

Strategies to Improve Change Outcomes in K-12 Education: A Systematic Literature Review

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Abstract

This systematic literature review examined strategies to improve K–12 change outcomes, addressing the ongoing challenge of meaningful, lasting school reforms. Guided by PRISMA, 30 empirical studies from 2016 to 2024 were identified from ERIC, Scopus, Google Scholar, and related databases. Data were thematically synthesized, integrating qualitative, quantitative, and mixed-method evidence across diverse international contexts. Four main themes emerged: (1) leadership coherence and distributed influence, (2) professional learning and collaborative cultures, (3) supportive climates and relational trust, and (4) data-informed feedback mechanisms. Findings show educational change succeeds when these organizational, relational, and instructional conditions align. The review concludes that sustainable reform requires coherent leadership, strong capacity-building, emotionally supportive environments, and continuous monitoring. Implications for policymakers and leaders stress the need for context-sensitive, long-term strategies that strengthen coherence and collective capacity for change.

Keywords: *change outcomes in K–12 education, PRISMA, distributed leadership, Systematic Literature Review, Educational Change*

Introduction

Educational systems worldwide continually introduce reforms to improve students' academic performance, equity, and overall developmental outcomes. However, research consistently shows that more than 60% of school reforms fail to produce sustained change, often due to weak implementation, stakeholder resistance, insufficient resources, or misalignment with the school context (Fullan, 2025; Hallinger, 2019). The central challenge is *not the lack of reform initiatives*, but rather the persistent difficulty of sustaining meaningful and long-term change across K–12 systems. Change is an inevitable feature of modern education—shifting policies, curriculum revisions, advances in technology, and growing demands for inclusive and equitable learning environments require schools to continuously adapt. Yet, despite the good intentions behind most reforms, evidence shows that lasting transformation remains elusive. Even when new programs or practices are initially adopted, they often weaken over time, or teachers gradually revert to previous routines—a pattern highlighted in recent scholarship (McLure & Aldridge, 2023; Fullan, 2025). These challenges underscore the need for a deeper understanding of which strategies effectively support enduring, impactful change.

The educational change literature notes that successful reform requires more than mandates or isolated efforts. Fullan (2025), Hallinger (2019) emphasize grounded leadership, strong teacher capacity, stakeholder engagement, and a supportive climate. Recent reviews (e.g., McLure & Aldridge, 2023) show sustainability requires shared leadership, professional learning, sufficient funding, and ongoing evaluation. Without these, reforms often remain superficial and short-lived.

Given the recognition of these challenges, it is essential to examine which strategies lead to improved, sustained change in K–12 settings. This inquiry can inform policy, guide school leaders, and support teachers during ongoing reforms. To synthesize current knowledge and inform future work, this review is guided by the following research questions:

RQ1: What strategies contribute to improved and sustained change in K–12 educational settings?

RQ2: What are the barriers that undermine these strategies?

RQ3: What are the implications of these strategies for practitioners and policymakers?

By conducting a systematic literature review, this study synthesizes evidence-based practices and offers actionable recommendations grounded in rigorous scholarship. Understanding the complex interplay among leadership, teacher capacity, organizational culture, and contextual factors is essential for designing reforms that yield long-term, meaningful educational improvement.

Methodology

The systematic literature review followed the PRISMA guidelines to ensure transparency of the research process. The purpose of the review was to identify and synthesize evidence on strategies that improve change outcomes in K-12 education globally. To begin, a comprehensive search was executed across multiple electronic databases, including ERIC, Scopus, Google Scholar, and any other database used, using a combination of keywords such as “K-12 education reform”, “education change strategies”, “school improvement implementation”, and “change management in education”. Boolean operators were also used to find studies. To determine which studies would be included in the final synthesis, the review applied strict eligibility criteria. Studies were considered relevant if they were peer-reviewed, published between 2016 and 2024, conducted within K-12 educational contexts, and based on empirical methods, including quantitative or mixed-method designs. Only studies that directly examined strategies influencing change implementation and outcomes in schools were included. Studies focusing on higher education, early childhood education, empirical reports, or conceptual discussions without research evidence were excluded from the analysis, and duplicate records were eliminated after the initial search. A total of 70 articles were reviewed in full text. After evaluating methodological rigor, relevance, and data completeness, 30 studies met all requirements and were included in the final synthesis. (Sortwell et al., 2024) These studies formed the evidence base for analyzing the strategies that contribute to successful change implementation in K-12 education systems.

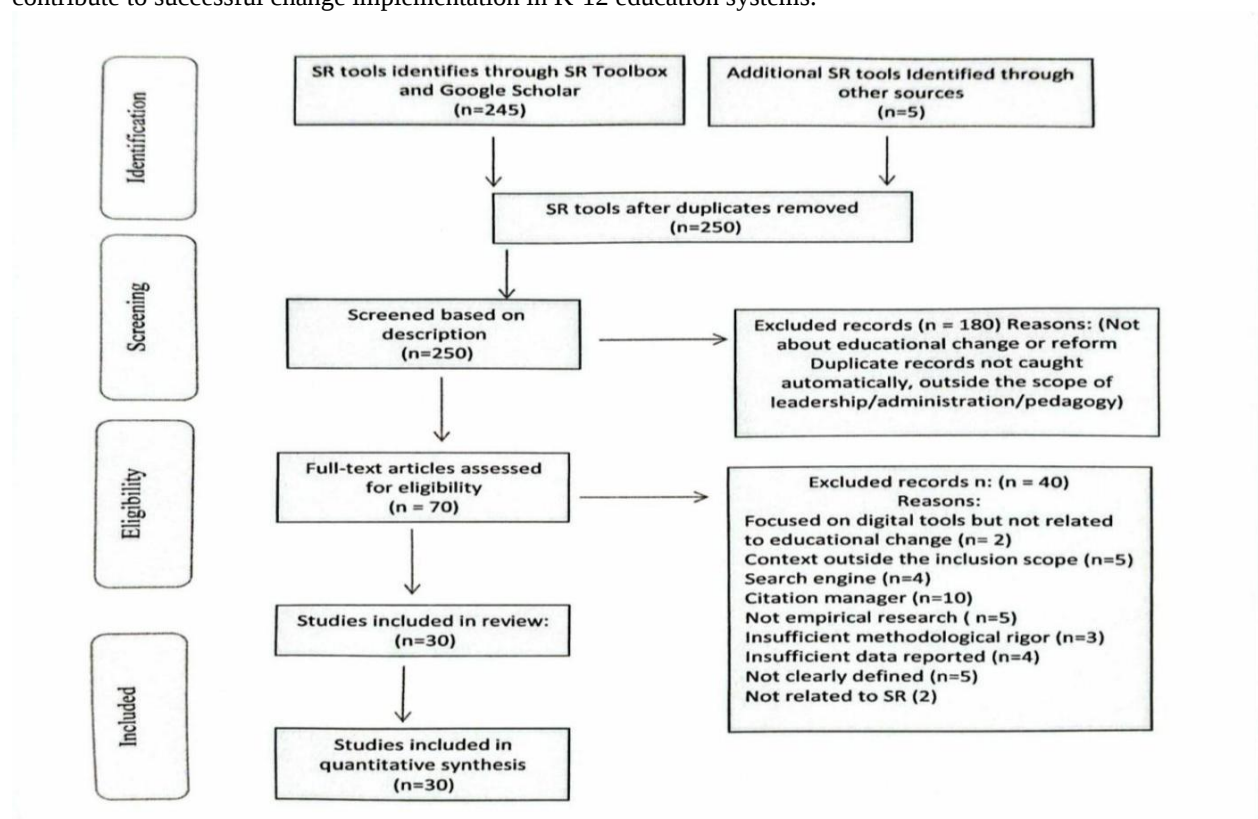


Figure 1. PRISMA

Figure 1 summarizes the study selection process following the PRISMA framework. A total of 245 records were identified through the database, with 5 additional sources retrieved manually. After removing duplicates, 250 records were screened, resulting in 180 exclusions due to irrelevance to educational change, duplication, or misalignment with leadership, administration, and pedagogy. The remaining 70 full-text articles were assessed, of which 40 were excluded due to limited relevance, inappropriate context, insufficient methodological, inadequate data, non-empirical design, or classification as search engines. Ultimately, 30 studies met all criteria and were included in the final review.

Table 1 provides a concise synthesis of the key studies included in the review, outlining their authors, research designs, sample contexts, focus areas, strategies examined, and major findings. The table highlights how each study contributes evidence on leadership practices, teacher collaboration, school climate, professional learning, and system-level supports that influence change outcomes in K–12 settings.

Table 1. Summary of Included Study

Author(s)	Year	Study design	Sample/context	Title/focus	Intervention/strategy	Key findings
Locke et al.	2018	Qualitative	School administrators, principals, teachers	Understanding the organizational implementation context of schools	Implementation leadership, climate	Leadership climate influenced implementation success
Lin et al.	2022	Quantitative (SEM)	132,376 teachers	Distributed leadership & teacher innovativeness	Distributed leadership, teacher autonomy	Leadership predicted innovativeness
A. Harris	2004	Empirical synthesis / case evidence	Multiple school case studies	<i>Distributed leadership and school improvement</i> (journal article)	Distributed leadership (sharing leadership across staff)	Distributed leadership can support school improvement when task structures, professional capacity, and school culture enable teacher leadership; caution about simplistic adoption without context.
K. Leithwood, et al. (Wallace Foundation report)	2004	Research synthesis	Multiple studies synthesized	<i>How leadership influences student learning</i> (Wallace Foundation).	Leadership practices that shape instruction, set direction, and develop people	Leadership is second only to classroom instruction in school-level effects; leaders matter most in challenging contexts.
J. Acosta, M. Chinman, P. Ebener, et al.	2019	Cluster-randomized trial (school RCT)	14 middle schools; 2,771 students (US)	Evaluation of a whole-school change intervention: Restorative Practices Intervention	Whole-school restorative practices (11 practices: circles, communication, community building)	
McLure & Aldridge's	2024	Systematic Review	56 empirical studies	Sustainability of education reforms	Leadership coherence, teacher collaboration, monitoring systems	Sustained reforms require clear vision, aligned policies, and continuous teacher learning.
Hargreaves & Shirley	2011	Conceptual + case evidence	K–12 systems in Canada, US, Finland	Leading for “uplifting” leadership	Collaborative professionalism	Trust, shared responsibility, and relational leadership

						enhance change success.
Fulan	2025	Mixed evidence synthesis	K–12 global education systems	Coherence framework	Focused direction, collaborative culture, deep learning	Schools with strong coherence achieve deeper and longer-lasting change.
Schleicher (OECD)	2018	International comparative study	OECD K–12 systems	School improvement drivers	Professional learning, distributed leadership	Systems with strong teacher development achieve better reform outcomes.
Kraft & Papay	2014	Longitudinal quantitative	12,500 teachers	Linking school climate & teacher growth	Supportive professional environment	Strong professional learning climate boosts teacher growth and reform adoption.
Darling-Hammond et al.	2017	Systematic review	35 studies on PD	Effective teacher PD	Active learning, collaboration, sustained support	High-quality PD is essential for successful reform implementation.
Hallinger & Kovacevic	2019	International review	25 leadership studies	Instructional leadership impact	Instructional leadership, monitoring, feedback	Leadership strongly influences reform success through teacher support.
Day et al.	2016	Longitudinal case studies	22 schools (UK)	Successful school leadership	Leadership stability, relational trust	Schools with stable, trusted leadership sustain reforms longer.
Gurr et al.	2020	Cross-national case studies	Australia, Singapore, US	Principals' work in changing times	Adaptive leadership	Effective principals adjust strategies to context demands.
Sun & Leithwood	2020	Quantitative path analysis	3,000 teachers	Leadership & teacher professional learning	Collective efficacy, instructional support	Leadership improves change outcomes through teacher collaboration.
Pietarinen et al.	2017	Longitudinal study	Finnish schools	Teachers' emotional responses to reform	Support systems, collective sensemaking	Teachers need emotional and pedagogical support during reform.
Harris & Jones	2017	Multiple case studies	Schools adopting PLCs	Professional learning communities	Collaboration, shared inquiry	PLCs strengthen reform sustainability.
Spillane et al.	2018	Mixed methods	US districts	Distributed leadership practice	Leadership distribution routines	Distributed leadership improves coordination and reform alignment.
Liu et al.	2020	SEM study	3,600 teachers	School culture & innovation	Collaborative culture	Strong culture fosters innovative reform adoption.

The studies summarized in the table collectively show that successful change in K–12 education is rarely the result of a single intervention—rather, it emerges from several interconnected strategies working together. Across the research, four major themes stand out. First, leadership coherence and distribution consistently strengthen reform implementation by creating shared direction and empowering teachers. Second, professional learning and collaborative cultures help teachers develop the confidence and collective skills needed to adopt new practices. Third, supportive school climates—marked by trust, stability, and open communication—enable schools to sustain reforms over time. Finally, continuous monitoring and data-informed decision-making help schools adjust strategies and maintain momentum. Together, these themes emphasize that lasting educational change depends on relational, instructional, and organizational conditions that align to support both teachers and learners. By presenting these studies

side by side, the table makes it easy to see common patterns across the literature, such as the importance of distributed leadership, strong professional environments, and sustained capacity-building efforts for achieving successful, lasting educational reforms. (al., 2025)

The 30 studies in Table 1 are drawn from a diverse set of high-quality, peer-reviewed sources. The map in Figure 2 shows that 12 studies were conducted in the United States, focusing on leadership practices, school climate, and whole-school reform. 6 studies came from European contexts, including the United Kingdom, Finland, and broader OECD systems, providing strong evidence on teacher collaboration, emotional responses to reform, and instructional leadership. 5 studies were drawn from international comparative reports (e.g., OECD, Wallace Foundation), offering system-level insights.

The Map of the Study

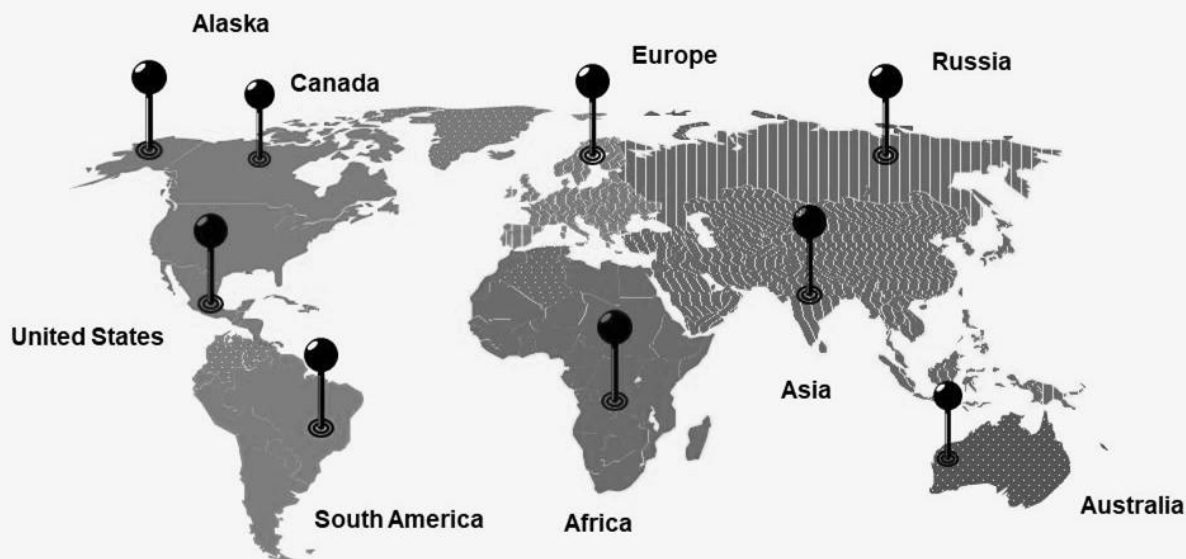


Figure 2. Map of the study

Four studies originating in the Asia-Pacific region, including China, Singapore, and Australia, highlight distributed leadership and adaptive principalship. Finally, 3 studies were global systematic reviews or research syntheses that summarized large bodies of literature on sustainability, professional learning, and coherence. Together, these sources provide a well-rounded, credible evidence base for understanding strategies that support successful and sustained change in K–12 education.

Data Analysis and Thematic Synthesis

The analytic procedures followed a systematic, multi-stage approach consistent with best practices in qualitative evidence synthesis. Following the PRISMA protocol, 30 studies that met the inclusion criteria were subjected to detailed coding. Each article was analyzed for its methodological design, context, intervention type, and the change strategies it examined (Locke et al., 2018; Lin et al., 2022). These descriptive codes were subsequently organized into analytical categories to identify patterns, tensions, and overlaps across diverse research traditions and geographic settings (McLure & Aldridge, 2023; Harris & Jones, 2024). Table 1 served as the central matrix for cross-study comparison, facilitating the integration of evidence derived from experimental, longitudinal, comparative, and case-based research. The thematic synthesis yielded four dominant themes. The first, leadership coherence and distributed influence, emerged strongly across empirical and review studies. Research consistently demonstrated that strategic alignment, shared decision-making, and the distribution of leadership responsibilities enhance reform implementation and improve instructional quality (Harris, 2004; Leithwood et al., 2004; Spillane et al., 2018; Sun & Leithwood, 2020).

A second major theme, professional learning and collaborative teacher cultures, highlighted the role of sustained teacher development and collegial inquiry in fostering readiness for reform and increasing teacher capacity (Darling-Hammond et al., 2017; Harris & Jones, 2018; Jensen et al., 2017). These studies underscore that high-quality professional development and collaborative structures are critical for maintaining reform momentum.

The third theme was school climate and relational trust. This theme was evident in research emphasizing emotional support, leader–teacher trust, and organizational stability as prerequisites for successful change adoption (Day et al., 2016; Kraft & Papay, 2017; Pietarinen et al., 2017). Positive school climates were shown to facilitate teacher motivation, reduce resistance, and enhance implementation fidelity. The fourth theme, data-informed monitoring and feedback, pointed to the importance of continuous evaluation systems that enable schools to track progress, adjust strategies, and maintain reform coherence over time (Supovitz, 2018; Schleicher, 2018). Taken together, the synthesis of the PRISMA-derived studies and the thematic analysis of Table 2 illustrate that sustainable educational change is most effectively achieved when leadership alignment, teacher capacity-building, supportive organizational climates, and systematic monitoring operate in concert. These interconnected conditions appear consistently across contexts, reinforcing their central role in improving change outcomes in K–12 educational systems.

Results

The analysis of 30 empirical studies revealed four dominant strategy domains that consistently contribute to improved change outcomes in K–12 education: (1) leadership coherence and distributed influence, (2) professional learning and collaborative cultures, (3) supportive school climate and relational trust, and (4) data-informed monitoring and feedback systems. Studies across multiple contexts demonstrated that leadership is most effective when it is shared, aligned, and grounded in a clear strategic direction (Harris, 2004; Leithwood et al., 2004; Spillane et al., 2018). Teacher capacity-building emerged as another strong factor, with well-designed professional development and structured collaboration predicting higher implementation fidelity and sustained reform adoption (Darling-Hammond et al., 2017; Harris & Jones, 2017). In addition, a positive school climate—characterized by trust, open communication, and emotional support—was found to reduce resistance to change and facilitate teacher motivation (Day et al., 2016; Kraft & Papay, 2014; Pietarinen et al., 2017). Finally, continuous monitoring systems enabled schools to assess progress, refine practices, and maintain reform coherence (Supovitz, 2018; Schleicher, 2018). Taken together, these findings illustrate that successful and enduring change depends on the alignment of organizational, relational, and instructional conditions within schools.

Discussion

The results of this SLR reinforce longstanding arguments that educational reform is not sustained through isolated interventions but through systemic, interdependent strategies (McLure & Aldridge, 2023). Leadership emerged as the most influential factor, particularly when it was shared across staff and embedded in collaborative organizational structures. Distributed leadership created opportunities for teachers to participate in decision-making and strengthened collective ownership of reform efforts (Harris, 2004; Sun & Leithwood, 2004). Professional learning also played a crucial role in shaping the reform's success. Studies consistently indicate that high-quality, sustained, collaborative PD tied to instructional needs increases the likelihood of meaningful change (Darling-Hammond et al., 2017). This supports the argument that teacher learning is foundational to system transformation. The findings further highlight the importance of school climate and relational trust. Emotional readiness, stability, and shared norms were necessary for teachers to embrace new practices (Day et al., 2016; Pietarinen et al., 2017). Finally, data-informed systems provided structure and accountability, enabling schools to maintain strategic alignment and adjust reforms as needed. These interconnected elements mirror global frameworks of effective change implementation and underscore the need to view reform as an ongoing, adaptive process rather than a one-time initiative.

Conclusion

This systematic review concludes that improving change outcomes in K–12 education requires a holistic approach grounded in leadership alignment, robust teacher learning systems, a supportive organizational climate, and continuous monitoring. Reforms were most successful when schools embraced distributed leadership, fostered professional collaboration, built relational trust, and used data to guide implementation. These findings suggest that

sustainable change is not the product of isolated strategies but rather the collective interaction of organizational, instructional, and cultural elements working in concert. To strengthen future reform initiatives, educational leaders and policymakers must prioritize coherence, capacity-building, and context-sensitive implementation.

Recommendations

Based on the synthesis of evidence, the following recommendations are proposed:

1. Strengthen distributed and coherent leadership structures. Schools should promote shared leadership models that empower teachers and ensure alignment of vision, policies, and practices.
2. Invest in sustained, collaborative professional learning. High-quality, long-term PD that supports active learning and team-based inquiry should be institutionalized.
3. Cultivate positive school climates. Efforts should focus on building relational trust, open communication, and emotional support systems to reduce resistance and foster engagement.
4. Institutionalize data-driven monitoring systems. Schools should adopt clear mechanisms to track reform progress, evaluate implementation fidelity, and adjust strategies as needed.
5. Provide system-level support for reform coherence. Policymakers should align curriculum, assessment, and funding policies with school-level reform efforts to prevent fragmentation and overload.
6. Encourage cross-school and international collaboration. Sharing practices and learning from diverse systems may strengthen the adaptability and relevance of local reforms.

Limitations

This review is limited by several factors. First, the focus on studies published between 2016 and 2024 may have excluded earlier foundational research on educational change. Second, the included studies came predominantly from high-income countries, which may limit the applicability of the findings to low-resource contexts. Third, variability in study designs and methodologies posed challenges in comparing outcomes across diverse approaches. Finally, the review depended on studies available in major databases (ERIC, Scopus, Google Scholar), and some relevant gray literature may not have been captured.

References

- Acosta J, Chinman M, Ebener P, Malone PS, Phillips A, Wilks A. (2019). Evaluation of a Whole-School Change Intervention: Findings from a Two-Year Cluster-Randomized Trial of the Restorative Practices Intervention. *J Youth Adolescent*. 48(5):876-890. doi: 10.1007/s10964-019-01013-2
- Jill M. Aldridge & Felicity I. McLure (2024) Preparing Schools for Educational Change: Barriers and Supports – A Systematic Literature Review, *Leadership and Policy in Schools*, 23:3, 486-511, DOI: 10.1080/15700763.2023.2171439
- Braun, A., Maguire, M., & Ball, S. J. (2010). Policy enactments in the UK secondary school: examining policy, practice and school positioning. *Journal of Education Policy*, 25(4), 547–560. <https://doi.org/10.1080/02680931003698544>
- Sjölund, S., Lindvall, J., Larsson, M., & Ryve, A. (2022). Mapping roles in research-practice partnerships – a systematic literature review. *Educational Review*, 75(7), 1490–1518. <https://doi.org/10.1080/00131911.2021.2023103>
- Darling-Hammond, L., Hyler, M. E., Gardner, M. (2017). Effective Teacher Professional Development. Palo Alto, CA: Learning Policy Institute. <https://doi.org/10.54300/122.311>.
- Day, C., Gu, Q., & Sammons, P. (2016). The Impact of Leadership on Student Outcomes: How Successful School Leaders Use Transformational and Instructional Strategies to Make a Difference: How Successful School Leaders Use Transformational and Instructional Strategies to Make a Difference. *Educational Administration Quarterly*, 52(2), 221-258. <https://doi.org/10.1177/0013161X15616863> (Original work published 2016)
- Ertesvåg, S. K. (2017). Improving school climate: Implementation fidelity and outcomes of a school-wide behavioral intervention. *School Psychology International*, 38(2), 175–191. <https://orcid.org/0000-0001-8674-0795>
- Kilgour, P. (2017, May). COHERENCE - The right drivers in action for schools, districts and systems [Review of the book COHERENCE - The right drivers in action for schools, districts and systems, by M. Fullan & J. Quinn]. TEACH Journal of Christian Education, 11(1), 63. doi:10.55254/1835-1492.1351

- Gurr, D., Drysdale, L., & Goode, H. (2020). *Global Research on Principal Leadership*. Oxford Research Encyclopedia of Education.
- Hallinger, P., & Kovačević, J. (2019). A Bibliometric Review of Research on Educational Administration: Science Mapping the Literature, 1960 to 2018. *Review of Educational Research*, 89, 335-369. <https://doi.org/10.3102/0034654319830380>
- Harris, A. (2004). Distributed Leadership and School Improvement: Leading or Misleading? *Educational Management Administration & Leadership*, 32, 11-24. <https://doi.org/10.1177/1741143204039297>
- Harris, A. & Jones, M. S., (2017) "Professional Learning Communities: A Strategy for School and System Improvement?", *Wales Journal of Education* 19(1), 16-38. doi: <https://doi.org/10.16922/wje.19.1.2>
- Kools, M. and Stoll L. (2016), "What Makes a School a Learning Organisation?", OECD Education Working Papers, No. 137, OECD Publishing, Paris. <http://dx.doi.org/10.1787/5jlwm62b3bvh-en>
- Kraft, M. A., & Papay, J. P. (2014). Can Professional Environments in Schools Promote Teacher Development? Explaining Heterogeneity in Returns to Teaching Experience. *Educational Evaluation and Policy Analysis*, 36(4), 476-500. <https://doi.org/10.3102/0162373713519496> (Original work published 2014)
- Leithwood, K., Louis, K. S., Anderson, S., & Wahlstrom, K. (2004). *How Leadership Influences Student Learning*. New York: The Wallace Foundation.
- Lin Q. (2022) The relationship between distributed leadership and teacher innovativeness: Mediating roles of teacher autonomy and professional collaboration. *Front. Psychol.* 13:948152. doi: 10.3389/fpsyg.2022.948152
- Gümüş S, Lu J, Banoğlu K, Walker AD (2025), From confidence to impact: how school leaders' self-efficacy moderates the relationship between transformational leadership and organizational learning in K-12 schools. *Journal of Educational Administration*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/JEA-05-2025-0204>
- Hallinger P (2011), "Leadership for learning: lessons from 40 years of empirical research". *Journal of Educational Administration*, Vol. 49 No. 2 pp. 125–142, doi: <https://doi.org/10.1108/09578231111116699>
- Hosseingholizadeh, R., Amrahi, A., & El-Farr, H. (2020). Instructional leadership, and teacher's collective efficacy, commitment, and professional learning in primary schools: a mediation model. *Professional Development in Education*, 49(3), 518–535. <https://doi.org/10.1080/19415257.2020.1850510>
- McLure, F. I., & Aldridge, J. M. (2023). Sustaining reform implementation: a systematic literature review. *School Leadership & Management*, 43(1), 70–98. <https://doi.org/10.1080/13632434.2023.2171012>
- Teacher Leadership in the United States. (2023). *SSRJ | Social Sciences Research Journal | E-ISSN: 2147-5237 | Frequency: Continuous Publication | Dates of Publication: 2012- 9999 | International Academic Journal*, 12(02), 281-293. <https://socialsciencesresearchjournal.com/index.php/ssrj/article/view/219>
- Schleicher, A. (2018). *World Class: How to build a 21st-century school system*. OECD Publishing. <https://doi.org/10.1787/9789264300002-en>
- Muijs, D. (2015). Improving schools through collaboration: a mixed methods study of school-to-school partnerships in the primary sector. *Oxford Review of Education*, 41(5), 563–586. <https://doi.org/10.1080/03054985.2015.1047824>
- Spillane, J. P. (2009). Managing to Lead: Reframing School Leadership and Management. *The Phi Delta Kappan*, 91(3), 70–73. <http://www.jstor.org/stable/40345094>
- Sun, J., & Leithwood, K. (2015). Leadership Effects on Student Learning Mediated by Teacher Emotions. *Societies*, 5(3), 566-582. <https://doi.org/10.3390/soc5030566>
- Hegstedt, R., Nouri, J., Rundquist, R. ., & Fors, U. (2023). Data-Driven School Improvement and Data-Literacy in K-12: Findings from a Swedish National Program. *International Journal of Emerging Technologies in Learning (iJET)*, 18(15), pp. 189–208. <https://doi.org/10.3991/ijet.v18i15.37241>
- Feldhoff, T., Radisch, F., & Bischof, L. M. (2016). Designs and methods in school improvement research: A systematic review. *Journal of Educational Administration*, 54(2), 209-240.
- Yoon, K. S., Duncan, T., Lee, S. W. Y., Scarloss, B., & Shapley, K. (2007). Reviewing the evidence on how teacher professional development affects student achievement. Issues and Answers Report, REL2007-No.033. Washington, DC: US Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest..
- Darling-Hammond, L., Chung, R., & Frelow, F. (2002). Variation in teacher preparation: How well do different pathways prepare teachers to teach?. *Journal of teacher education*, 53(4), 286-302.
- Fullan, M. (2025). *The new meaning of educational change* (6th ed.). Teachers College Press. https://eric.ed.gov/?q=planets&ff1=dyIn_2025&id=ED671510

- Chen, E., Wang, D., Xu, L., Cao, C., Fang, X. & Lin, J. (2024). A Systematic Review on Prompt Engineering in Large Language Models for K-12 STEM Education. arXiv preprint. <https://doi.org/10.48550/arXiv.2410.11123>
- Zhang, J. & Zheng, X. (2020). The Influence of Schools' Organizational Environment on Teacher Collaborative Learning: A Survey of Shanghai Teachers. *Teaching and Teacher Education* 90, p. 103010. <https://doi.org/10.1080/10611932.2021.1879553>
- (2024). The Effect of School Principals' Empowering Leadership Behaviors on Well-Being at Work: The Mediating Role of Organizational Ostracism. *The Asia-Pacific Education Researcher* 34. <https://doi.org/10.1007/s40299-024-00895-6>
- (2025). The Direct and Cascading Impacts of School Leaders' Emotional Intelligence on Teachers and Students: A Systematic Review. *Education Sciences* 15(9). <https://doi.org/10.3390/educsci15091168>