

The Role of School Principals in Implementing Deep Learning at Elementary Schools in Panggul District, Trenggalek

Tinuk Lastriatun¹, Yepi Sedya Purwananti², M. Abdul Roziq Asrori³, Dian Septi Nur Afifah⁴

Universitas Bhinneka PGRI, Tulungagung, Indonesia

Author Email: tinuk.lastriatun@gmail.com¹, dyepisedya@gmail.com², roziq@ubhi.ac.id³, dian.septi@ubhi.ac.id⁴

Abstract. Twenty-first-century learning demands that elementary schools develop learning processes that are not merely oriented toward content mastery but also toward deep understanding and higher-order thinking skills. The deep learning approach is considered relevant because it emphasizes meaningful, reflective, and applicable learning. This study aims to analyze the role of school principals in implementing deep learning at elementary schools in Panggul District, Trenggalek Regency. A qualitative descriptive approach was employed, with data collected through in-depth interviews, classroom observation, and documentary analysis involving school principals and teachers. Data analysis followed the interactive model of Miles and Huberman, encompassing data reduction, data display, and conclusion drawing, with data validity assured through source and technique triangulation. Findings reveal that school principals serve as instructional leaders through planning, implementation, and academic supervision functions. Support was provided through the formulation of school policies, strengthening of learning planning, facilitation of teacher collaboration, and provision of professional support. However, academic supervision still tends to focus on administrative aspects and has not fully emphasized the quality of the classroom learning process. This study underscores the importance of strengthening instructional leadership and process-based academic supervision to ensure the sustainable implementation of deep learning at the elementary school level.

Keywords: deep learning, elementary school, instructional leadership, school principal

1 Introduction

Elementary schools, as formal educational institutions, play a strategic role in building the foundational competencies of students. In the era of twenty-first-century learning, schools are expected not only to emphasize content mastery but also to develop critical, creative, collaborative, and communicative thinking skills through meaningful learning processes. The deep learning approach is considered relevant because it emphasizes deep conceptual understanding, reflective thinking, and applicability in real-life contexts. The implementation of this approach depends not only on teachers' competencies but is also significantly influenced by the leadership of school principals as instructional leaders who are responsible for formulating policies, building a learning culture, and conducting academic supervision oriented toward improving the quality of the learning process.

Theoretically, instructional leadership positions school principals as the primary drivers of learning quality improvement through planning, implementation, and evaluation of instruction. Numerous studies demonstrate that the effectiveness of academic supervision, transformative leadership, and teacher professional development contribute significantly to the success of pedagogical innovation. The concept of deep learning itself emphasizes high-order cognitive engagement, encouraging students to analyze, synthesize, and apply knowledge contextually. Nevertheless, empirical findings indicate that supervisory practices in elementary schools still tend to be administratively oriented and have not fully engaged with the quality of classroom learning interactions.

Within the context of Panggul District, Trenggalek Regency, the geographic and socioeconomic conditions of the community also influence the dynamics of school management and the equalization of learning quality. Preliminary observation revealed that the implementation of deep learning remains suboptimal and that the role of school principals in directing and supervising such practices requires further strengthening. The gap between policy demands and field practice constitutes the central problem addressed by this research.

Based on the foregoing, this study aims to analyze in depth the role of school principals in planning policies and implementing academic supervision in order to support deep learning at elementary schools in Panggul

District, Trenggalek, with the goal of generating a conceptual and practical framework for effective and contextual instructional leadership.

2 Method

2.1 Research Approach and Design

This study employed a qualitative approach with a descriptive design. This approach was selected to develop a deep understanding of the role of school principals in implementing deep learning at elementary schools in Panggul District, Trenggalek Regency. The research was conducted in natural settings, with the researcher as the primary instrument. The design was systematically structured to be replicable in comparable elementary school contexts.

2.2 Research Site and Timeline

The study was conducted at seven state elementary schools in Panggul District: SDN 4 Karangtengah (NPSN 20542312), SDN 3 Terbis (20542291), SDN 1 Tangkil (20542052), SDN 1 Nglebeng (20541996), SDN 3 Ngrambingan (20542259), SDN 1 Ngrencak (20542004), and SDN 2 Banjar (20542068). The research was conducted from October 2025 to February 2026, progressing through the following stages: (1) preliminary observation; (2) proposal development and seminar; (3) instrument testing; (4) data collection; (5) evaluation and analysis; and (6) final report preparation.

2.3 Participants and Sampling Technique

Research participants consisted of one school principal and two teachers (one from lower grades and one from upper grades) at each school. Informants were selected using purposive sampling based on the following criteria: (1) direct involvement in learning planning and implementation; (2) authority over academic policy (for principals); and (3) implementation of deep learning in the classroom (for teachers).

2.4 Data Collection Techniques

Data were collected through three complementary techniques. First, semi-structured interviews were conducted for 45 to 60 minutes per informant, employing interview guides based on indicators of the principal's role (planning, implementation, supervision). The process included scheduling, conducting, recording, transcribing, and confirming results (member check). Second, direct observation was conducted at least twice for each teacher, focusing on the implementation of deep learning in the classroom and the supervisory practices of the principal, using a structured observation sheet. Third, documentary analysis was conducted on policy documents, instructional materials, and supervisory instruments to verify interview and observational data.

2.5 Data Analysis Technique

Data analysis employed the interactive model of Miles and Huberman, comprising three stages. Data reduction involved selection, coding, and thematic grouping according to the principal's roles as planner, implementer, and supervisor, including identification of constraints and support. Data display was presented in thematic matrices and descriptive narratives. Conclusion drawing and verification were conducted continuously until consistent patterns were identified.

2.6 Data Validity

Data validity was ensured through source triangulation (principal and teacher), technique triangulation (interview, observation, documentation), member checking with informants, and audit trails comprising complete documentation of the research process.

3 Results

Research findings are presented across four tables and two figures, addressing: (1) conceptual understanding of deep learning; (2) integration into school planning; (3) forms of principal support; and (4) implementation constraints and strategies.

Table 1. Principal and Teacher Understanding of Deep Learning

Dimension of Understanding	Principal	Teacher	Implementation Consistency
Meaningful learning	High	High	Moderate
Critical thinking	High	Moderate	Moderate
Active student engagement	High	High	Moderate
Contextualisation of content	Moderate	High	Moderate
Reflective assessment	Low–Moderate	Low	Low

Table 1 indicates that conceptual understanding of deep learning has developed well, particularly regarding meaningful learning and student engagement. However, implementation consistency remains at a moderate to low level, especially with respect to reflective assessment. This finding signals a gap between understanding and systematic practice.

Table 2. Integration of Deep Learning into School Planning

Planning Component	Integration Status	Measurable Indicators	Periodic Evaluation
Vision and Mission	Implicit	Not specific	Not systematic
School Development Plan (RKS)	Partial	Not detailed	Limited
School Budget Plan (RKAS)	Not explicit	None	None
Training Programme	Present	Unstructured	Incidental

Planning reflects a normative commitment to deep learning, but it is not yet grounded in measurable performance indicators. This explains why implementation is ongoing yet remains systemically inconsistent.

Table 3. Forms of Principal Support

Form of Support	Intensity	Impact on Teachers
Verbal motivation	High	Increased enthusiasm
Internal workshops	Moderate	Enhanced knowledge
Classroom supervision	Moderate	General feedback
Personal mentoring	Limited	Not yet equitable
Provision of facilities	Adaptive	Condition-dependent

Support is motivational and adaptive in character, but not yet fully transformative. Supervision remains predominantly administrative rather than deeply pedagogical.

Table 4. Constraints and Implementation Strategies

Constraint	Impact	Current Strategy	Strengthening Needed
Limited facilities	Limited method variety	Environmental optimisation	Budget support
Minimal specific training	Varied understanding	Internal discussion	Continuous training
Non-specific supervision	Insufficient evaluation	General observation	Specific instruments
Limited planning time	Insufficiently innovative lesson plans	Informal collaboration	Structured PLC

The primary constraint lies not in teacher resistance but in an as-yet-underdeveloped support system. Learning transformation requires managerial and structural approaches.

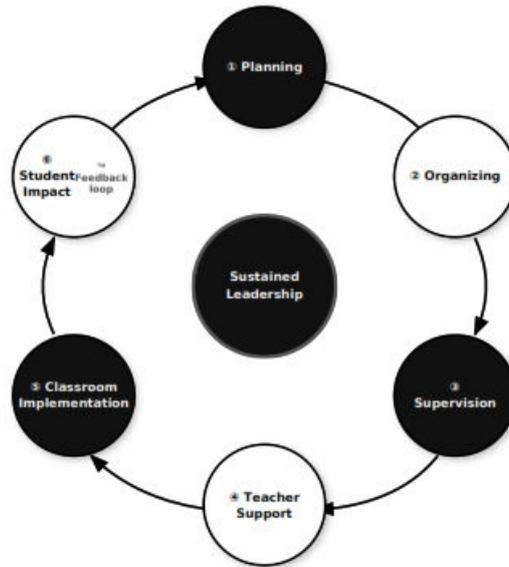


Figure 1. Interrelational Model of Principal Roles and Deep Learning Implementation

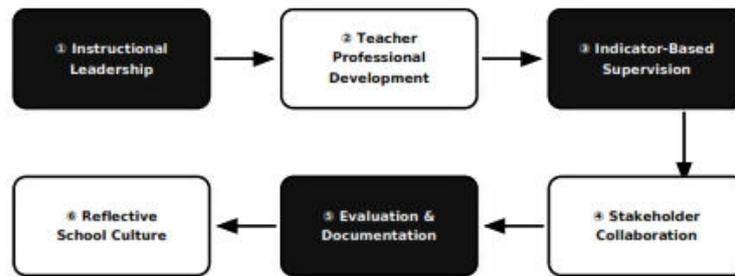


Figure 2. Model for Strengthening the Deep Learning Implementation System

4 Discussion

4.1 Why Does High Conceptual Understanding Not Automatically Produce Optimal Implementation?

Findings indicate that conceptual understanding has developed well, yet implementation remains insufficiently systemic. This is attributable to the fact that deep learning has not been institutionalised within the school’s strategic documents, supervision is not yet grounded in specific pedagogical indicators, and teacher professional development continues to be incidental in nature. Pedagogical transformation requires robust institutional structures, not merely individual awareness (Fullan et al., 2013; Suhartono et al., 2024).

Expert Commentary – Dr. Yepi Sedya Purwananti, M.Pd.:

This finding must be interpreted within the theoretical framework of Fullan et al. (2013), who define deep learning as a process of developing higher-order thinking through deep conceptual understanding and critical connection of ideas. The synthesis of Fullan et al. (2013) with Fitriani and Santiani (2025) produces a sharper argument: success in deep learning cannot stop at the level of verbal understanding—it requires internalisation expressed through written policy and measurable achievement indicators. The recent research of Suhartono et al. (2024) reinforces this position: schools that explicitly integrate deep learning into planning documents demonstrate significantly higher learning quality than those relying on informal understanding alone. This finding contradicts the conditions at the research sites, where integration into school plans (RKS, RKAS, and annual programmes) remains implicit, affirming that the gap between theoretical understanding and policy formalisation constitutes a structural weakness that urgently demands attention.

Expert Commentary – Dr. M. Abdul Roziq Asrori, S.Pd.I., M.Si.:

This gap between understanding and formalisation must be understood within the context of principals’ limited managerial capacity. Given high administrative workloads and minimal technical guidance from education authorities, expecting principals to simultaneously serve as pedagogical thinkers and strategic planners is an

unrealistic expectation without systemic support. Practically, this implies the need for targeted training programmes that not only teach the concept of deep learning but also equip principals with concrete skills to develop indicator-based school plans with measurable outcomes and operational evaluation mechanisms.

Expert Commentary – Dr. Dian Septi Nur Afifah, M.Pd.:

From an evaluative perspective, this finding highlights a critical gap in assessment literacy at the institutional level. When school documents fail to operationalise deep learning indicators, evaluation becomes impressionistic rather than data-driven. Developing a school-based assessment framework that aligns planning documents with observable classroom indicators would serve as a practical bridge between conceptual understanding and systemic implementation. This is not merely an administrative exercise; it is a prerequisite for transformative educational leadership.

4.2 How Does the Principal's Role Influence Implementation?

School principals function as drivers of a learning culture. Motivational support demonstrably increases teacher readiness. However, without supervision grounded in indicators of critical thinking and reflective assessment, its impact remains suboptimal. Effective leadership in this context refers to instructional leadership that focuses on learning quality, data-based feedback, and the development of professional learning communities (Hoe'rudin et al., 2024; Khasanah et al., 2025).

Expert Commentary – Dr. Yepi Sedya Purwananti, M.Pd.:

This finding is consistent with Hoe'rudin, Kurniady, and Sudarsyah (2024), who demonstrate that school effectiveness is strongly shaped by the principal's capacity to articulate a clear instructional vision and develop academic programmes systematically—neither element can be separated from the other. Fullan and Langworthy (2014) caution that without systemic policy and change management, deep learning risks degrading into sporadic practice. Munna (2022) adds an important dimension: effective instructional leadership requires multi-stakeholder collaboration—including parents—to build a cohesive learning ecosystem. The absence of parental involvement in planning at the research sites potentially undermines the consistency of learning support beyond school hours.

Expert Commentary – Dr. M. Abdul Roziq Asrori, S.Pd.I., M.Si.:

Three immediately implementable practical steps are recommended. First, the Education Authority should provide deep learning-based school plan templates already equipped with achievement indicators, so that principals are not required to design them from scratch. Second, Principal Working Group (KKS) forums should be revitalised as venues for sharing planning practices rather than administrative forums. Third, parental involvement in planning can begin with simple mechanisms such as needs surveys or semester consultation forums before being escalated to more substantive participation.

Expert Commentary – Dr. Dian Septi Nur Afifah, M.Pd.:

The relational model proposed in this study (Figure 1) offers a valuable conceptual contribution, yet its operationalisation demands a more nuanced understanding of how feedback loops function in practice. When supervision remains general and feedback is not tied to specific learning indicators, the model risks remaining aspirational. Embedding structured peer observation and reflective dialogue within the supervisory cycle would strengthen the feedback-to-planning connection and foster a genuinely self-improving school system.

4.3 What Might Occur If the System Is Strengthened?

If integration is carried out systematically, the following outcomes are anticipated: the formation of a school culture grounded in reflection; the strengthening of students' twenty-first-century skills; consistency of innovative learning practices; and the replication of the model at other rural schools. These prospects align with the findings of Angga and Iskandar (2022), who emphasise that principals as agents of change must actively guide teachers toward the transformation of assessment, not merely of teaching methods.

4.4 Implementation in the Classroom and Instructional Leadership

Teachers have employed various strategies consistent with deep learning principles—problem-based learning, group discussion, and contextual instruction linking content to students' lived realities. Positive student responses, manifested in increased willingness to pose questions and greater participation in discussion, indicate that a shift from teacher-centred to student-centred learning is underway. The research confirms a direct relationship: teachers who receive more intensive principal support demonstrate greater readiness for deep learning implementation.

Nevertheless, the most conspicuous weakness lies in assessment. Teachers continue to rely predominantly on conventional written tests, while authentic assessment—based on portfolios, process observation, and self-

reflection—has not been systematically implemented. This deficit directly affects the validity of measuring deep learning outcomes (Hakim et al., 2025; Sudirman et al., 2025). Warman et al. (2025) confirm that time constraints, limited access to technology, and minimal structured guidance represent systemic obstacles that cannot be overcome by motivational support alone.

Expert Commentary – Dr. Dian Septi Nur Afifah, M.Pd.:

The assessment deficit identified in this study warrants particular attention. Authentic assessment is not merely a technical skill—it reflects a fundamental epistemological shift in how learning is conceptualised and valued. Professional development programmes that treat assessment in isolation from curriculum and instructional design are unlikely to produce lasting change. What is needed is an integrated approach in which principals lead conversations about the purposes of assessment, and teachers are supported in developing assessment repertoires that genuinely capture depth of learning rather than surface recall.

4.5 The Rural Context as Pedagogical Resource

The rural context of Panggul District, rather than being viewed as an obstacle, harbours untapped pedagogical potential. The natural environment, local traditions, and social community networks constitute authentic sources of contextual learning that are entirely consistent with the principle of meaningful learning. Principals should proactively identify and document these local learning resources, facilitating teachers in integrating them into lesson designs. The development of a lesson plan bank grounded in local context, accessible to all teachers across the school, represents a practical solution to the constraint of limited concrete references (Hidayani et al., 2025).

4.6 Research Limitations and Future Research Agenda

Several methodological limitations warrant transparent acknowledgement. The focus on seven schools holding Best Performance BOS designations introduces potential selection bias, as these schools likely possess higher leadership capacity and greater commitment to innovation than the average school in comparable contexts. Generalisation of findings to broader contexts—particularly schools without performance designations—must therefore be approached with theoretical caution. Furthermore, this study has not produced direct measurement of the impact of principal leadership on student learning outcomes; the relationships claimed remain at the level of perception and implementation process.

Data collection relying on interviews carries the risk of social desirability bias, whereby respondents tend to report more idealised practices than actual conditions. While triangulation through observation and documentary analysis was conducted, this bias cannot be entirely eliminated. Future research using mixed methods designs with more diverse samples, longitudinal studies measuring long-term outcomes, and intervention research testing the effectiveness of principal coaching and professional learning community programmes should be prioritised, given the scarcity of empirical evidence in the literature for rural Indonesian elementary school contexts.

5 Conclusion

This study found that school principals and teachers at state elementary schools in Panggul District, Trenggalek Regency possess a reasonably sound conceptual understanding of deep learning, particularly regarding meaningful learning and active student engagement. However, this understanding has not automatically generated optimal and systemic classroom implementation. The gap between understanding and practice is attributable not to teacher resistance but to the absence of deep learning's explicit integration into the school's strategic planning documents—including the vision and mission, school development plan, and school budget plan—and to the suboptimal nature of pedagogical indicator-based supervision and the lack of structured, sustained professional training. Principal support that is motivational and adaptive has demonstrably enhanced teacher enthusiasm, yet it has not proven transformative because it is not accompanied by specific data-driven supervision and feedback systems.

The effectiveness of deep learning implementation at rural elementary schools is thus largely determined by the strength of the institutional system sustaining it, encompassing planning integration, pedagogical supervision, and structured teacher professional development operating in synergistic concert. Theoretically, this study enriches the field of instructional leadership by positioning deep learning as a transformational variable in the rural elementary school context, thereby extending the scope of educational leadership theory beyond its predominantly urban focus. Practically, this study produces a model for strengthening deep learning implementation that integrates planning, supervision, and professional development in a unified framework—one that may serve as a reference point and be replicated by schools with comparable characteristics, particularly in the context of the Merdeka Curriculum implementation in rural areas.

References

- Angga, A., & Iskandar, S. (2022). Principal leadership in improving learning quality and student achievement in elementary schools. *Journal of Education and Practice*, 13(5), 45–52.
- Artanti, Y., et al. (2024). The influence of instructional supervision on teacher performance and learning quality. *International Journal of Educational Management*, 38(2), 112–124.
- Fitriani, A., & Santiani, N. (2025). Implementation of deep learning in elementary school: Challenges and opportunities. *Journal of Elementary Education Research*, 7(1), 21–34.
- Fullan, M., Hill, P., & Crevola, C. (2013). *Breakthrough*. Corwin Press.
- Fullan, M., & Langworthy, M. (2014). *A rich seam: How new pedagogies find deep learning*. Pearson.
- Hakim, L., et al. (2025). Mindful, meaningful, and joyful learning: A framework for deep learning in 21st-century schools. *International Journal of Learning and Development*, 15(1), 55–68.
- Hidayani, R., Prayitno, H. J., & Handayani, S. (2025). Project-based and problem-based learning in developing critical thinking in elementary schools. *Journal of Educational Innovation*, 9(2), 77–90.
- Hoe'rudin, C., Kurniady, D. A., & Sudarsyah, A. (2024). Instructional leadership and school effectiveness: A systematic review. *Journal of Educational Administration and History*, 56(3), 301–318.
- Khasanah, U., Yulaeha, Y., & Permana, J. (2025). The simultaneous influence of instructional leadership on teacher performance: An empirical study. *Journal of School Leadership*, 35(1), 88–105.
- Munna, A. S. (2022). Teaching and learning process to enhance teaching effectiveness in higher education. *International Journal of Humanities and Innovation*, 5(1), 1–8.
- Sudirman, A., et al. (2025). Teacher readiness for authentic assessment in deep learning implementation. *International Journal of Curriculum and Instruction*, 17(1), 40–54.
- Suhartono, S., et al. (2024). Deep learning integration in school planning documents and its effect on learning quality. *Journal of Educational Research and Practice*, 14(2), 109–122.
- Warman, D., et al. (2025). Barriers to deep learning implementation in rural elementary schools: Time, technology, and structured support. *Journal of Rural Education*, 12(1), 61–76.
- Halawa, Y., Asrori, R., & Purnawanti, Y. S. (2025). Development of Multimedia-Based Interactive Learning Media to Increase Student Learning Motivation. *BADA'A: Journal of Basic Education*, 7(2).
- Widyawati, L., Asrori, M. A. R., & Trisnantari, H. E. (2025). Grade VI Teacher Working Group (KKG) Strategies in Preparation for Deep Learning Implementation. *Pendas: Journal of Basic Education*, 10(03).