
Israel	20
South Africa	18
Turkey	17
Australia	15
India	14
Pakistan	10

The dominance of the United States as the leading contributor indicates that research on educational leadership remains largely centered within the academic ecosystems of developed countries. Indonesia ranks second, highlighting the strong relevance of this topic within developing country contexts. This pattern suggests that transformational leadership is not only a global concern but also highly contextual in addressing local educational

challenges. The distribution further reflects a geographical shift toward Asia as an emerging hub for research growth.

Table 2. Top Affiliations by Number of Documents

Affiliation	Documents
Chitkara University, India	2
Zayed University, United Arab Emirates	2
Auburn University, United States	2
University of Patras, Greece	2
University of Oslo, Norway	2
Bar-Ilan University, Israel	2
Monash University, Australia	2
University of Manitoba, Canada	2
Ege University, Turkey	2
Universitas Negeri Surabaya, Indonesia	2

The relatively even distribution of institutional affiliations (each contributing only 2 publications) indicates that no single institution exerts significant dominance in this field. This suggests that the domain is globally distributed rather than concentrated within a single center of excellence. In other words, research on transformational leadership is developing collaboratively across institutions and countries.

The results indicate that most authors have made only limited contributions (a maximum of 2 publications), consistent with Lotka's Law, suggesting that only a small proportion of authors are highly productive. This finding reflects a pattern of fragmented authorship, where few leading scholars consistently dominate scientific output. Table 3 presents the top five authors with the most publications.

Table 3. Most Productive Authors (Consistent with Lotka's Law)

Author	Documents
Berkovich, Izhak	2
Hou, Mingyu; Ahmad, Jamilah Binti; Zhao, Yi	2
Meyer, Merna; Wood, Lesley	2
Yokota, Hirokazu	2
Zadok, Ayala; Benoliel, Pascale; Schechter, Chen	2

Christopher Day demonstrates a dominant position in citation counts, indicating his role as a key intellectual foundation within this field. The high citation impact of Christopher Day and Sedat Gumus suggests that their work serves as a primary reference in the development of both theoretical and practical perspectives on transformational leadership in education. Table 4 presents the top five authors with the highest citation counts.



“transactional leadership” and “leadership styles” reflects a growing comparative approach and the expansion of theoretical perspectives. However, the limited diversity of keywords suggests that thematic exploration has not yet fully evolved toward a multidisciplinary direction. The keyword relationships illustrated in Figure 3 demonstrate extensive interconnections among terms, with “transformational leadership” being the most frequently used keyword, appearing in 145 papers.

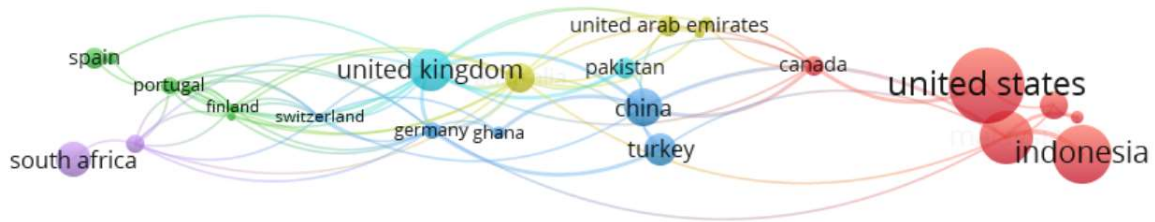


Figure 4. International Co-Authorship Patterns

Patterns of international collaboration indicate that countries with higher research productivity tend to form stronger collaborative networks. This suggests that research in this field is increasingly global and collaborative in nature. Further investigation is needed to determine whether disparities exist in collaboration between developed and developing countries.

The most highly cited article by Christopher Day indicates that earlier studies have exerted a substantial influence on the development of this field. This finding confirms the presence of a time advantage effect, whereby older publications are more likely to accumulate higher citation counts. Citations for the year 2026 have not yet been fully accumulated due to citation delays. Table 6 presents the top five most highly cited papers.

Table 6. Top Cited Papers

Documents	Cited by
day c.; qu q.; sammons p. (2016)	665
gumus s., et al. (2018)	379
Mohamed Hashim M.A., et al. (2022)	131
Al-Hussein, S.; elbeltagi i. (2016)	109
alzoraiki m., et al., (2023)	107

Table 7 shows a significant increase in publication productivity in 2024 and 2025, which recorded the highest number of documents. This pattern indicates an expansion and growing development of research in the field of educational transformational leadership. The citation per publication (CPP) values were notably high in 2016, 2018, and 2019, but declined sharply in 2025 and 2026, likely due to citation lag, reflecting the delayed accumulation of citations for recent publications. The yearly h-index remained relatively

stable within the range of 8–10 between 2016 and 2021, suggesting a consistent level of scientific impact during this period.

Table 7. Average Citations per Document and per Year

Years	Documents	Total Citations	Citations per Paper	h-index (per year)
2026	24	10	0.42	2
2025	99	175	1.76	7
2024	71	329	4.63	10
2023	39	331	8.48	8
2022	24	274	11.41	8
2021	25	366	14.64	10
2020	25	433	17.32	10
2019	22	451	20.5	10
2018	16	697	43.56	10
2017	12	286	23.83	8
2016	15	1156	77.06	10

Table 8. Thematic Evolution

Years	Dominant Themes
2026	Digital transformation, well-being, innovation, sustainability leadership
2025	AI in education, digital leadership, teacher well-being, organizational behavior
2024	Sustainability, digital transformation, leadership development, organizational performance
2023	Innovation, digital education, commitment, crisis leadership
2022	COVID-19 leadership, digital transformation, and professional development
2021	Online learning, collaboration, gender leadership, organizational culture
2020	School leadership, innovation performance, policy, organizational outcomes
2019	Organizational commitment, job satisfaction, ICT integration, sustainability
2018	Teacher self-efficacy, leadership models, cultural leadership
2017	Instructional leadership, professional development, school management
2016	Transformational leadership impact, student outcomes, school effectiveness

From a longitudinal perspective, research themes in educational transformational leadership have undergone a significant shift, moving from a focus on school effectiveness and student outcomes (2016–2018) toward a more complex, integrative, and systems-oriented paradigm that incorporates digital transformation, artificial intelligence, human well-being, and global educational sustainability (2023–2026). This transition indicates that educational leadership is no longer viewed as a single variable within school organizations, but rather as a strategic component within a dynamic and multidimensional educational ecosystem.

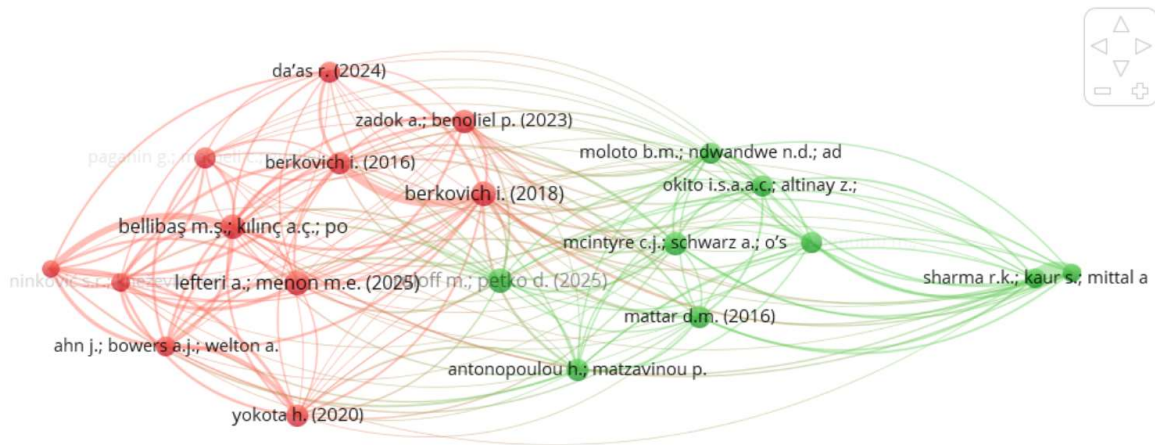


Figure 5. Bibliographic Coupling

The bibliographic coupling visualization reveals that the research structure in this field is divided into two main clusters: a traditional cluster focused on organizational effectiveness and school leadership, and a contemporary cluster oriented toward innovation, digital transformation, and global contexts. The limited integration between these clusters indicates a significant conceptual gap, particularly in bridging classical leadership theories with technological advancements and the evolving dynamics of modern education.

### 3.2. Discussion

The analysis reveals that publications on educational transformational leadership have increased significantly over the past decade, reaching a peak in 2025. This trend indicates growing academic interest in **the role of leadership in** responding to **the** increasing complexity **of** educational **systems**. The rise in publications after 2020 can be attributed to global disruptions, particularly **the COVID-19 pandemic**, which heightened **the need for** adaptive, responsive **leadership** models **in** times of uncertainty [21]. The decline in citations in recent years does not reflect a decrease in research quality, but rather the effect of citation lag in newly published works. According to the diffusion of innovation theory, an increase in publication output often occurs when a field enters an expansion phase [22], [23]. Educational leadership research appears to be in this phase, as evidenced by the growing diversification of topics and research approaches.

The geographical distribution of publications shows the dominance of developed countries, particularly the United States; however, the significant contribution of Indonesia and other Asian countries reflects an expansion of the research landscape. This phenomenon suggests that transformational leadership is no longer viewed as a homogeneous and universal concept, but rather as a construct shaped by social, cultural, and local educational policy contexts. Indonesia's prominence as the second most productive country may reflect a combination of factors, including growing academic interest, strong policy relevance of educational leadership reform, national publication incentive programs, and the increasing Scopus indexing of Indonesian journals [24], [25]. Contributions from developing countries play a crucial role in enriching theoretical perspectives, especially in addressing **challenges**

such as limited resources, unequal access to education, and the need for locally grounded innovation.

The analysis of author productivity indicates that most authors publish only a few papers, reflecting a fragmented field in which no dominant group of scholars consistently leads theoretical and practical advances. This condition creates opportunities for emerging researchers to make significant contributions, while the lack of continuity among authors may hinder the development of deeply integrated knowledge.

Citation analysis identifies Christopher Day as a highly influential scholar whose work serves as a key reference in understanding the relationship between transformational leadership and various educational variables. It is important to note that citation frequency reflects scholarly influence rather than methodological quality per se, and may be affected by publication age, journal visibility, and language. The concentration of publications in specific journals, such as the International Journal of Educational Management, suggests the presence of established academic hubs. This implies that researchers should consider diversifying their target journals to enhance the visibility and impact of their work.

The h-index data indicate a shift from an early phase characterized by high-impact but limited publications toward a growth phase marked by a rapid increase in publication volume, with impact continuing to develop over time. Furthermore, the findings reveal that relationships between research clusters remain partial and have not yet formed a cohesive knowledge framework, particularly between conventional transformational leadership and technology-driven innovation domains. This limited integration highlights the need for a new conceptual model that incorporates not only classical leadership dimensions but also digitalization, artificial intelligence, and the complexity of 21st-century educational ecosystems.

The mapping results provide important theoretical contributions by demonstrating the need to reconceptualize transformational leadership within the context of modern education. The integration of classical theories with digital technologies has become essential to ensure the continued relevance of leadership frameworks in practice. Future research should focus on developing integrative models, employing longitudinal approaches, and exploring local and cultural contexts. A multidisciplinary perspective is essential to capture the complexity of leadership phenomena in education fully. In contrast, the development of new conceptual frameworks that integrate transformational leadership with digital and innovation dimensions represents a strategic step toward strengthening both theoretical foundations and practical relevance.

This study underscores the urgent need to integrate classical transformational leadership theory, rooted in Bass and Burns' frameworks, with emerging dimensions of digital transformation, artificial intelligence, sustainability, and teacher well-being. The two identified clusters (traditional and contemporary) represent a theoretical divide that future model-building efforts must bridge. In terms of practical implications, educational leaders and school principals should invest in digital competencies and build adaptive leadership capacities that address the demands of 21st-century learning environments. Policymakers should design professional development programs that connect foundational leadership values with innovation and technology integration. Future researchers are encouraged to

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conduct empirical cross-cultural studies, particularly in developing-country contexts such as Indonesia, to validate and extend the theoretical models emerging from this field.

This study has several limitations that should be considered when interpreting the findings. First, the analysis was limited to publications indexed in Scopus, potentially excluding relevant studies available in other databases, such as Web of Science, ERIC, Google Scholar, or regional academic repositories. Second, citation counts may be influenced by publication age, journal visibility, language bias, and database coverage, meaning that high citation frequency reflects scholarly influence rather than methodological quality per se. Third, the 2026 data are partial as data retrieval was conducted in early 2026, which may underrepresent publications and citations for that year. Fourth, the clustering and mapping results depend on VOSviewer parameters and thresholds, and should be interpreted accordingly.

#### 4. CONCLUSION

This study reveals that the field of educational transformational leadership has experienced significant growth between 2016 and 2026, with a notable acceleration after 2020 and a peak in 2025. This trend reflects increasing academic interest in the role of leadership in addressing the complexity of modern educational systems. The geographical distribution remains dominated by developed countries, particularly the United States; however, substantial contributions from Indonesia and other Asian countries indicate a shift toward broader global participation. The fragmented structure of author productivity and the relatively even distribution of institutional affiliations suggest that the field is developing collaboratively, while citation analysis highlights key scholars who serve as the intellectual foundation of the literature.

The conceptual and intellectual analyses demonstrate a clear paradigm shift from traditional emphases on school effectiveness toward more complex themes, including digital transformation, artificial intelligence, teacher well-being, and sustainability. Bibliographic coupling analysis identifies two dominant clusters—a traditional cluster and a contemporary cluster—with limited integration between them, indicating a significant conceptual gap in bridging classical leadership theories with emerging technological developments. Future research should prioritize: (1) comparative bibliometric studies using both Scopus and Web of Science, (2) systematic literature reviews on digital transformational leadership, (3) empirical studies on transformational leadership, AI, and teacher well-being, (4) cross-cultural studies in developing-country contexts, and (5) development of integrative theoretical models. It should also be noted that the 2026 data are partial and may not fully represent publication and citation patterns for that year. Overall, this study makes a significant contribution by providing the first decade-long, multidimensional bibliometric mapping of educational transformational leadership research from 2016 to 2026, establishing a robust empirical foundation for future theoretical development and evidence-based educational policy.

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