

Integrating Transformational and Instructional Leadership to Support Deep Learning in Elementary Schools: A Systematic Review

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Abstract

The shift toward 21st-century education demands meaningful, competency-based learning, making the implementation of deep learning in elementary schools increasingly important despite ongoing challenges. This study aims to synthesize empirical evidence on the role of principals' transformational leadership in supporting deep learning. The method used is a Systematic Literature Review (SLR) with a qualitative-descriptive approach and thematic synthesis based on the PRISMA framework. Data were collected from Scopus and ERIC through a staged selection process, resulting in 13 empirical studies for analysis. The findings show that the four dimensions of transformational leadership function complementarily in building teacher trust, strengthening collective commitment, encouraging pedagogical innovation, and supporting contextual professional development. Instructional leadership also serves as a key bridge through academic supervision and the strengthening of professional learning communities. In conclusion, the successful implementation of deep learning in elementary education largely depends on systematically applied transformational leadership that fosters sustained pedagogical change.

Keywords: transformational leadership; deep learning; elementary education; instructional leadership; leadership patterns.

Abstrak

Pergeseran menuju pendidikan abad ke-21 menuntut pembelajaran bermakna dan berorientasi kompetensi, sehingga implementasi pembelajaran mendalam di sekolah dasar menjadi semakin penting meskipun menghadapi berbagai tantangan. Studi ini bertujuan mensintesis bukti empiris mengenai peran kepemimpinan transformasional kepala sekolah dalam mendukung pembelajaran mendalam. Metode yang digunakan adalah Systematic Literature Review (SLR) dengan pendekatan kualitatif-deskriptif dan sintesis tematik berbasis kerangka PRISMA. Data diperoleh dari Scopus dan ERIC melalui proses seleksi bertahap, menghasilkan 13 studi empiris untuk dianalisis. Hasil menunjukkan bahwa empat dimensi kepemimpinan transformasional berperan saling melengkapi dalam membangun kepercayaan guru, meningkatkan komitmen kolektif, mendorong inovasi pedagogis, serta mendukung pengembangan profesional yang kontekstual. Kepemimpinan instruksional juga berfungsi sebagai penghubung penting melalui supervisi akademik dan penguatan komunitas belajar profesional. Kesimpulannya, keberhasilan pembelajaran mendalam sangat dipengaruhi oleh kepemimpinan transformasional yang diterapkan secara sistematis dan berkelanjutan untuk mendorong perubahan pedagogis di sekolah dasar.

Kata Kunci: kepemimpinan transformasional; pembelajaran mendalam; pendidikan dasar; kepemimpinan pembelajaran; pola kepemimpinan.



INTRODUCTION

The educational paradigm in the 21st century is undergoing a significant transformation driven by increasing demands for learning experiences that are meaningful, contextual, and competency-oriented. Traditional rote-based learning approaches, which emphasize memorization and recall, have been widely criticized for their inability to equip students with essential skills required in contemporary society, prompting calls for pedagogical models that foster critical thinking, creativity, and collaboration (Natuna et al., 2021)(Nilimaa, 2023). These limitations have accelerated the emergence of deep learning as an alternative paradigm that promotes higher-order thinking skills (HOTS), reflective practices, and the application of knowledge to complex real-world problems (Bhattacharya, 2022). Deep learning shifts the focus of instruction from surface-level knowledge acquisition to deeper cognitive engagement through collaboration, reflection, and the meaningful integration of technology, which has been shown to enhance students' cognitive development and problem-solving capacities (Nilimaa, 2023). The use of communicative tools and digital platforms further enables interactive learning environments that support dialogue, knowledge exchange, and authentic learning experiences (Ceballos et al., 2021). Central to the successful implementation of these pedagogical transformations is the role of school leadership, as educational leaders are instrumental in shaping instructional direction, fostering professional collaboration, and sustaining innovation within schools. Transformational leadership, in particular, has been identified as an effective approach for empowering teachers, strengthening Professional Learning Communities (PLCs), and improving both teacher efficacy and student learning outcomes (Tichnor-Wagner, 2019). Empirical evidence further indicates that strong instructional leadership significantly influences teachers' beliefs and practices, creating conditions that support the adoption of deep learning strategies and the realization of meaningful, future-oriented education (Darling-Hammond et al., 2023).

Deep learning in elementary education emphasizes understanding, application, and creation of knowledge over rote memorization. It engages students in critical thinking and collaboration, promoting autonomy through inquiry-based learning and integrating technology to enhance interactive experiences (Winje & Løndal, 2020). However, the implementation of deep learning practices in elementary schools faces significant challenges, including insufficient teacher training in deep learning methodologies, inadequate infrastructure and resources, and resistance to changing established pedagogical practices (Song et al., 2022). Furthermore, it has been argued that deep learning cannot be effectively implemented on an individual basis; it requires systemic support at the school level. This support must include a comprehensive approach to curriculum design, professional development for educators, and initiatives that incorporate deeper learning strategies throughout the entire school ecosystem (Winje & Løndal, 2020). Without such systemic backing, efforts to foster deep learning may yield inconsistent or limited results, potentially undermining the benefits this approach can offer to younger learners.

Transformational leadership serves as a crucial framework for driving leadership change within elementary schools, empowering principals to enact pedagogical shifts that enhance teaching and learning practices. This leadership style emphasizes inspiring and motivating school staff to achieve their collective vision, fostering an environment where innovation and collaboration thrive (Riswandi et al., 2023). In the context of elementary education, the implementation of transformational leadership helps cultivate an atmosphere of trust and engagement among teachers, leading to improved teacher efficacy and student outcomes (Tian et al., 2022). Research indicates that transformational principals not only serve as role models but also actively support teachers' professional development, facilitating their adaptation to new pedagogical strategies (Hardianto et al., 2024). However, the significance of transformational leadership extends beyond mere individual influence; it necessitates a systemic approach that integrates the entire school community in the change process. This involves creating structures that enable continuous professional learning, open communication, and shared responsibility, ensuring that all members of the school are

aligned with the mission to enhance educational quality ((Karaköse et al., 2021). Thus, transformational leadership is not solely about individual principal capabilities; rather, it is about fostering a cohesive, supportive infrastructure that empowers teachers and ultimately enriches students' learning experiences.

Current literature demonstrates that research on transformational leadership has expanded considerably, particularly in examining its influence on teacher performance, school organizational culture, strengthening professional collaboration, and the effectiveness of instructional leadership and Professional Learning Communities (PLCs) (Tichnor-Wagner, 2019)(Darling-Hammond et al., 2023). Concurrently, research on deep learning has also intensified, with primary focus on classroom learning strategies, development of Higher-Order Thinking Skills (HOTS), technology integration, and curriculum design that supports meaningful and contextual learning (Bhattacharya, 2022; Ceballos et al., 2021). Nevertheless, the majority of these studies tend to address these two constructs separately, leaving the functional relationship between principals' transformational leadership and deep learning implementation inadequately examined in an integrative manner. Moreover, despite the distinctive pedagogical and organizational characteristics of elementary education contexts, research that systematically synthesizes empirical findings on how transformational leadership functions in creating conditions, mechanisms, and strategies supporting deep learning at this level remains limited (Winje & Løndal, 2020; Song et al., 2022). This gap underscores the necessity for a Systematic Literature Review (SLR) to comprehensively map the role of principals' transformational leadership, identify effective leadership patterns and mechanisms, and formulate evidence-based leadership strategies relevant to deep learning implementation in elementary education.

Based on the identified research gaps, this study aims to systematically synthesize empirical findings regarding the role of principals' transformational leadership in supporting deep learning implementation in elementary education. Theoretically, this study contributes by developing a conceptual integration among the dimensions of transformational leadership (idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration), the principal's role as instructional leader, and deep learning practices as a core pedagogical approach. Practically, the findings are expected to provide a robust conceptual foundation for principals, policy developers, and elementary education stakeholders in designing leadership strategies and school policies capable of supporting deep learning in a sustained and contextual manner. This research is guided by the following research questions:

- RQ1. How does each dimension of transformational leadership—idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration—function in promoting deep learning implementation in elementary schools?
- RQ2. How do principals serve as instructional leaders in creating pedagogical conditions that support deep learning?
- RQ3. What barriers are identified in the literature regarding deep learning implementation, and what transformational leadership strategies are employed to address them?

METHOD

This study employs a Systematic Literature Review (SLR) with a qualitative-descriptive approach to synthesize empirical findings related to the role of principals' transformational leadership in deep learning implementation in elementary education (Snyder, 2019). Data sources in this study were obtained from two major academic databases: Scopus and ERIC (Education Resources Information Center). These databases were selected due to their strong international reputation and status as primary references in educational research and school leadership publications (Ramalho et al., 2015). Scopus provides coverage of reputable journals with rigorous peer-review processes, while ERIC specifically focuses on educational studies, learning policies, and pedagogical practices.

The literature search strategy was constructed conceptually, referring to three main constructs: transformational leadership, school leadership, and deep learning in elementary

education. Keywords employed included transformational leadership, school principal/school leadership, deep/deeper learning, and primary/elementary education, combined using Boolean operators AND and OR. The search process was conducted iteratively to enhance relevance and minimize articles incompatible with the research focus. This study applies explicit inclusion and exclusion criteria to maintain focus and synthesis quality. Included articles comprise peer-reviewed journals based on empirical findings concerning school leadership and learning in elementary education contexts, particularly those relevant to transformational leadership. Non-empirical studies, research outside elementary school contexts, and articles without direct pedagogical relevance to deep learning were excluded from the analysis.

Table 1. Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Type of publication	Peer-reviewed journal articles	Non-empirical papers (conceptual articles, opinion pieces, reviews without data)
Research focus	School leadership and learning, particularly transformational leadership	Studies not related to school leadership or pedagogical practices
Educational context	Primary / elementary education	Higher education, corporate training, non-school contexts
Methodological approach	Empirical studies (qualitative, quantitative, or mixed methods)	Studies without research data or methodological clarity
Pedagogical relevance	Explicit relevance to learning practices or deep learning implementation	Articles lacking pedagogical relevance

Data were analyzed using thematic analysis to synthesize findings from selected studies systematically and meaningfully (Kraus et al., 2022). The analytical process proceeded through three main stages: open coding, categorization, and theme development. During open coding, each article was read thoroughly to identify concepts, key terms, and findings relevant to transformational leadership and deep learning implementation. Subsequently, initial codes sharing semantic similarities were grouped into conceptual categories through categorization to establish a more organized analytical structure. The final stage, theme development, involved synthesizing these categories into overarching themes representing patterns of roles, mechanisms, and challenges in transformational leadership. All generated themes were then systematically aligned with the Research Questions (RQ1–RQ3) to ensure that synthesis results directly addressed the research focus and maintained coherence among objectives, analysis, and findings (Lochmiller, 2021).

The study selection process followed PRISMA stages, comprising identification, screening, eligibility, and included. During identification, literature searches through Scopus and ERIC databases yielded 286 articles. Following duplicate removal, 248 articles proceeded to screening. At this stage, title and abstract review was conducted to assess alignment with the research focus, resulting in the exclusion of 182 articles that failed to address school leadership, lacked connection to deep learning, or fell outside elementary education contexts. Subsequently, 66 articles underwent full-text eligibility assessment. Of these, 53 articles were excluded for being non-empirical, focusing on higher education or non-school contexts, or lacking direct pedagogical relevance to deep learning implementation. In the final included stage, 13 articles met all inclusion criteria and were subsequently analyzed in depth through thematic synthesis. These thirteen articles formed the foundation for constructing the PICO-based data extraction table and synthesizing findings in this study. The illustration follows:

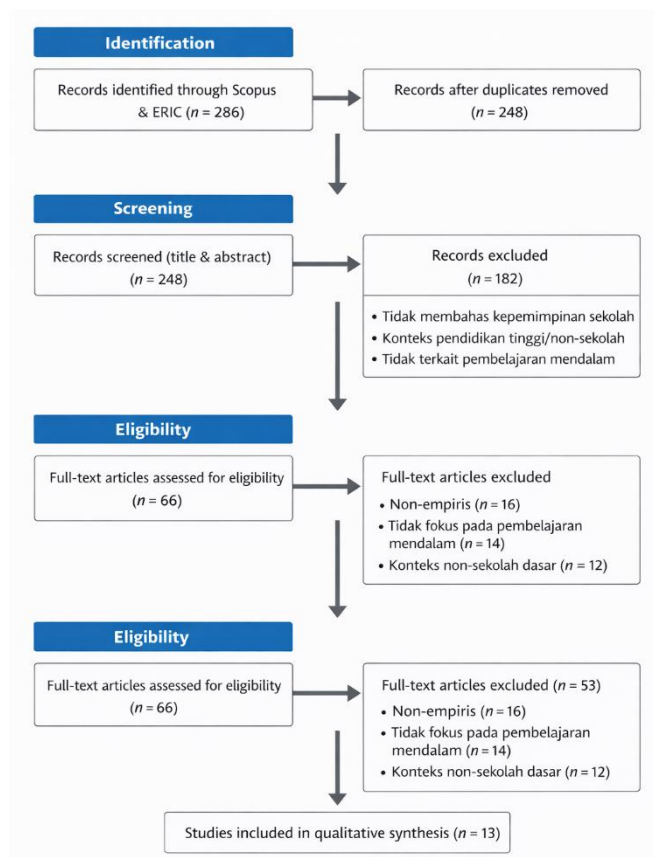


Figure 1. Alur PRISMA
RESULT AND DISCUSSION

The following presents the results of data extraction from articles systematically reviewed using the Systematic Literature Review (SLR) approach with the PRISMA framework. The extraction process was conducted on selected studies meeting inclusion and exclusion criteria, aimed at identifying patterns of findings, mechanisms, and the role of principals' transformational leadership in supporting deep learning implementation in elementary education. Extracted information was organized uniformly to ensure consistency in cross-study analysis, encompassing research focus, educational context, transformational leadership dimensions, key findings, and pedagogical implications relevant to Research Questions (RQ1–RQ3). This extraction table serves as the primary foundation for the thematic synthesis process and conceptual synthesis discussed in the Results and Discussion section.

Table 2. Data Extraction Matrix Based on PICO Framework

Author(s) & Year	Population	Intervention Focus	Context	Key Outcomes
(Roopsuwankun et al., 2025)	Elementary school principals & teachers	Transformational Leadership (4I)	Implementing deep/deeper learning	Increasing teacher trust, pedagogical innovation, and commitment to change
(Sliwka et al., 2023)	Elementary–secondary schools	TL-based instructional leadership	Deep learning & school reform	Transforming learning culture, teacher collaboration, and vision-practice alignment

(Heenan et al., 2024)	Teachers & school leaders	Idealized influence & inspirational motivation	Learning innovation	Strengthening moral legitimacy and collective motivation
(Messmann et al., 2021)	School teachers	Intellectual stimulation & individualized consideration	Collaboration-based pedagogical innovation	Increasing innovative behavior and professional competence of teachers
(Zadok et al., 2024)	School principals	Transformational leadership	School culture change	Scalability of learning innovation
(Bohari et al., 2024)	Elementary school teachers	Leadership support & coaching	ICT-based deep learning	Courage to experiment and use of technology
(Admiraal et al., 2019)	Teachers & school leaders	Professional Learning Community (PLC)	Collaborative school culture	Improving the quality of learning and professional collaboration
(Listiyorini et al., 2025)	Elementary school principals & teachers	Collaborative leadership & academic supervision	Implementing deep learning	Learning quality increases ($\pm 77\%$ of variation explained)
(Olmo-Extremera et al., 2025)	Teacher communities	Distributed leadership	PLC & learning innovation	Sustainability of collaborative practices
(Althubyani, 2024)	Teachers & school leaders	Change leadership	Workload & curriculum innovation	Reducing administrative barriers, increasing innovation focus
(McChesney & Cross, 2023)	Elementary schools	Transformational leadership	Teacher resistance culture	Strengthening shared vision and trust
(Okoye et al., 2022)	Teachers	Leadership digital literacy	Technology-based learning	Improving digital pedagogical competence
(Nair et al., 2024)	Educational organizations	Change leadership	Implementing systemic innovation	Sustainable change management

RQ 1: Transformational Leadership Dimensions & Deep Learning Implementation in Elementary Schools

To address RQ1 regarding how transformational leadership supports deep learning implementation in elementary schools, a synthesis of literature findings was conducted to map the specific roles of each transformational leadership dimension. Extraction results indicate that the dimensions of idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration have distinct yet complementary contributions in promoting pedagogical innovation and deep learning practices. This mapping not only illustrates the conceptual function of each dimension but also highlights its practical implications for elementary school principals' leadership in creating learning environments that are safe, collaborative, reflective, and oriented toward 21st-century competency

development. A summary of roles, implications, and empirical support from the reviewed studies is systematically presented in Table 3.

Table 3. Specific Roles of Each Dimension

Dimensions of Transformational Leadership	Role in driving deep learning / learning innovation	Implications for Elementary Schools	Authors
Idealized influence	Leaders serve as ethical role models, capable of transforming crises into opportunities, and consistent with the school's long-term values and goals. They foster a culture of trust and commitment to pedagogical changes such as deeper learning.	Elementary school principals need to consistently practice deep learning values (e.g., emphasizing conceptual understanding, collaboration, and critical thinking) in curriculum decisions, use of learning time/space, and interactions with teachers, so that teachers feel safe experimenting with project-based and ICT-based deep learning approaches.	(Roopsuwankun et al., 2025)(Sliwka et al., 2023)(Zadok et al., 2024)
Inspirational motivation	They convey a clear and challenging vision for 21st-century learning and deeper learning, recognizing change as a necessary and overdue process for the school. They create a positive work environment, recognize staff contributions, and motivate them to exceed expectations.	Elementary school principals need to repeatedly articulate the pedagogical rationale for deep learning (rather than simply following digital trends), connect it to students' future needs, and celebrate small teacher successes in implementing authentic assignments, teamwork, and formative assessments to generate collective energy for scaling these practices.	(Heenan et al., 2024)(Roopsuwankun et al., 2025)
Intellectual stimulation	They encourage problem-solving, critical thinking, challenging traditional teaching routines, and experimenting with new techniques.	In elementary schools, leaders can facilitate teacher communities to collaboratively design deep learning units (cross-subject,	(Bohari et al., 2024)(Messmann et al., 2021)

Individualized consideration	<p>In the context of IT innovation, it facilitates the adoption of new technologies and more creative work changes. It strengthens teachers' competencies and innovative behaviors.</p> <p>It provides support for self-development tailored to individual differences, allowing for the freedom to explore interests and abilities. In the context of innovation, leaders provide individual attention, feedback, and encouragement to achieve goals, thereby enhancing teacher autonomy and competence.</p>	<p>project-based, blending physical and digital spaces), critique rote exams, and use ICT for authentic assignments. Reflective discussions and feedback on teachers' innovative ideas foster a sense of competence and courage to experiment.</p> <p>Elementary school principals can map each teacher's digital and pedagogical readiness and then offer coaching, training, or differentiated collaboration pairs. More prepared teachers can be positioned as mentors within small teams designing deep learning units, while teachers who are still unsure receive gradual support so they don't feel forced or isolated.</p>	(Messmann et al., 2021)(Heenan et al., 2024)
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Overall, the literature synthesis demonstrates that the four dimensions of transformational leadership operate in a complementary manner to promote deep learning implementation in elementary schools. Idealized influence functions to build moral legitimacy and teacher trust in the deep learning agenda, enabling pedagogical change to be perceived as a meaningful and valuable endeavor rather than merely a policy mandate. Inspirational motivation then mobilizes collective commitment and energy for change by articulating a learning vision that is both challenging and relevant to students' future needs (Sliwka et al., 2023; Heenan et al., 2024). Subsequently, intellectual stimulation drives shifts in teaching practices toward more complex, collaborative, and technology-integrated tasks through critical reflection, pedagogical experimentation, and the courage to challenge traditional instructional routines. Concurrently, individualized consideration ensures that each teacher receives professional development support tailored to their individual needs, readiness, and capacity, allowing deep learning innovation to develop inclusively and sustainably (Zadok et al., 2024; Bohari et al., 2024). These cross-study findings affirm that deep learning is difficult to scale when relying on a single leadership dimension; conversely, the combination of all four transformational leadership dimensions appears crucial for transforming partial deep learning initiatives into an integrated and sustained school culture (Roopsuwankun et al., 2025).

RQ:2 Principals as Instructional Leaders in Deep Learning Implementation

The principal's role as instructional leader is pivotal in deep learning implementation. Principals with transformational leadership styles are capable of shifting practices from traditional teaching toward learning that is contextual, collaborative, technology-based, and oriented toward 21st-century competencies (Sliwka et al., 2023; Sutikno, 2025). Principals not only direct change at the classroom level but also conduct systemic analysis of school culture, assessment regulations, utilization of learning spaces and time, and strengthening teacher collaboration to design interdisciplinary deep learning units (Apriliyana, 2025; Sutikno, 2025). Effective instructional leadership manifests in academic mentoring, facilitation of teacher innovation, and alignment of programs with the school vision, thereby forming a learning ecosystem that is independent, character-based, and competitive (Listiyorini et al., 2025).

Strengthening Professional Learning Communities (PLCs) and collaborative culture constitutes an essential instrument: schools that successfully develop PLCs demonstrate shared vision about learning, collaborative work structures, ongoing professional learning opportunities, and leadership distributed between principals and teachers (Baroroh et al., 2025; Olmo-Extremera et al., 2025). Well-managed learning communities, with data-driven planning, flexible structures, and participatory supervision, demonstrably enhance lesson planning quality and instructional practices (Wisnurat & Wasliman, 2025).

This entire process becomes effective when the school's vision of deep learning such as contextual learning, personalization, collaboration, and technology integration, aligns with classroom practices, organizational governance, and even physical learning space design through participatory design processes involving leaders, teachers, and students (Sliwka et al., 2023). Consequently, deep learning implementation demands that principals serve as instructional leaders who are visionary, collaborative, and consistent in aligning school vision with classroom learning practices and collaborative culture throughout the school ecosystem.

Table 4. Conceptual Summary

Focus	Key Findings	Literature	Implication for Practice	Citations
The principal as a learning leader in deep learning	Transformational principals encourage teacher collaboration, assessment reform, and the use of space-time and technology to support deep learning.		Prioritize transformational leadership that reimagines curriculum, assessment, and culture to support deep learning units.	(Apriliyana, 2025)(Sutikno, 2025)
Strengthening learning communities and collaborative culture	Effective PLCs are characterized by a shared vision for learning, collaborative work, professional learning opportunities, and leadership for distributed learning.		Establish structured PLCs (lesson study, co-teaching, peer coaching) embedded within the school organization for sustainability.	(Baroroh et al., 2025)(Wisnurat & Wasliman, 2025)(Olmo-Extremera et al., 2025)
The influence of learning communities and collaborative leadership on learning quality	Teacher learning communities and collaborative leadership contribute significantly to learning quality; together with academic supervision, they explain approximately 77% of the variation in		Integrate academic supervision, learning communities, and collaborative leadership into a single quality improvement strategy.	(Listiyorini et al., 2025)

Aligning school vision with classroom practices	learning quality. Many schools fail to align innovative vision with practices, organization, and space design; Success requires alignment of culture, structure, and teaching methods.	Involve teachers and students in the formulation of the deep learning vision, learning space design, and organizational regulations to ensure classroom practices are consistent with the vision.	(Sliwka et al., 2023)(French et al., 2020)
Learning leadership aligned with the school vision	Principals who focus on teacher mentoring, instructional innovation, and programs aligned with the school's vision and mission result in effective and high-achieving schools.	Make the school vision the primary reference for program planning, supervision, and teacher professional development.	(Listiyorini et al., 2025)(Masengesho, 2025)

RQ 3: Barriers and Leadership Strategies in the Implementation of Deep Learning

Across settings, principals and faculty report that administrative workload and staffing shortages drain the time and energy needed for school and curriculum innovation, making it difficult to design and sustain deeper learning initiatives (Sliwka et al., 2023; Althubyani, 2024). Heavy administrative and teaching burdens contribute to teacher overload and limit engagement with new, technology-rich or deep-learning approaches (Althubyani, 2024). Teacher resistance—often rooted in entrenched beliefs, examination-focused systems, and a culture of “lone fighters” rather than collaborative professionalism—emerges as a major obstacle to scaling deeper learning beyond small, intrinsically motivated groups (Zadorozhnyy et al., 2025).

Transformational leadership is repeatedly identified as central to overcoming these barriers: leaders who articulate a compelling vision for deeper learning, challenge the “grammar of schooling,” and address both cultural constraints (attitudes, collaboration norms) and structural constraints (assessment rules, time and space utilization, infrastructure) are better positioned to mobilize staff, secure resources, and create conditions for sustained change (Sliwka et al., 2023)(Nair et al., 2024). Such leaders foster trust, support risk-taking with new practices, provide ongoing professional learning, and advocate for systemic policy support, positioning deep learning not as isolated classroom innovation but as whole-school and system-level transformation (McChesney & Cross, 2023; Wiziack & Santos, 2021).

Table 5. Barriers and Transformational Leadership Strategies for Deep Learning Implementation

Barrier category & examples	Transformational leadership strategies evidenced in literature	Citations
Principal administrative burden, staff shortages, heavy workloads limiting time for innovation	Reallocate time and resources; streamline routines; protect collaborative planning time; advocate for additional staffing and policy support to sustain change efforts	(Althubyani, 2024)(Zadorozhnyy et al., 2025)
Teacher resistance, entrenched beliefs, exam-focused culture, “lone fighter” norms	Build and communicate a shared vision for deeper learning; reculture toward collaborative professionalism; foster trust and psychological safety for experimentation; align change	(Wiziack & Santos, 2021)(McChesney & Cross, 2023)

Limited pedagogical/digital competence, lack of training in AI/deep learning pedagogies	with teachers' values Provide sustained, practice-oriented professional development; create learning networks and peer mentoring; model innovative practices; integrate digital competence into strategic plans	(Okoye et al., 2022), (Wiziack & Santos, 2021)
Structural and organizational constraints (assessment regulations, time/space use, infrastructure)	Challenge and gradually redesign assessment policies, schedules, and use of physical/digital spaces; work with policymakers to embed deeper learning in system-level frameworks	(Nair et al., 2024)(Okoye et al., 2022)

The synthesis across Research Questions demonstrates that principals' transformational leadership functions as the primary driver in integrating the deep learning vision into elementary school pedagogical practices. The literature affirms that the four dimensions of transformational leadership (idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration) operate in an integrated manner to build trust in the change agenda, strengthen teachers' collective commitment, stimulate reflection and instructional innovation, and provide professional development support aligned with teacher readiness. The combination of these dimensions enables deep learning to evolve from individual initiatives into more systemic and sustained school-wide practices (Roopsuwankun et al., 2025)(Heenan et al., 2024). These findings underscore that successful deep learning implementation is heavily dependent on transformational leadership enacted as instructional leadership—that is, leadership that consistently aligns the 4I dimensions with academic supervision, strengthening of professional learning communities, and translation of school vision into classroom learning practices. Consequently, the novelty of this review lies in the conceptual integration of transformational leadership and deep learning as the core of pedagogical school transformation, rather than merely as standalone policies or innovations.

CONCLUSION

Based on the results of this systematic literature review employing a thematic synthesis approach, this study concludes that principals' transformational leadership plays a central role in driving deep learning implementation in elementary education. Cross-study synthesis reveals that the four dimensions of transformational leadership (idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration) operate in an integrated manner to build trust, commitment, pedagogical innovation, and teacher professional development support. The principal's role as instructional leader proves to be a key mechanism linking transformational leadership with deep learning practices through academic supervision, strengthening professional learning communities, and aligning school vision with classroom practices. These findings affirm that successful deep learning implementation cannot be separated from transformational leadership that is consistent and oriented toward pedagogical change at the school level.

REFERENCES

- Admiraal, W., Schenke, W., De Jong, L., Emmelot, Y., & Sligte, H. (2019). Schools as professional learning communities: what can schools do to support professional development of their teachers? *Professional Development in Education*, 47, 684–698. <https://doi.org/10.1080/19415257.2019.1665573>
- Althubyani, A. (2024). Digital Competence of Teachers and the Factors Affecting Their Competence Level: A Nationwide Mixed-Methods Study. *Sustainability*. <https://doi.org/10.3390/su16072796>
- Apriliyana, N. P. (2025). Transforming Education Through Deep Learning Design: Integrating Four Key Elements in School Practice. *Molang: Journal Islamic Education*.

- <https://doi.org/10.32806/jm.v3i1.843>
- Baroroh, U., Bunyamin, & Sudana, I. (2025). Unpacking the Role of Teacher Competence and Collaborative School Culture in Primary Education: A Systematic Review. *Journal of Innovation and Research in Primary Education*. <https://doi.org/10.56916/jirpe.v4i3.1936>
- Bhattacharya, U. (2022). "I Am a Parrot": Literacy Ideologies and Rote Learning. *Journal of Literacy Research*, 54(2), 113–136. <https://doi.org/10.1177/1086296x221098065>
- Bohari, A., Wider, W., Udang, L. N., Jiang, L., Tanucan, J. C. M., & Lajuma, S. (2024). Transformational leadership's role in shaping Education 4.0 within higher education. *Journal of Infrastructure, Policy and Development*, 8(8), 4900. <https://doi.org/10.24294/jipd.v8i8.4900>
- Ceballos, M., Vitale, T., & Gordon, W. R. (2021). Remote Continuity of Learning and the COVID-19 Pandemic: Educators' Self-Perceptions of Preparedness. *Journal of Pedagogical Sociology and Psychology*, 3(2), 75–89. <https://doi.org/10.33902/jpsp.2021271304>
- Darling-Hammond, L., Schachner, A., Wojcikiewicz, S., & Flook, L. (2023). Educating teachers to enact the science of learning and development. *Applied Developmental Science*, 28, 1–21. <https://doi.org/10.1080/10888691.2022.2130506>
- French, R., Imms, W., & Mahat, M. (2020). Case studies on the transition from traditional classrooms to innovative learning environments: Emerging strategies for success. *Improving Schools*, 23, 175–189. <https://doi.org/10.1177/1365480219894408>
- Hardianto, H., Hidayat, H., Wulandari, A., Sulastri, S., & Nofriser, N. (2024). Revitalizing Educational Leadership: A Comprehensive Literature Review of Transformational Leadership in Indonesia Academic Settings. *Al-Ishlah Jurnal Pendidikan*, 16(1), 98–106. <https://doi.org/10.35445/alishlah.v16i1.4768>
- Heenan, I. W., Lafferty, N., & McNamara, P. (2024). Enactment of Transformational School Leadership—Insights From Primary School and System Leaders. *Education Sciences*, 14(6), 557. <https://doi.org/10.3390/educsci14060557>
- Karaköse, T., Polat, H., & Papadakis, S. (2021). Examining Teachers' Perspectives on School Principals' Digital Leadership Roles and Technology Capabilities During the COVID-19 Pandemic. *Sustainability*, 13(23), 13448. <https://doi.org/10.3390/su132313448>
- Kraus, S., Breier, M., Lim, W. M., Dabić, M., Kumar, S., Kanbach, D., Mukherjee, D., Corvello, V., Piñeiro-Chousa, J., Liguori, E., Palacios-Marqués, D., Schiavone, F., Ferraris, A., Fernandes, C., & Ferreira, J. J. (2022). Literature reviews as independent studies: guidelines for academic practice. *Review of Managerial Science*, 16(8). <https://doi.org/10.1007/s11846-022-00588-8>
- Listiyorini, L., Ginting, R. B., & Muhtarom, M. (2025). The Influence of Academic Supervision, Learning Communities, and Collaborative Leadership of Principals on the Quality of Learning in Public Elementary Schools. *Scaffolding: Jurnal Pendidikan Islam Dan Multikulturalisme*. <https://doi.org/10.37680/scaffolding.v7i2.7878>
- Lochmiller, C. R. (2021). Conducting thematic analysis with qualitative data. *Qualitative Report*, 26(6). <https://doi.org/10.46743/2160-3715/2021.5008>
- Masengesho, A. (2025). Exploring the Impact of School Leadership Practices on Teachers' Job Performance in Rwanda. *Journal of Education*. <https://doi.org/10.53819/81018102t4317>
- McChesney, K., & Cross, J. (2023). How school culture affects teachers' classroom implementation of learning from professional development. *Learning Environments Research*, 1–17. <https://doi.org/10.1007/s10984-023-09454-0>
- Messmann, G., Evers, A., & Kreijns, K. (2021). The role of basic psychological needs satisfaction in the relationship between transformational leadership and innovative work behavior. *Human Resource Development Quarterly*. <https://doi.org/10.1002/hrdq.21451>
- Nair, M., Svedberg, P., Larsson, I., & Nygren, J. (2024). A comprehensive overview of barriers and strategies for AI implementation in healthcare: Mixed-method design. *PLOS ONE*, 19. <https://doi.org/10.1371/journal.pone.0305949>

- Natuna, D. A., Putra, M. J. A., & Azhar, A. (2021). Teachers' performance in online learning during covid-19 outbreak: an analysis based on 21st century proficiency. *International Journal of Educational Best Practices*, 5(2), 197. <https://doi.org/10.31258/ijebp.v5n2.p197-210>
- Nilimaa, J. (2023). New Examination Approach for Real-World Creativity and Problem-Solving Skills in Mathematics. *Trends in Higher Education*, 2(3), 477–495. <https://doi.org/10.3390/higheredu2030028>
- Okoye, K., Hussein, H., Arrona-Palacios, A., Quintero, H., Ortega, L. O. P., Sanchez, A. L., Ortiz, E., Escamilla, J., & Hosseini, S. (2022). Impact of digital technologies upon teaching and learning in higher education in Latin America: an outlook on the reach, barriers, and bottlenecks. *Education and Information Technologies*, 28, 2291–2360. <https://doi.org/10.1007/s10639-022-11214-1>
- Olmo-Extremera, M., Segovia, J. D., Khalil, M., & De La Hoz Ruíz, J. (2025). Professional learning communities in secondary schools and improvement of learning in challenging contexts. *Frontiers in Education*. <https://doi.org/10.3389/feduc.2025.1598133>
- Ramalho, R., Adams, P., Huggard, P., & Hoare, K. (2015). Literature review and constructivist grounded theory methodology. *Forum Qualitative Sozialforschung*, 16(3).
- Riswandi, R., Illahiyah, A. D., Pangestu, D., & Utami, N. R. (2023). The Influence of Elementary School Principal's Transformational Leadership Behavior in Cultivating Entrepreneurial Character of the Millennial Generation. *Edumaspul - Jurnal Pendidikan*, 7(2), 3104–3113. <https://doi.org/10.33487/edumaspul.v7i2.6506>
- Roopsuwankun, P., Prasertsin, U., Kawmongkon, S., & Rodthong, T. (2025). Analysis of components and find mechanism models to promote digital transformational leadership of school administrators. *Journal of Infrastructure, Policy and Development*. <https://doi.org/10.24294/jipd10788>
- Sliwka, A., Klopsch, B., Beigel, J., & Tung, L. (2023). Transformational leadership for deeper learning: shaping innovative school practices for enhanced learning. *Journal of Educational Administration*. <https://doi.org/10.1108/jea-03-2023-0049>
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104. <https://doi.org/10.1016/j.jbusres.2019.07.039>
- Song, X., Yang, X., Wang, Q., Su, Y., & Hong, J. (2022). The Relationship Between Teacher's Gender and Deep Learning Strategy: The Mediating Role of Deep Learning Motivation. *Psychology in the Schools*, 59(11), 2251–2266. <https://doi.org/10.1002/pits.22694>
- Sutikno, S. (2025). Optimizing Principal Management for Deep Learning Curriculum Implementation in Vocational High Schools. *Scaffolding: Jurnal Pendidikan Islam Dan Multikulturalisme*. <https://doi.org/10.37680/scaffolding.v7i3.7780>
- Tian, J., Zhang, W., Mao, Y., & Gurr, D. (2022). The Impact of Transformational Leadership on Teachers' Job Burnout: The Mediating Role of Social-Emotional Competence and Student-Teacher Relationship. *Journal of Educational Administration*, 60(4), 369–385. <https://doi.org/10.1108/jea-04-2021-0075>
- Tichnor-Wagner, A. (2019). Globally-Minded Leadership: A New Approach for Leading Schools in Diverse Democracies. *International Journal of Education Policy and Leadership*, 15(2). <https://doi.org/10.22230/ijepl.2019v15n2a869>
- Winje, Ø., & Løndal, K. (2020). Bringing Deep Learning to the Surface. *Nordic Journal of Comparative and International Education (Njcie)*, 4(2), 25–41. <https://doi.org/10.7577/njcie.3798>
- Wisnurat, Y., & Wasliman, I. (2025). Learning Community Management in Developing a Culture of Teacher Collaboration in the Learning Process. *Journal of Innovation and Research in Primary Education*. <https://doi.org/10.56916/jirpe.v4i4.2166>
- Wiziack, J. C., & Santos, V. D. Dos. (2021). Evaluating an integrated cognitive competencies model to enhance teachers' application of technology in large-scale educational contexts. *Heliyon*, 7. <https://doi.org/10.1016/j.heliyon.2021.e05928>
- Zadok, A., Benoliel, P., & Schechter, C. (2024). School middle leaders' transformational

leadership and organizational resilience: The moderating role of academic emphasis.
European Journal of Education. <https://doi.org/10.1111/ejed.12657>

Zadorozhnyy, A., Winsy, L. W. Y., & Lee, J. S. (2025). EFL Teachers' Ecological Barriers to Integrating Informal Digital Learning of English. *TESOL Quarterly*. <https://doi.org/10.1002/tesq.3400>