

Principals' Transformational Leadership and Its Role in Shaping Teachers' Differentiated Instruction and Student Achievement: A Systematic Literature Review

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Abstract: This study aimed to examine how principals' transformational leadership is positioned in the recent literature as a factor shaping teachers' differentiated instruction and student achievement. Using a Systematic Literature Review (SLR) supported by bibliometric mapping, the study analyzed 27 Scopus-indexed publications published between 2021 and 2026. The dataset was retrieved through a structured search strategy using the keywords transformational leadership, principal or school leader, and differentiated learning or adaptive teaching, and was analyzed descriptively through Scopus indicators and VOSviewer keyword co-occurrence mapping. The findings show that differentiated instruction occupies the most central position in the literature, functioning as the conceptual link between leadership, teaching practice, learner diversity, and academic outcomes. The bibliometric results also reveal that the field remains concentrated in a limited number of authors, institutions, and countries, with Australia and the United States dominating publication output. Substantively, the reviewed studies indicate that principals' transformational leadership influences student achievement mainly through indirect pathways, especially by improving teacher motivation, professional capacity, collaboration, and readiness to implement differentiated instruction. However, the relationship is not linear, as its effectiveness depends on contextual conditions such as teacher beliefs, assessment literacy, class composition, institutional support, and national policy environments. This study concludes that transformational leadership should be understood as a catalytic mechanism that strengthens teachers' ability to deliver differentiated instruction in heterogeneous classrooms. It is therefore suggested that future research adopt more integrative and comparative designs, while policymakers and school leaders should prioritize professional development, formative assessment support, and collaborative cultures that enable differentiated instruction to be implemented more consistently and effectively.

Keywords: differentiated instruction; school principals; student achievement; transformational leadership.

The principal remains a pivotal actor in translating policy into classroom practice. Recent evidence suggests that school leadership affects learning less through direct contact with students than through its influence on school culture, teacher motivation, instructional coherence and professional development. In Azerbaijan, merit-based appointment and the professionalisation of school principals were associated with improved university admission rates and stronger academic performance, while transformational and distributed leadership were positively related to school-leaving examination outcomes and educational progression (Mikayilova, Alasgarova and Peken, 2025). A recent systematic review likewise concluded that leadership is fundamental to institutional development and highlighted transformational leadership as one

of the most effective styles for improving educational experiences and outcomes (Huangal-Scheineder *et al.*, 2024). Recent work on principal qualifications and instructional leadership further indicates that leadership effects depend not only on formal position but also on preparation, competence and contextual enactment (Gümüş *et al.*, 2024; Cansoy, Gümüş and Walker, 2025).

However, stronger leadership discourse does not automatically resolve the instructional problem inside classrooms. Differentiated instruction has emerged as a compelling response to learner diversity because it allows teachers to adapt content, process, product and learning environment in line with students' readiness, interests and profiles. Empirical studies continue to show its promise. In physics education, differentiated instruction improved the academic achievement of low- and mid-achieving students, even though gains in self-efficacy were less evident (Salar and Turgut, 2021). In elementary mathematics, differentiation across content, process and product significantly enhanced students' mathematical performance (Rijal, Aswarliansyah and Waluyo, 2025). In higher education, differentiated instructional strategies in a smart education environment also improved course achievement more effectively than traditional instruction (Gan *et al.*, 2023). These findings reinforce the argument that differentiation is not merely an inclusive ideal but an achievement-relevant instructional strategy.

The problem is that differentiated instruction is still inconsistently understood and unevenly enacted. Research from Vietnam shows that subject-head teachers widely recognise the value of differentiation, but implementation is skewed toward content and learning-environment adjustments, with weaker attention to process and product differentiation; barriers include institutional constraints, heterogeneous learner profiles and limited pedagogical preparedness (Huong, 2025). In an Australian secondary school, teachers and school leaders identified limited time, inadequate resources, student behaviour issues and uncertainty about differentiated instruction as major obstacles to implementation (Gibbs, 2023). Pozas and Letzel-Alt (2026) likewise found that students perceived their teachers' differentiated practices as relatively infrequent and that perceived differentiation was not positively associated with socio-emotional outcomes in their sample. Thus, although differentiated instruction is repeatedly advocated, schools still struggle to institutionalise it as a robust teaching framework.

This implementation problem points directly to leadership. Transformational leadership is theoretically well positioned to shape differentiated teaching because its core dimensions, intellectual stimulation, inspirational motivation and individualized consideration, match the conditions teachers need in order to adapt instruction for diverse learners. Evidence from China showed a strong positive relationship between transformational leadership and teacher job performance, with intellectual stimulation, inspirational motivation and individualized consideration emerging as significant predictors (Zhao, Saidin and Jaafar, 2025). In multilingual settings, targeted teacher preparation models that equip teachers to provide differentiated support have also been linked with reduced achievement gaps, indicating that teacher capacity-building can matter substantially for learner outcomes (Ghimire and Nutta, 2026). Studies on teaching innovation further suggest that when teachers receive suitable support, adaptive strategies can improve teaching effectiveness, engagement and achievement (Islam and Rahman, 2025).

Yet the literature remains fragmented. One cluster of studies examines transformational leadership and teacher performance (Adeoye, Baharun and Munawwaroh, 2025; Zhao, Saidin and Jaafar, 2025). A

second investigates differentiated instruction and student outcomes (Salar and Turgut, 2021; Gan *et al.*, 2023; Rijal, Aswarliansyah and Waluyo, 2025; Pozas and Letzel-Alt, 2026). A third focuses on school leadership and student achievement more broadly (Huangal-Scheineder *et al.*, 2024; Alaro, Thuo and Lodesso, 2025; Mikayilova, Alasgarova and Peken, 2025). What remains less visible is the integrative question of how principals' transformational leadership specifically shapes teachers' differentiated instruction and how this, in turn, is associated with student achievement.

The state of the art therefore suggests both progress and limitation. Recent studies show that leadership preparation and professionalisation can improve school conditions and student outcomes (Gümüş *et al.*, 2024; Mikayilova, Alasgarova and Peken, 2025). Differentiated instruction has been shown to improve achievement in varied subject areas, while customised diagnostic and pedagogical supports can help teachers respond to students' misconceptions and readiness levels more effectively (Easa and Blonder, 2022; Wudthayagorn and Nipaspong, 2025). Emerging work also indicates that differentiated professional development and support systems are necessary because teachers vary in readiness, motivation and digital competence (Morrison *et al.*, 2025; Pahrudin *et al.*, 2025). Even studies outside the immediate school-leadership tradition continue to recommend differentiated strategies to improve conceptual understanding and academic performance (Boateng and Kumi-Manu, 2026).

This gap is important for both theory and practice. Theoretically, a systematic review can clarify whether transformational leadership should be understood only as a broad school-improvement orientation or also as a leadership mechanism that enables pedagogical responsiveness in heterogeneous classrooms. Practically, schools need more than general claims that leadership matters or that differentiation works. They need evidence on what kinds of leadership behaviours, organisational supports and teacher-development processes are associated with effective differentiation and stronger learning outcomes. This is especially urgent in systems where schools are expected to deliver excellence, inclusion and measurable performance at the same time (Wudthayagorn and Nipaspong, 2025; Boateng and Kumi-Manu, 2026).

Against this background, this study undertakes a systematic literature review of recent scholarship on principals' transformational leadership, teachers' differentiated instruction and student achievement. By mapping patterns, convergences and inconsistencies across recent studies, the review seeks to explain how principals' transformational leadership may influence teachers' willingness and capacity to differentiate instruction, and how such instructional shaping may be associated with student achievement. In doing so, the study contributes an integrated evidence base for researchers, school leaders and policymakers seeking to improve equitable and high-quality learning in increasingly diverse schools.

METHOD

This study employed a Systematic Literature Review (SLR) supported by bibliometric mapping to synthesize recent scholarship on principals' transformational leadership, teachers' differentiated instruction, and student achievement. The review drew exclusively on the Scopus database because of its broad coverage of peer-reviewed education research and its compatibility with citation-based mapping in VOSviewer. The search was conducted on 20 April 2026 using the Title-Abstract-Keywords field with three concept clusters: "*transformational leadership*", "*principal OR school leader OR headteacher*", and

“differentiated learning OR adaptive teaching”. These terms were combined to capture studies positioned at the intersection of school leadership and differentiated pedagogy. The initial search yielded 27 documents published between 2021 and 2026, which formed the final dataset for bibliometric review. The analytical procedure involved four stages. First, the metadata were exported from Scopus in CSV format, including authors, titles, years, source titles, citation counts, and DOIs. Second, the records were screened for topical relevance to ensure alignment with the review focus on leadership, instructional differentiation, and school outcomes. Third, descriptive bibliometric indicators were compiled to identify publication characteristics and annual trends. Fourth, the cleaned dataset was imported into VOSviewer to map co-occurrence patterns and reveal thematic relationships among dominant concepts in the literature. This approach is consistent with recent education reviews that combine structured literature synthesis with bibliometric visualization to clarify research patterns and conceptual development (Gibbs, 2023; Huangal-Scheineder *et al.*, 2024; Huang, 2025; Mikayilova, Alasgarova and Peken, 2025; Pozas and Letzel-Alt, 2026). Using Scopus and VOSviewer together allowed the study not only to document the volume and direction of publications, but also to identify how current scholarship links leadership practices with differentiated teaching and student-related outcomes. This design is therefore suitable for establishing research concentration, uncovering emerging emphases, and locating gaps that justify further review and discussion.

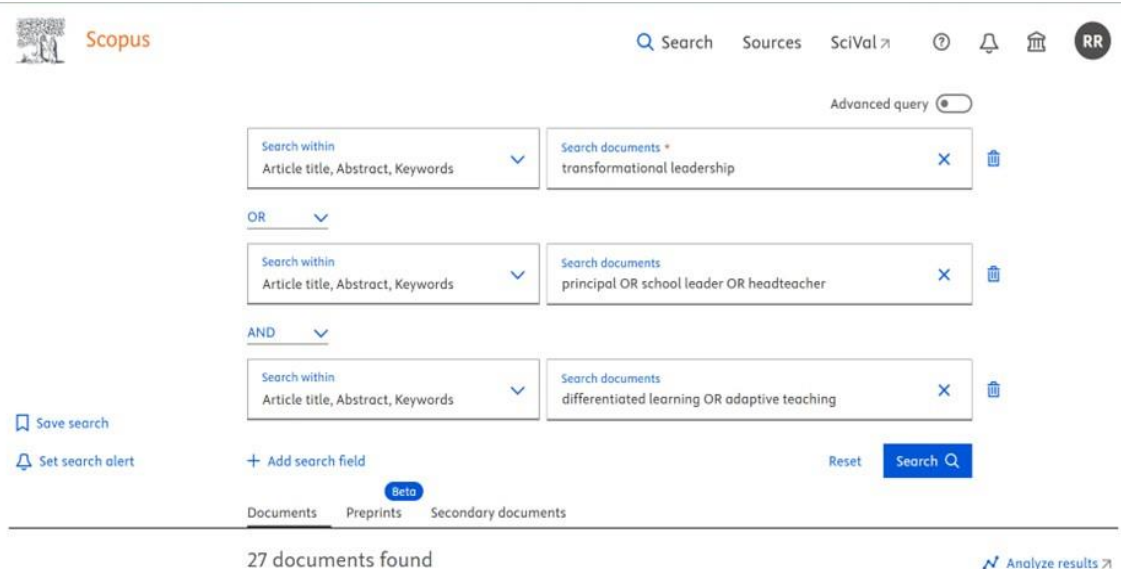


Figure 1. Scopus Search Strategy and Document Selection Process
Source: Scopus dataset, processed by the authors (2026)

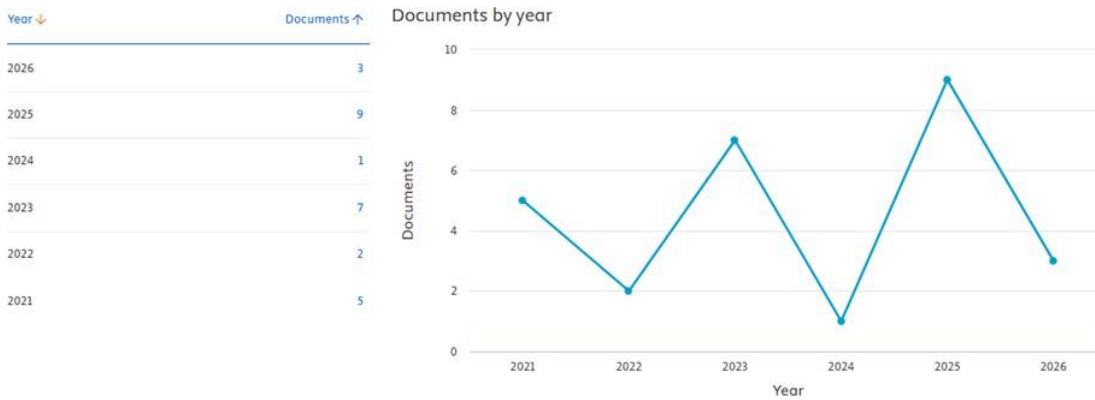


Figure 2. Annual Publication Trends (2021–2026)
Source: Scopus dataset, processed by the authors (2026)

The final dataset consisted of 27 publications that met the scope of this review and were retained for bibliometric analysis. Each document was examined to identify its basic bibliographic attributes and its contribution to the emerging body of knowledge on leadership, differentiated instruction, and student-related outcomes. To provide a clearer overview of the reviewed corpus, the descriptive characteristics of these publications are presented in Table 1.

Table 1. Descriptive Characteristics of Publications Included in the Bibliometric Review

No	Authors	Title	Year	Source Title	Cited by	DOI
1	Gibbs, Kathryn	Voices in practice: challenges to implementing differentiated instruction by teachers and school leaders in an Australian mainstream secondary school	2023	Australian Educational Researcher	48	10.1007/s13384-022-00551-2
2	Shareefa, Mariyam	Using differentiated instruction in multigrade classes: a case of a small school	2021	Asia Pacific Journal of Education	29	10.1080/02188791.2020.1749559
3	Neufeld, Philip; Mohammed, Sarojani S.; Vidden, Chad	Better Understanding People’s Experiences With Technologically Mediated Learning, What Works, For Whom, And Within What Situations: Large-Scale Analytics Of Learning Experiences And Outcomes To Inform Practice	2025	Journal of Information Technology Education: Innovations in Practice	0	10.28945/5580
4	Hammad, Waheed; Hilal, Yara Yasser; Bellibaş, Mehmet Şükrü	Exploring the link between principal instructional leadership and differentiated instruction in an understudied context: the role of teacher collaboration and self-efficacy	2024	International Journal of Educational Management	13	10.1108/IJEM-09-2023-0441
5	Weber, Christine L.; Boswell, Cecelia; Behrens, Wendy A.	Providing professional learning opportunities using case studies	2021	Best Practices in Professional Learning and Teacher Preparation: Methods and Strategies for Gifted Professional Development: Vol. 1	1	10.4324/9781003233251-8

6	Marko, Betty M.; DeFazio, Jean; Gaetano, Lewis F.	CHRIST THE SERVANT TEACHING CORPS (CTSTC): A Transformative Partnership for Teacher Candidates and K-5 Students	2021	Rethinking School-University Partnerships: A New Way Forward	0	10.1108/978- 1-64802-528- 020251008
7	Gibbs, Kathryn; Kumbukage, Wasula	From theory to practice: insights on differentiated instruction by Australian early career secondary school teachers	2026	Asia-Pacific Journal of Teacher Education	0	10.1080/1359 866X.2025.25 98819
8	Fajardo, Romeo A.; Lozano, Jessel A.; Sabunod, Gwyneth Marie M.; Sarangani, Athea Faith M.; Yamba, Rezel B.; Galan, Gilbert N.	Navigating diversity: a phenomenological exploration of pedagogical practices of non- SPED seasoned teachers in inclusive classroom	2026	International Journal of Inclusive Education	0	10.1080/1360 3116.2026.26 32777
9	Gibbs, Kathy	Differentiation in practice: an exploratory investigation in an Australian mainstream secondary school	2023	Teaching Education	6	10.1080/1047 6210.2022.21 61508
10	Morrison, Anna; Smart, Julie; Wiles, Daphne; Bennett, Luke	Examining Differences Among K-12 Teachers' Motivation for Online Teaching	2025	Online Learning Journal	0	10.24059/olj.v 29i4.5218
11	Lüddeckens, Johanna	Bridging policy and practice: a review of school leadership in differentiation from a system perspective	2025	Cogent Education	0	10.1080/2331 186X.2025.25 64494
12	Huber, Stephan Gerhard; Schneider, Nadine	The Network of Erfurt Schools (NES): Professionalization of School Actors and School Development Through School, School Supervisory Authority, and University Cooperation in Germany	2023	International Perspectives on School-University Partnerships: Research, Policy and Practice	0	10.1007/978- 981-99-0807- 3_12
13	Gibbs, Kathryn; McKay, Loraine	Differentiated teaching practices of Australian mainstream classroom teachers: A systematic review and thematic analysis	2021	International Journal of Educational Research	41	10.1016/j.ijer. 2021.101799
14	Thompson, Pauline; Stokes, Helen; Kirley, Michael	The Middle Leadership Looking Glass: Comparing the Self-Perception of Leadership Practices with the Perspectives of Teachers Spanning Career Stages	2025	Leadership and Policy in Schools	0	10.1080/1570 0763.2025.25 63368
15	Gibbs, Kathryn	School leaders' approaches to supporting differentiated instruction	2025	Educational Research	1	10.1080/0013 1881.2025.25 30613
16	Basu, Rituparna; Sondhi, Neena	Nykaa: retailing decisions in an emerging market	2023	Emerald Emerging Markets Case Studies	2	10.1108/EEM CS-12-2022- 0449
17	Del-Valle-Rojas, Ivette Anne; Callupe-Ricaldi, Angela Luz; Ruiz- Ruiz, Marcos Fernando	Structural Characterization of Factors for the Digital Training of Public Primary School Teachers: The Peruvian Case	2023	Proceedings of the LACCEI international Multi-conference for Engineering, Education and Technology	2	
18	Pahrudin, Agus; Irwandani; Aridan, Muhammad; Barata, Muhammad Farhan	Teacher Readiness for Deep Learning in Islamic Education: A Rasch Model Analysis of Challenges and Opportunities	2025	Journal of Teaching and Learning	0	10.22329/jtl.v 19i4.9573

19	Huong, Tran Thanh	Differentiated Instruction in School Practices: Managerial Implications for Teacher Professional Development	2025	Asten Journal of Teacher Education	0	10.56278/asten.vi.3343
	Nguyet, Nguyen Thi Minh; Huong, Vu Thi Mai; Vinh,	Cluster-Informed Policy Design for School Administrators in Vietnam: A Data-Driven	2025	Educational Process: International Journal	0	10.22521/edu.pij.2025.16.291
	Bui Quang; Long, Pham Ngoc	Perspective on Digital Readiness		International Journal		
21	Hubbard, Jane; Livy, Sharyn	Self-study of a mathematics learning consultant: Supporting teachers to plan lessons for implementing differentiation in the classroom	2021	Mathematics Teacher Education and Development	10	
22	Lang, Josephine; Anderson, Melody; Mandouit, Luke; Wilson, Eve; Favero, Erin; Marlow, Emily	Value of Mentor Professional Learning Through a Digital Micro-Credential in a School-University Partnership	2022	School-University Partnerships-Innovation in Initial Teacher Education	3	10.1007/978-981-19-5057-5_8
23	Borasi, Raffaella; Deangelis, Karen; Mason, Sharon; Han, Yu Jung; Vaughan-Brogan, Patricia; Miller, David E.	K-12 Leaders' Perspectives on AI's Risks and Benefits - Findings from a Follow-Up Survey Study	2025	Proceedings - Frontiers in Education Conference, FIE	0	10.1109/FIE63693.2025.11328612
	Gordon, John; Nourie, Kristi; Steward, Helen	The role of teacher agency in realising EdTech's potential to reduce teacher workload and improve teacher retention	2026	British Educational Research Journal	0	10.1002/berj.70117
25	Kemethofer, David	The everyday life of school principals: Empirical findings on job profiles and leadership approaches; [Der Alltag von Schulleitungen: Empirische Befunde zu Tätigkeitsprofilen und Führungsansätzen]	2022	Gruppe. Interaktion. Organisation. Zeitschrift für Angewandte Organisationspsychologie	4	10.1007/s11612-022-00647-4
26	Gibbs, Kathy	Australian teachers and school leaders' use of differentiated learning experiences as responsive teaching for students with ADHD	2023	Emotional and Behavioural Difficulties	11	10.1080/13632752.2023.2194131
27	Sobhani, Naghmeh	Peace-Based Education in Early Post-War Bosnia and Herzegovina: Insights from the Education for Peace Program (2000–2013)	2023	Peace Pedagogies in Bosnia and Herzegovina: Theory and Practice in Formal Education	0	10.1007/978-3-031-26246-3_11

Source: Scopus dataset, exported on 20 April 2026 and processed by the authors (2026).

RESULTS AND DISCUSSION

RESULT

Keyword Co-occurrence Network Analysis

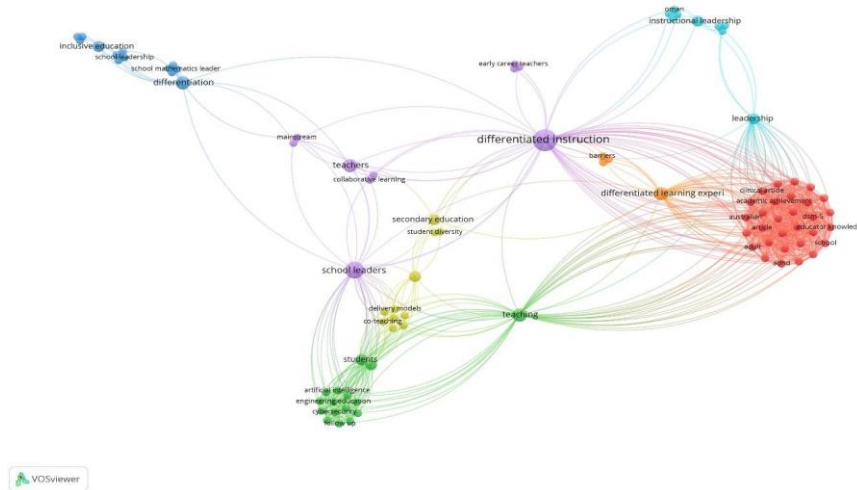


Figure 3. Keyword Co-occurrence Network Based on VOSviewer Analysis
Source: VOSviewer analysis based on the Scopus dataset, processed by the authors (2026)

Figure 3 presents the keyword co-occurrence network generated through VOSviewer, revealing the conceptual structure of the literature on transformational leadership, differentiated instruction, and student-related learning outcomes. The map shows that “differentiated instruction” occupies the most central position in the network, indicating that it serves as the primary connecting concept across the dataset. Its centrality suggests that the reviewed literature is strongly anchored in discussions of instructional adaptation in response to learner diversity.

Several clusters can be identified in the network. One cluster connects differentiated instruction with teachers, school leaders, and collaborative learning, reflecting the pedagogical and organizational dimensions of differentiated practice. Another prominent cluster links leadership and instructional leadership, suggesting that studies in this field frequently position school leadership as an enabling factor for instructional improvement. A further cluster includes terms related to academic achievement, school, and other education-related descriptors, indicating that differentiated instruction is often examined in relation to student performance outcomes.

The network also shows that differentiated instruction is associated with terms such as students, secondary education, inclusive education, and student diversity, which reinforces the idea that this body of literature is largely concerned with addressing heterogeneous classrooms. Although the phrase transformational leadership does not appear as the most dominant visible node in this network, the presence of leadership-related terms confirms that leadership remains an important analytical lens in studies connecting school management and instructional responsiveness.

Overall, Figure 3 demonstrates that the literature is not fragmented into isolated themes, but instead organized around an interconnected knowledge base in which differentiated instruction functions as the conceptual bridge between school leadership, teaching practice, and student outcomes.

Distribution of Documents by Author

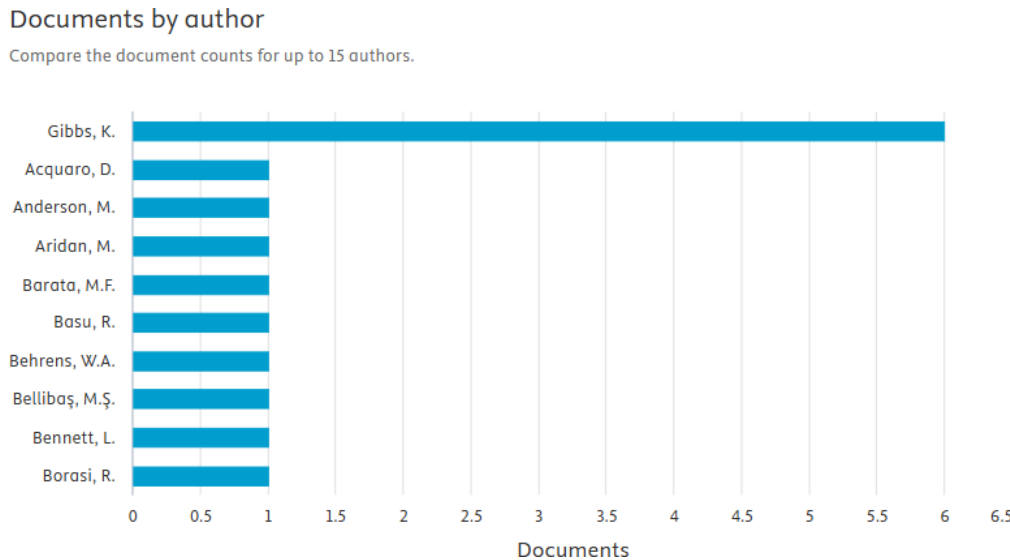


Figure 4. Distribution of Documents by Author in the Scopus Dataset
Source: Scopus dataset, processed by the authors (2026)

Figure 4 shows the distribution of documents by author in the Scopus dataset. The most striking feature is the clear dominance of Gibbs, K., who appears with six documents, substantially exceeding all other authors represented in the dataset. This indicates that Gibbs is the most visible contributor within the selected body of literature and may be regarded as a leading scholarly voice in discussions related to differentiated instruction and school practice.

In contrast, the remaining authors, including Acquaro, D., Anderson, M., Aridan, M., Barata, M.F., Basu, R., Behrens, W.A., Bellibaş, M.Ş., Bennett, L., and Borasi, R., each contribute one document. This pattern suggests that the field is characterized by a relatively dispersed authorship structure, with only a few researchers contributing repeatedly while many others appear as occasional contributors.

This uneven distribution may indicate two things. First, the literature is still developing and has not yet been shaped by a large number of consistently prolific authors. Second, the field appears interdisciplinary, attracting scholars from different educational subfields such as school leadership, inclusive education, teacher development, and instructional design. As a result, the dataset reflects a broad but somewhat scattered authorship profile rather than a highly concentrated scholarly tradition.

From a bibliometric perspective, this pattern implies that although there is an emerging core author, the knowledge base remains open and evolving, with substantial room for future contributions and synthesis.

Distribution of Documents by Institutional Affiliation

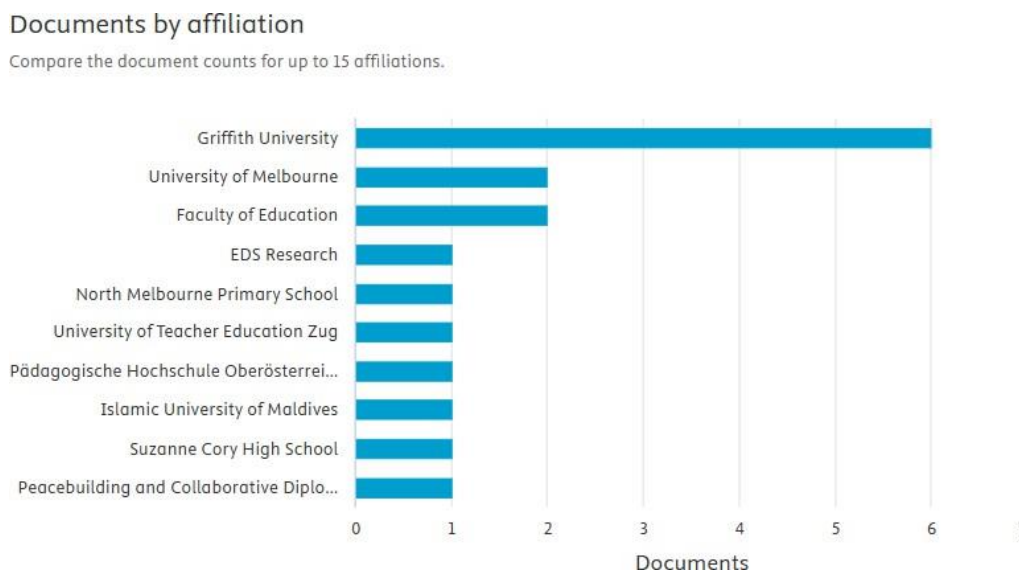


Figure 5. Distribution of Documents by Institutional Affiliation
Source: Scopus dataset, processed by the authors (2026)

Figure 5 displays the distribution of publications by institutional affiliation. The data show that Griffith University is the most productive institution in the dataset, with six documents, making it the dominant institutional contributor. This prominence suggests that Griffith University has played a particularly active role in generating scholarship related to differentiated instruction, school leadership, and inclusive pedagogical practices.

The second tier includes University of Melbourne and Faculty of Education, each with two documents, followed by several affiliations represented by one document each, such as EDS Research, North Melbourne Primary School, University of Teacher Education Zug, Pädagogische Hochschule Oberösterreich, Islamic University of Maldives, Suzanne Cory High School, and Peacebuilding and Collaborative Diplo.... The diversity of these affiliations reflects that the literature has emerged from both university-based research institutions and school-based or specialized educational organizations.

This distribution reveals a field that is institutionally diverse but led by a relatively small number of active research centers. The dominance of a few institutions may indicate that research capacity, funding, or thematic specialization is concentrated in certain contexts, especially those with stronger traditions in inclusive education and pedagogical innovation.

In addition, the presence of teacher education institutions and school-based organizations suggests that the topic is not purely theoretical. Rather, it is closely tied to professional practice, educational leadership, and classroom implementation. This strengthens the relevance of the current review, since the literature is grounded not only in academic debate but also in institutional experiences of teaching and school improvement.

Distribution of Documents by Country

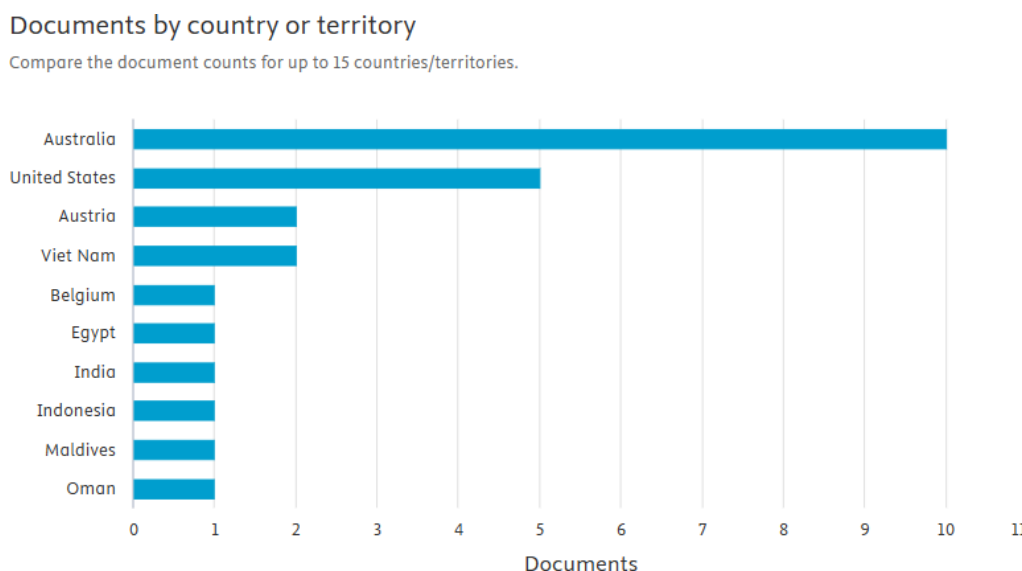


Figure 6. Distribution of Documents by Country or Territory
Source: Scopus dataset, processed by the authors (2026)

Figure 6 illustrates the geographical distribution of the documents included in the Scopus dataset. The chart shows that Australia is the most productive country, contributing ten documents, followed by the United States with five documents. The next group consists of Austria and Viet Nam, each contributing two documents, while Belgium, Egypt, India, Indonesia, Maldives, and Oman each contribute one document.

The clear dominance of Australia indicates that the topic of differentiated instruction and related school leadership issues has received particularly strong scholarly attention in the Australian context. This may be linked to the country's emphasis on inclusive education, differentiated pedagogy, and policy frameworks addressing student diversity in mainstream schools. The United States also shows a substantial contribution, reflecting its established research traditions in instructional leadership, teacher development, and educational equity.

At the same time, the presence of countries from Asia, Europe, and the Middle East suggests that the field has begun to expand internationally. Although contributions from these countries remain modest in number, their inclusion points to a growing global interest in how schools respond to learner heterogeneity and how leadership can support adaptive teaching practices.

However, the uneven distribution also indicates that the international knowledge base remains geographically imbalanced. Much of the literature is still concentrated in Anglophone and highly resourced educational settings. Consequently, there is still a need for more research from underrepresented regions, particularly from developing and non-Western educational systems, to enrich the comparative and contextual understanding of differentiated instruction and leadership practices.

Synthesis of Findings

Taken together, the findings reveal a bibliometric landscape structured around a strong conceptual, authorship, institutional, and geographical pattern. Conceptually, the keyword network places differentiated instruction at the center of the literature, connecting themes of teaching, leadership, student diversity, and academic achievement. This confirms that differentiated instruction is the dominant lens through which the interaction between classroom practice and school leadership is understood.

From the perspective of scholarly production, the dataset shows a partially concentrated structure. A small number of authors and institutions, especially Gibbs, K. and Griffith University, contribute disproportionately to the field, while many others appear only once. This suggests that the literature is growing but still relies on a limited number of recurring contributors.

Geographically, the findings indicate that the field is led primarily by Australia and, to a lesser extent, the United States, with smaller contributions from several other countries. This distribution suggests that the international conversation is expanding, yet still unevenly developed across regions.

These findings imply that the literature on principals' leadership, differentiated instruction, and student outcomes is conceptually interconnected but still concentrated in selected authors, institutions, and countries. This confirms the importance of the present systematic literature review, as it helps synthesize a field that is increasingly relevant yet not fully consolidated across global educational contexts.

DISCUSSION

Keyword Co-occurrence Network Analysis

The centrality of differentiated instruction in the keyword co-occurrence network suggests that the recent literature has increasingly framed school improvement through the lens of instructional responsiveness rather than through leadership discourse alone. This finding is significant because it implies that leadership is being interpreted less as an abstract organizational phenomenon and more as a condition that enables teachers to adapt instruction to diverse learner needs. The prominence of terms such as *teachers*, *school leaders*, *students*, *inclusive education*, and *academic achievement* around the node of differentiated instruction indicates that the field has moved toward a more integrated understanding of how classroom practice mediates broader school-level influences. This interpretation is consistent with studies showing that differentiated instruction is associated with improved academic performance, engagement, and learning behavior when implemented through flexible grouping, varied content, and adaptive processes (Magableh and Abdullah, 2022; Rijal, Aswarliansyah and Waluyo, 2025; Subandiyah *et al.*, 2025).

At the same time, the network pattern also shows that leadership remains conceptually relevant, even where transformational leadership does not appear as the largest node. This suggests that the literature may be discussing leadership through adjacent concepts such as *instructional leadership*, *teacher support*, *collaboration*, and *professional development* rather than through transformational terminology alone. This interpretation aligns with evidence that principals influence student outcomes indirectly through school climate, teacher beliefs, instructional coherence, and organizational support (Chen, Ning and Bos, 2022; Mikayilova, Alasgarova and Peken, 2025). It also supports the view that differentiated instruction should not be treated merely as a classroom technique, but as part of a school-level ecology requiring leadership, assessment capacity, and teacher readiness (Bleukx *et al.*, 2024; Huong, 2025; Rufaidah, Andayani and

Wardani, 2025).

Distribution of Documents by Author in the Scopus Dataset

The concentration of publications around Gibbs indicates that the field has, at least within this dataset, been shaped strongly by a relatively small number of recurring contributors. This pattern may be interpreted in two ways. On the one hand, it demonstrates the importance of sustained scholarly attention in conceptualizing and problematizing differentiated instruction, particularly in relation to teachers and school leaders. Gibbs' work consistently highlights that differentiated instruction is valued in principle but remains difficult in practice because of time limitations, resource scarcity, teacher uncertainty, and uneven school-level support. On the other hand, the limited recurrence of most other authors suggests that the field remains dispersed and not yet fully consolidated around a stable set of dominant scholars or theoretical models.

This dispersed authorship structure is also reflected in the substantive diversity of recent studies. Some authors focus on leadership and teacher performance, as in Zhao, Saidin and Jaafar (2025), who found a strong positive relationship between transformational leadership and teacher job performance. Others focus on differentiated instruction as a pedagogical intervention, as in Subandiyah *et al.* (2025), Magableh and Abdullah (2022), and Anggoro *et al.* (2024), all of whom report positive effects of instructional differentiation on student engagement or achievement. Still others investigate mediating mechanisms such as teacher beliefs, reflective learning, motivation, formative assessment, and feedback literacy (Xiao and Sun, 2021; Bleukx *et al.*, 2024; Gong *et al.*, 2025; Mat Yusoff, Hao and Basal, 2025). Together, these studies indicate that the literature is evolving through multiple entry points rather than through one unified school of thought.

Distribution of Documents by Institutional Affiliation

The dominance of Griffith University and the visibility of a small number of institutions suggest that differentiated instruction and leadership-related scholarship are being generated more intensively in institutions with strong traditions in inclusive education, teacher education, and classroom practice research. This pattern supports the idea that the field is institutionally anchored in settings where pedagogical diversity is treated as a practical and systemic challenge rather than only a conceptual one. The presence of teacher education institutions and school-linked organizations among the affiliations is particularly important because it indicates that the literature is grounded in the realities of implementation, not merely in policy rhetoric.

This institutional pattern also helps explain why much of the literature emphasizes teacher preparation, professional learning, diagnostic assessment, and formative support. For example, multiliteracy-based differentiated instruction in Indonesian vocational schools relied on diagnostic assessments, personalized feedback, multimodal content, and continuous teacher support (Rufaidah, Andayani and Wardani, 2025). Similarly, studies on pedagogical content knowledge and formative assessment show that teachers' capacity to design adaptive and meaningful learning experiences depends on an integration of content knowledge, pedagogy, and ongoing reflection (Mat Yusoff, Hao and Basal,

2025). These findings imply that principals' transformational leadership is likely to shape differentiated instruction most effectively when it is exercised through institutional support structures, professional development, and assessment-informed pedagogical guidance rather than through symbolic motivation alone.

Distribution of Documents by Country or Territory

The geographical concentration of the dataset in Australia and the United States indicates that the international discussion on differentiated instruction and school leadership is still led by Anglophone and highly resourced educational systems. This matters because the meanings of leadership, inclusion, teacher agency, and instructional adaptation are shaped by policy environments, institutional capacity, and national curriculum traditions. The Australian prominence may be explained by a strong policy emphasis on inclusive schooling and differentiated pedagogies, while the United States has a long-standing research tradition in leadership, teacher development, and classroom heterogeneity.

However, the inclusion of studies from Indonesia, Jordan, Austria, Malaysia, China, Ethiopia, Azerbaijan, and Vietnam shows that the field is becoming more globally distributed and that differentiated instruction is increasingly being examined in relation to local curriculum reforms, language diversity, cultural expectations, and resource constraints. Importantly, these non-Western and cross-national studies complicate any universal claim that transformational leadership or differentiated instruction works in the same way across contexts. Chen, Ning and Bos (2022) showed that instructional and integrated leadership were more strongly associated with student achievement in Germany, whereas transformational leadership was somewhat more favorable in China. Mikayilova, Alasgarova and Peken (2025) found that transformational and distributed leadership were positively associated with student outcomes in Azerbaijan, but also emphasized the mediating role of culturally embedded relational values. Alaro, Thuo and Lodesso (2025) went further by showing paradoxical effects, where some expected transformational dimensions were weakly or even negatively linked to school performance under constrained conditions. Together, these findings indicate that leadership effects are contingent, culturally mediated, and institutionally bounded.

Synthesis of Discussion

Taken together, the discussion confirms that the bibliometric patterns identified in the findings are not merely descriptive but theoretically meaningful. The dominance of differentiated instruction in the keyword network reflects a shift in educational scholarship toward understanding school effectiveness through pedagogical responsiveness. The concentration of authors and institutions shows that this field is still emerging and is being shaped by a relatively small but influential group of scholars and research centers. The country distribution further demonstrates that while the field is expanding globally, the knowledge base remains uneven and context dependent.

More importantly, the reviewed studies suggest that principals' transformational leadership is most plausibly linked to student achievement through its influence on teachers' professional capacity, motivation, beliefs, and adaptive instructional practices rather than through direct effects on students. This interpretation is supported by evidence that transformational leadership improves teacher job performance (Zhao, Saidin and Jaafar, 2025), that differentiated instruction can improve achievement and engagement

(Magableh and Abdullah, 2022; Rijal, Aswarliansyah and Waluyo, 2025; Subandiyah *et al.*, 2025), and that implementation succeeds only when schools provide sufficient support, assessment literacy, and pedagogical flexibility (Bleukx *et al.*, 2024; Mat Yusoff, Hao and Basal, 2025; Rufaidah, Andayani and Wardani, 2025). Accordingly, the contribution of this review lies in clarifying that leadership, differentiation, and achievement should be understood not as isolated variables but as parts of a connected instructional ecosystem.

CONCLUSION AND SUGGESTION

CONCLUSION

This systematic literature review demonstrates that principals' transformational leadership holds an important but predominantly indirect role in shaping student achievement. The evidence synthesized in this study suggests that leadership exerts its greatest influence not through direct intervention in students' learning, but through the conditions it creates for teachers to perform effectively, adapt instruction, and respond to learner diversity in more purposeful ways. Across the reviewed studies, differentiated instruction emerged as the strongest conceptual and practical bridge linking school leadership with classroom practice and student outcomes. The bibliometric findings further confirmed this pattern by positioning differentiated instruction at the center of the keyword network and showing that the field is organized around themes of teaching, leadership, diversity, and achievement. The review also indicates that the relationship among transformational leadership, differentiated instruction, and student achievement is not linear or universal. Rather, it is mediated by teacher beliefs, professional readiness, institutional support, assessment literacy, and contextual factors such as curriculum demands, class composition, and national education systems. In contexts where teachers receive professional encouragement, pedagogical guidance, and opportunities for collaboration, differentiated instruction is more likely to be implemented meaningfully and to contribute to improved academic performance and engagement. Conversely, when schools lack time, resources, assessment capacity, or shared instructional vision, differentiation tends to remain partial, inconsistent, or symbolic. Another key conclusion is that the global literature on this topic remains conceptually interconnected but geographically and institutionally uneven. The field is still concentrated in a limited number of countries, authors, and institutions, which means that current knowledge is informative but not yet fully representative of diverse educational realities. Overall, this study concludes that principals' transformational leadership should be understood as a catalytic leadership mechanism that strengthens teachers' capacity to differentiate instruction, and through that pathway, contributes to more equitable and potentially stronger student learning outcomes in heterogeneous classrooms.

SUGGESTION

Based on the results of this review, several suggestions can be proposed for research, policy, and educational practice. First, future studies should move beyond examining leadership, differentiated instruction, and student achievement as separate themes. There is a clear need for more integrative empirical research that explicitly tests how transformational leadership shapes differentiated instructional practices

and how these practices mediate student outcomes across different educational contexts. Comparative and mixed-method studies would be particularly valuable in clarifying why leadership appears effective in some settings but less so in others. Second, school policymakers and educational authorities should recognize that differentiated instruction cannot be sustained by teacher effort alone. If schools expect teachers to respond to learner diversity, then principals must be supported to act not only as administrators but also as pedagogical leaders who foster teacher learning, collaboration, reflective practice, and formative assessment competence. Leadership preparation programs should therefore include stronger components on inclusive pedagogy, instructional adaptation, data-informed decision making, and teacher professional development.

Third, for school practice, principals should build a culture in which differentiated instruction becomes a shared professional responsibility rather than an individual classroom strategy. This includes providing time for co-planning, encouraging diagnostic and formative assessment, supporting flexible teaching approaches, and ensuring that teachers feel both trusted and guided in responding to student variability. Teacher development initiatives should also be differentiated, since the literature shows that teachers themselves vary in readiness, confidence, and instructional expertise. Finally, more scholarship is needed from underrepresented and non-Western contexts to balance the current knowledge base. Expanding the geographical range of research will make future conclusions more robust and context-sensitive. In this sense, the present review should be seen not as the final statement on the topic, but as a foundation for more focused and internationally inclusive inquiry into the interaction between leadership, pedagogy, and student achievement.

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