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Academic Supervision for Developing Teachers' Growth Mindset and Instructional Innovation in Primary Schools

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Abstract

This article examines three interconnected issues: (1) principals' academic-supervision strategies for developing teachers' growth mindset, (2) manifestations of that development in instructional innovation, and (3) supervision follow-up that sustains improvement. A qualitative case-study design was conducted at SDN Mundu 01, Tanjung District, Brebes Regency, Indonesia, involving one principal and seven teachers selected purposively. Data were collected through in-depth interviews, observations, teacher reflections, and document analysis. Data were analyzed using the interactive model of Miles, Huberman, and Saldaña through data condensation, data display, and conclusion drawing/verification, with source and technique triangulation. Findings show that dialogic supervision through planning, pre-observation, observation, feedback, reflection, and follow-up fostered openness to feedback, willingness to improve, courage to test new strategies, and innovation in methods, media, and technology. Initial teacher anxiety during observation decreased when supervision was supportive and non-judgmental. Follow-up through coaching, mentoring, lesson study, learning communities, training, individual assistance, repeat observation, and sharing good practice sustained improvement. The study concludes that developmental supervision can connect growth mindset with sustainable instructional innovation. Practically, schools can use supervision findings to design differentiated professional-development support based on teachers' identified needs.

Keywords Academic Supervision; Growth Mindset; Instructional Innovation

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1. INTRODUCTION

Educational change requires teachers not only to perform routine instruction but also to generate, test, and sustain new ideas that are relevant to students' needs. (Gkontelos et al., 2023) show that teacher innovation should be understood as work behavior that moves from recognizing opportunities and generating ideas to implementation and sustained use of new practices. In primary schools, this demand is increasingly important because curriculum change, technological development, and diverse learning needs are encountered directly in the classroom. Teachers' capacity to respond to change is not supported by technical skills alone; beliefs about their ability to learn and develop also shape their readiness to renew instructional practice.

Instructional innovation is likewise more than occasional use of digital media or a superficial variation of teaching methods. According to (Gkontelos et al., 2022), innovative behavior involves a

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fuller process in which teachers identify room for improvement, generate alternatives, secure support, implement ideas, and sustain effective practices. This perspective treats innovation as part of teachers' professional work rather than as an additional activity detached from instruction. Because the process requires teachers to face uncertainty and evaluate the consequences of their actions, innovation needs a work environment that allows experimentation, discussion, and learning from shortcomings without treating error as the endpoint of professional development.

One concept that helps explain teachers' readiness to learn from experience is growth mindset, the belief that abilities can be developed through effort, strategy, experience, and continuous learning. Current evidence, however, suggests that the benefits of teachers' growth mindset need to be interpreted proportionately. (Bardach et al., 2024), in a meta-analysis of teacher studies, found generally small positive relationships with motivational outcomes such as self-efficacy and mastery orientation, while links with several other outcomes were not consistently significant. This evidence helps prevent growth mindset from being reduced to a slogan; what matters is how the belief is translated into reflective practice, openness to feedback, and observable improvement in instruction.

At the professional level, growth mindset can be associated with perseverance and work engagement when teachers interpret challenges as opportunities to develop their capacity. (L. Liu et al., 2023), in research with language teachers, indicate that growth mindset, grit, and positive teaching experiences are related to teachers' work engagement. Although that context differs from primary schooling, the mechanism suggests that mindset development is strengthened when teachers experience work processes that allow them to try, receive support, and notice progress. Consequently, cultivating a growth mindset in schools should be embedded in concrete professional learning systems rather than delivered merely as motivational messaging to teachers.

Teachers' mindsets also have social consequences because the messages teachers convey during instruction can shape how students interpret ability and learning. (MacDonnell Mesler et al., 2021) provide longitudinal evidence indicating that teacher mindset is associated with the development of students' growth mindset. This relationship reminds us that teachers' professional change can extend beyond the individual and influence the psychological climate of the classroom. When teachers routinely use errors as learning resources, value process, and show that strategies can be improved, students receive a model that ability is not static. Developing teachers' growth mindset therefore has a dual relevance: it supports teachers' professional learning while also contributing to students' learning experiences.

Mindset, however, cannot be separated from practice and school context. (Yu et al., 2022), through research in primary schools, show that students' growth mindset is associated with particular teaching practices and with a school climate that values holistic development. This finding underscores that individual beliefs operate alongside the messages embedded in instruction and in the organization. For teachers, the implication is that growth mindset development requires professional experiences that allow them to test strategies, analyze student responses, and adjust instruction. Principals therefore occupy an important position in building conditions through which a belief in development is translated into professional behavior that can be observed in classrooms.

The distinction between belief and practice also requires attention. Teachers who report a growth mindset do not automatically provide growth-mindset-oriented feedback consistently in classroom instruction. (K. Zhang & He, 2024), through classroom observation, identified discrepancies between self-reports and feedback behavior, influenced by institutional, cultural, and broader educational pressures. This evidence strengthens the case for developing growth mindset through mechanisms that touch actual practice. Academic supervision can provide such a mechanism because the principal does not merely hear teachers' beliefs but can observe instruction, discuss evidence, offer feedback, and design follow-up support in response to identified needs.

The principal's role in promoting innovation is not limited to giving instructions. (Bao, 2024) shows

that principals' transformational leadership can be associated with teachers' innovative behavior through the meaning teachers attach to their work and related psychological conditions. In school practice, this finding points to the importance of leadership relationships that provide support, clear direction, and room for teachers to take initiative. Academic supervision is especially close to instruction because principal–teacher interaction centers on planning, implementation, and improvement of teaching. The quality of that process can therefore determine whether classroom observation is experienced as control or as an opportunity for professional learning.

Instructional leadership becomes especially meaningful when it is connected to teachers' professional learning. (Thien & Liu, 2024) identify relationships among instructional leadership, teacher self-efficacy, and professional learning, including patterns that are not always simple or linear. This means that principal support needs to respond to teachers' needs and developmental stages. Uniform supervision risks becoming an administrative requirement, whereas diagnostic and dialogic supervision can help teachers identify strengths, examine instructional problems, and select improvement actions. This perspective provides a basis for examining academic supervision as a developmental process rather than merely an instrument for rating performance.

(He et al., 2024) demonstrate that principals' instructional leadership can predict teacher professional development, particularly when leaders provide learning opportunities and meaningfully coordinate instructional work. This finding emphasizes that leadership quality goes beyond checking document compliance and must connect with opportunities for teachers to learn from practice. In primary schools, this connection is particularly important because principals remain close to day-to-day instruction and can facilitate reflection after classroom observation. Academic supervision designed as a learning cycle allows classroom evidence to be converted into specific decisions about professional development rather than remaining as an administrative record.

In Indonesia, principals' academic supervision has been linked to teaching quality and school culture. (Nursidah et al., 2022) suggest that supervision quality does not operate in isolation but within an organizational climate that supports teaching practice. This is relevant to growth mindset because openness to feedback is not solely an individual characteristic. Teachers are more likely to engage with feedback when supervision occurs in a culture that values dialogue, improvement, and learning. Discussion of academic supervision therefore needs to position communication, professional relationships, and follow-up as key elements that connect classroom observation with changes in teaching practice.

At the primary-school level, well-planned academic supervision can help principals understand instruction while supporting teachers' competence development. (Suriati et al., 2022), in qualitative research in primary schools, describe supervision through planning, observation or measurement of performance, development support, evaluation of results, and program revision. This sequence shows that supervision is a cycle rather than a one-time event. When the cycle is implemented supportively, each stage can become a learning experience: pre-observation clarifies needs, observation provides evidence, post-observation generates reflection, and follow-up creates opportunities to test improvements in practice.

The relationship between supervision and teaching performance also highlights motivational dimensions. (Supriadi et al., 2021) indicate that principals' academic supervision and work motivation are positively related to teaching performance. For growth mindset development, the implication is not that supervision automatically changes beliefs, but that the way supervision is conducted can create experiences that strengthen motivation to develop. When teachers receive actionable feedback and support to improve, supervision is more likely to be experienced as professional assistance. When it focuses only on deficits and scores, teachers may become defensive and avoid instructional experimentation.

Principal leadership and the school as a learning organization are related to teachers' innovative

work behavior. Hidayat and Patras (2022) show that leadership and learning-organization characteristics can explain variation in innovative teacher behavior under rapidly changing conditions. Recent Indonesian studies reinforce the developmental role of school leadership: coaching-based learning communities can strengthen reflective professional learning and teachers' pedagogical competence (Whindari et al., 2026), while principals' instructional leadership and teacher work motivation are associated with elementary teachers' pedagogical competence (Saputro et al., 2026). Yet these studies primarily explain relationships or program outcomes. Less is known at the process level about how principal–teacher interaction during academic supervision changes teachers' responses to feedback, how those responses are enacted as instructional innovation, and how follow-up sustains the change. Addressing this gap, this study explicitly examines three aspects: (1) the principal's academic-supervision strategies for developing teachers' growth mindset; (2) the manifestations of growth-mindset development in instructional innovation; and (3) supervision follow-up that supports sustained improvement in a primary-school setting. The study's novelty lies in tracing supervision, growth-mindset development, instructional innovation, and follow-up as one connected professional-learning process rather than as separate outcomes.

2. METHODS

The study used a qualitative approach with a case-study design at SDN Mundu 01, Tanjung District, Brebes Regency, Indonesia. The design was selected to develop an in-depth understanding of leadership processes and teachers' professional learning within an authentic school context. The inquiry focused on three interconnected issues: the principal's academic-supervision strategies for developing teachers' growth mindset, manifestations of growth mindset in instructional change and innovation, and forms of supervision follow-up that support the sustainability of innovation. The unit of analysis was not an individual score but patterns of action, experience, reflection, and practice emerging through academic-supervision interactions in the school.

Participants comprised one principal and seven teachers who were directly involved in academic supervision and classroom instruction. Participants were purposively selected because of their relevance to the research focus, allowing the data to include both a leadership perspective and teachers' experiences as the professionals undergoing supervision. The principal contributed information on planning, strategy, feedback, professional support, and follow-up, while teachers described how they received feedback, reflected on practice, reconsidered assumptions, improved instruction, and developed innovation. Personal names are not presented in this article so that the analysis remains focused on professional processes and findings rather than on individual identities. For article reporting, the principal is coded P and the seven teachers are coded T1-T7 so that personal identities do not become the focus while connections across data sources remain traceable.

Data were collected through in-depth interviews, observation, teacher reflection, and document analysis. Interviews explored participants' experiences and meanings related to supervision, growth mindset, and innovation; observation provided direct evidence of supervision and classroom practice; teacher reflections traced how feedback was processed into awareness of strengths, weaknesses, and improvement plans; and documents included supervision programs and instruments, observation records, instructional materials, meeting minutes, supervision reports, and follow-up records. The researcher served as the primary human instrument. Before fieldwork, instrument adequacy was checked through researcher readiness-mastery of qualitative procedures, relevant theory, and the research focus-and through a structured instrument grid that mapped each subfocus, dimension, indicator, data-collection technique, and source. The interview and observation guides were derived from this grid to ensure content alignment with the research questions. Combining these sources enabled comparison among statements, observed practices, teacher reflections, and administrative evidence rather than reliance on one type of data.

Analysis followed the interactive framework of Miles, Huberman, and Saldaña (2019) through data condensation, data display, and conclusion drawing/verification. Condensation involved coding interview, observation, reflection, and documentary records according to the research focus and grouping codes into categories and themes. Data displays were organized in reduction, triangulation, and thematic matrices to compare evidence across participants and techniques. Conclusions were developed iteratively and checked against recurrent and mutually reinforcing evidence. An audit trail documented interview transcripts, observation notes, supporting documents, analytic memos and reflection notes, and methodological decisions from fieldwork through coding, theme development, and reporting. Credibility was strengthened through source triangulation by comparing the principal's, teachers', and documentary evidence, and through technique triangulation by comparing interviews, observations, teacher reflections, and documents. Interpretations were retained only when they were supported by relevant converging evidence while remaining bounded by the context of the case.

3. FINDINGS AND DISCUSSIONS

Findings

Academic Supervision Strategies for Developing Teachers' Growth Mindset

The findings show that academic supervision at SDN Mundu 01 was implemented as a systematic sequence. The process began with scheduling and preparation of instruments, followed by initial communication and pre-observation discussion of teacher readiness, lesson resources, media, and constraints. During classroom observation, the principal directly examined instructional practice with attention to areas requiring improvement. Post-observation activities consisted of dialogic feedback, discussion of constraints, reflection on the lesson, and planning follow-up actions. Teachers did not merely receive observation results; they were given opportunities to explain their teaching experiences, identify strengths and areas for development, and agree on improvement steps for subsequent lessons. Classroom evidence therefore served directly as a basis for teacher development.

Teacher interviews and reflections show that the principal's supervisory approach was generally supportive and non-judgmental. One teacher who initially felt nervous reported that the principal's relaxed manner helped the teacher teach with greater confidence. Another teacher explained becoming more open to criticism and suggestions after understanding that feedback was intended to improve instructional quality. Observation data and post-supervision documents displayed the same pattern: feedback was discussed jointly, followed by identification of constraints, selection of solutions, and preparation of improvement plans. A professionally safe supervisory climate thus formed a tangible part of the process through which teachers became willing to reflect on their teaching practice.

Initial apprehension was visible in the teachers' accounts. T3 reported being "slightly nervous" at the beginning of classroom observation but described the principal as "relaxed and non-judgmental," which allowed the teacher to remain focused and teach more confidently. The principal (P) similarly stated that teachers were "mau menerima dengan lapang hati dan siap untuk melakukan perubahan" (willing to accept feedback openly and ready to make changes). These accounts indicate that openness was not automatic; it developed when supervision reduced the threat of judgment and framed feedback as professional support.

Table 1. Academic supervision cycle and its developmental functions

Stage	Empirical practice	Developmental function
Planning and pre-observation	Scheduling, instruments, initial communication, and discussion of readiness, lesson resources, media, and teacher constraints.	Aligns expectations and diagnoses needs before classroom observation.

Stage	Empirical practice	Developmental function
Classroom observation	Direct observation of instruction using a supportive and collaborative approach.	Generates classroom evidence for dialogue and reflection.
Post-observation	Dialogic feedback, joint reflection, and identification of strengths and improvement areas.	Supports openness to feedback and an improvement orientation.
Follow-up	Coaching, mentoring, lesson study, training, individual support, repeat observation, and monitoring.	Converts reflection into sustained improvement and innovation.

Teachers' Growth Mindset and Instructional Innovation

Teachers' growth mindset developed through four recurring patterns: openness to feedback, willingness to improve, courage to test new instructional strategies, and a more positive response to instructional challenges. These patterns were not limited to stated attitudes but appeared in practice. Teachers used a broader range of methods, including discussion, group work, experiments, project-based learning, educational games, and direct practice. The use of media and technology also expanded to instructional videos, presentations, learning applications, interactive flat panels (IFPs), LCD projectors, images, and teaching aids. Creativity was visible in the variation of activities designed to increase student participation and adapt instruction to classroom needs.

The depth of change was also evident in teachers' experiences after supervision. Teacher T3 described the principal as "relaxed and non-judgmental," preventing classroom observation from becoming a threatening situation. Teacher T2 reported becoming "more open to criticism and suggestions," while several other teachers showed greater confidence in testing strategies that had not previously been used effectively. When facing difficulties, teachers reported searching for references, discussing problems with colleagues, applying the principal's suggestions, and testing instructional alternatives. In the data, mindset change was therefore identified through teachers' responses to feedback and challenges and through concrete improvement actions in classroom practice.

The behavioral dimension of the change was also visible in the principal's description that teachers showed "gairah untuk maju dan lebih baik" (an enthusiasm to progress and improve) after supervision. This account converged with teachers' reports of revising methods, seeking references, discussing challenges with colleagues, and testing instructional alternatives. The finding therefore reflects not only a positive attitude toward feedback but also action-oriented professional learning consistent with the study's growth-mindset indicators.

Table 2. Manifestations of growth mindset and instructional innovation

Growth-mindset indicator	Empirical evidence	Innovation manifestation
Openness to feedback	Teachers accepted criticism and suggestions and identified instructional strengths and weaknesses.	Changes in methods, media, and activities based on supervision findings.
Willingness to improve	Reflection was followed by improvement plans and preparation for subsequent teaching.	Revisions to lesson planning, strategy, and student support.
Courage to test new strategies	Teachers became more confident using discussion, group work, experiments,	Broader methods and use of videos, presentations, applications,

Growth-mindset indicator	Empirical evidence	Innovation manifestation
	projects, and educational games.	IFPs, LCDs, and teaching aids.
Positive response to challenges	Difficulties prompted searching for references, peer discussion, and testing solutions.	Iterative improvement and alternative strategies matched to student needs.

Practice-based evidence shows that innovation took different forms according to subject area and teacher needs. In physical education, for example, innovation included game-based learning, direct practice, group work, movement demonstrations, videos, images, and sports teaching aids. Other lessons included discussion, interactive question-and-answer activities, simple projects, presentations, digital media, and varied activities intended to increase student engagement. These findings show that innovation was not defined only as the use of digital devices but also included changes in methods, media, activity management, and teachers' responses to students' learning needs.

Supervision Follow-up for Sustaining Innovation

Supervision follow-up was implemented as a continuation of observation, feedback, and teacher reflection. The form of support was adjusted to teacher needs and included coaching, mentoring, lesson study, learning communities, workshops, in-house training, individual assistance, repeat observation, and sharing good practice. Teachers therefore did not receive identical recommendations. Those needing support with planning or a specific instructional issue received more individualized assistance, whereas needs that could be addressed collectively were followed up through workshops, lesson study, or sharing sessions. Monitoring and evaluation were used to examine progress and determine whether support should be continued or adjusted.

Follow-up documents show differentiated professional support across teachers. Some teachers received coaching combined with repeat observation and sharing good practice, whereas others were directed to workshops, mentoring, lesson study, or individual assistance according to the problems identified. Where needs involved digital media, follow-up emphasized skill development through training and coaching. Reflection results were subsequently used to examine changes in practice during later meetings or observations. Follow-up therefore operated as a mechanism for translating supervision findings into specific and monitorable professional-development actions.

Follow-up was also reflected in teachers' documented commitments to continue reflection, evaluate learning outcomes, revise instructional materials, participate in professional training, and collaborate with the principal and peers. This evidence links follow-up to concrete professional actions rather than to administrative closure of the supervision cycle.

Discussion

Academic Supervision as a Professional-Learning Process

(Rawati et al., 2022) position academic supervision as professional support involving observation, communication, and improvement of teacher performance. In practice, the value of supervision lies less in the existence of an instrument than in how observational evidence is used to help teachers understand instruction. The case shows that the principal converted observation results into material for dialogue, enabling teachers to identify strengths and limitations more objectively. This approach narrows the distance between evaluation and development because assessment becomes the starting point for designing improvement rather than the endpoint of supervision.

Professional learning was most visible in the post-observation phase. Feedback was not delivered as a list of errors; it was discussed through conversations that invited teachers to interpret instructional outcomes, connect them to student responses, and decide on subsequent action. (Dorukbaşi & Cansoy,

2024) show that instructional leadership can influence teaching practice through teacher professional learning. In other words, the principal's influence on classrooms often works indirectly: the leader creates learning processes for teachers, teachers reconstruct their practice, and change then becomes visible in instruction. The case therefore supports an interpretation of academic supervision as a concrete form of teacher professional learning at school level.

Collaborative communication was another important element. Teachers were more open when supervision began with discussion of readiness and needs rather than with an assumption that every teacher faced the same problem. (Xie et al., 2022) suggest that collaboration can connect teacher-perceived principal leadership with teacher self-efficacy and that the strength of this relationship may differ according to teaching experience. Adaptive supervision therefore has a strong rationale: both experienced and developing teachers need opportunities to explain context and participate in improvement decisions. In this case, pre-observation and post-observation dialogue served as mechanisms through which that collaboration could occur.

The quality of feedback determines whether supervision stimulates learning or defensiveness. In the findings, effective feedback had three characteristics: it was grounded in observed events, communicated dialogically, and concluded with feasible improvement actions. (To et al., 2023) describe a shift in teacher feedback literacy from error-focused toward learner-centered feedback practices. Within supervision, teachers can be treated as professional learners; feedback should therefore help them understand information, manage their responses, and use evidence to plan their next action. This orientation makes feedback a learning resource rather than merely a judgment about previous performance.

An important counterpoint is that the change process was not frictionless. Interview reductions from several teachers recorded initial nervousness during classroom observation, while contextual data from the case showed that academic supervision could initially be interpreted primarily as appraisal. In this case, resistance appeared less as overt refusal than as evaluative anxiety and concern about being judged. Pre-observation clarification, calm observation, respectful dialogue, and constructive feedback reduced that anxiety. This finding is important for Indonesian primary schools because moving from rigid administrative supervision to developmental supervision requires a relational shift as well as a procedural one. Whindari et al. (2026) similarly show that coaching-based learning communities can strengthen reflective professional learning while implementation is shaped by differences in teacher readiness. Saputro et al. (2026) further demonstrate the relevance of principals' instructional leadership to elementary teachers' pedagogical competence. The present case extends these studies by showing how dialogic supervision can turn an initially evaluative experience into a professional-learning process linked to growth mindset and instructional innovation.

Reflection formed the bridge between feedback and mindset change. Teachers used supervision results to identify successful aspects of teaching, areas requiring improvement, and alternatives that could be tested. Such reflection does not arise simply because teachers are asked to write notes; it develops from experience, evidence, and professional conversation that provides material for reconsidering practice. (Almusharraf et al., 2022) show that mentoring, collaboration, self-study, and courses are associated with higher levels of teacher reflection. This evidence reinforces the need to design supervision as a reflective experience connected to development activities rather than as observation detached from professional learning.

Support after observation shows that the principal did not stop at delivering recommendations. Teachers were encouraged to implement improvements, prepare media, and refine planning before subsequent instruction. (Glover et al., 2023), in research on instructional coaching, indicate that actions such as modeling, practice, and feedback can predict specific classroom practices and implementation outcomes. In this case, the relevant principle is the proximity between feedback and the opportunity to try. Feedback without an implementation opportunity can remain passive information, whereas

support that enables practice turns supervision into a stronger action–reflection–action cycle.

The findings further indicate that supervision becomes more meaningful when connected to continuing professional development. (Ventista & Brown, 2023), in a systematic review of professional learning, report that training, sustained coaching, and collaborative professional development are among the forms associated with improvement in teaching and student outcomes, although the strength of evidence varies across programs. The implication is that supervision follow-up should avoid a one-off pattern. Observation results can help determine whether a teacher needs individual coaching, peer discussion, media training, or stronger instructional planning. Supervision can therefore function as a diagnostic process that directs professional-development resources more precisely.

The iterative supervision cycle also resembles the logic of lesson study, in which practice becomes an object of learning that is planned, observed, analyzed, and improved. (Kager et al., 2023), through a conceptual model of continuous professional development, emphasize connections among inputs, collaborative processes, learning activities, and outcomes that develop over time. Although supervision and lesson study are not identical, the case reveals a shared principle: classroom evidence can support iterative improvement. This principle opens the possibility of using supervision findings to initiate collective learning rather than leaving them as administrative records in the principal's files.

Technology-supported collaboration also offers lessons for extending follow-up. (Holden, 2023) shows that online lesson study can support structured interschool collaboration and help teachers co-construct knowledge when digital tools are used purposefully. In the case school, the availability of ICT resources and teachers' use of instructional media create opportunities for supervision findings to be discussed beyond formal meetings. Teachers can share media examples, lesson designs, or reflection notes digitally, making professional learning more flexible. Technology, however, remains a means rather than the goal; the quality of dialogue and a sustained focus on instructional problems are still the central conditions for meaningful collaboration.

Conceptually, the findings suggest that growth-mindset-oriented supervision is humanistic, collaborative, and focused on professional potential. (Nufusila et al., 2026), through development work on growth-mindset-based coaching supervision, emphasize collaborative and potential-oriented approaches as alternatives for strengthening teacher motivation and innovation. The convergence supports an interpretation that growth mindset need not be an additional topic outside supervision; it can be embedded in how principals ask questions, provide feedback, and organize follow-up. When teachers are treated as professionals whose capacity can develop, the structure of supervision itself communicates an organizational message that improvement is normal, possible, and learnable.

Growth Mindset as a Link between Feedback and Innovation

(Shoshani, 2021), through a growth-mindset program for mathematics teachers, reported benefits for aspects of teacher well-being and effectiveness. Its relevance to the case lies in how teachers respond to instructional difficulty: challenges are not interpreted as permanent evidence of inability but as problems that may require a different strategy. During supervision, the principal reinforced this orientation through questioning and reflection that directed attention toward possible improvement. Growth mindset is therefore better understood here as a learning orientation that influences professional decisions than as a fixed label attached to a teacher.

Reflection on professional purpose may also strengthen beliefs that ability can develop. (Heyder et al., 2023), through experiments with preservice teachers, show that a brief activity asking participants to reflect on their mission as educators can increase growth mindset. The case provides a practice-based parallel: post-supervision reflection encouraged teachers not only to judge whether a lesson succeeded or failed but also to reconnect improvement with the purpose of enhancing students' learning experiences. When reflection is linked to professional purpose, principal feedback can be interpreted more readily as a resource for development. This helps explain why openness to feedback and

willingness to test new strategies appeared together in the findings.

The use of technology in teacher innovation is also related to growth mindset and lifelong-learning orientation. (Baharuddin, 2024), in research with Indonesian teachers, identifies relationships among growth mindset, lifelong learning, continuing professional development, and ICT integration. The case reveals a compatible pattern: teachers who became more open to improvement were also more willing to use videos, presentations, applications, interactive flat panels, and LCD projectors. Technology use is not treated here as an automatic indicator of innovation; its value depends on whether media respond to instructional needs and increase student participation. Innovation therefore remains pedagogically centered rather than device centered.

The relationship between professional learning and innovation becomes stronger when teachers have opportunities to collaborate. (S. Liu et al., 2022), through multilevel research, indicate that professional learning communities are positively related to teacher innovation, with creative self-efficacy operating as one mechanism linking the two. This finding helps explain why individual follow-up alone is insufficient. Once teachers become willing to experiment, they also need an environment that supports idea exchange and professional validation. Peer discussion, sharing good practice, and learning communities can expand individual reflection into collective school knowledge and reduce the risk that innovation will stop at the first difficulty.

Not every professional community automatically generates innovation. (J. Zhang et al., 2022), through comparative research in primary schools, show that the learning culture of professional learning communities can be innovation-driven or can primarily reproduce established practice. This distinction is relevant because teachers' willingness to try new strategies requires a discussion culture that permits questioning, experimentation, and evaluation. If a learning community is used only to transmit procedures, an emerging growth mindset may have little room for enactment. Principals therefore need to ensure that collaborative follow-up focuses on authentic instructional problems and allows teachers to test and revise ideas rather than merely receive information.

Instructional innovation can also be strengthened when professional development explicitly trains teachers to design creative learning experiences. (Patphol, 2022) found that a professional-learning-community-based training program for primary teachers improved learning-management skills and students' creativity and innovation outcomes. In this case, methods such as experiments, projects, discussion, and group work become more meaningful when the principal follows supervision with opportunities for teachers to redesign instruction. Growth mindset provides psychological readiness to learn, whereas professional development supplies the knowledge and skill needed for that readiness to become planned innovation in the classroom.

For technology use, successful integration cannot be explained simply by the presence of devices. (Peng et al., 2023), in research with in-service teachers, show that attitudes, self-efficacy, digital competence, and tool use interact in ICT integration. The case supports this interpretation: LCD projectors, interactive flat panels, laptops, and internet access are resources, but innovation occurs when teachers have the confidence and competence to align media with instructional goals. Supervision can help by identifying specific digital-competence needs and linking them to appropriate training or support. Recommendations then move beyond the general instruction to "use technology" and become feasible development plans.

Technology integration is also dynamic. (Lai et al., 2023), through longitudinal research, indicate that the factors shaping teachers' technology use can change over time; TPACK self-efficacy, value beliefs, pedagogical practices, and contextual barriers do not carry identical weight at every stage. Academic supervision should therefore avoid assuming that one intervention will remain appropriate indefinitely. A teacher who initially needs technical support may later need help with pedagogical design or evaluation of impact. Growth mindset supports teachers in treating these changing needs as part of learning, while supervision provides a mechanism for reviewing development over time.

Technology leadership is also relevant to teachers' ICT integration. (Setia & Aufar, 2023) show a positive effect of principals' technology leadership on teacher technology integration, with government ICT policy functioning as a contextual moderator. In the case, the principal does not need to be an expert in every application but does need to create direction, access, and support for technology use. When supervision identifies a need for particular media or technology, leadership decisions regarding resources, peer learning, and follow-up can help move teachers from intention to stable classroom practice.

Teachers' digital competence itself extends beyond the ability to operate devices. (Budiyanti et al., 2022) emphasize the importance of diagnosing competence according to instructional level and need. This reinforces the interpretation that technology-based innovation should be evaluated for pedagogical fit rather than by counting applications. Academic supervision can help teachers reflect on whether media actually improve participation, understanding, and learning experiences. Growth mindset and digital competence meet in teachers' willingness to keep learning technologies, test their value, and modify or discontinue uses that do not support instructional goals.

Follow-up and the Sustainability of Instructional Innovation

Lesson study is a relevant form of follow-up because it combines collaborative planning, lesson observation, discussion, and improvement. (Elkomy & Elkhaial, 2022), through research in Egypt, show that lesson study can support peer mentoring and communities of practice while also contributing to student learning. In the present case, the value of lesson study lies less in adopting the program label than in making authentic classroom instruction an object of collective learning. When supervision identifies a problem experienced by several teachers, collective follow-up can use resources efficiently and generate richer solutions than isolated individual recommendations.

Professional development through lesson study can also reduce professional isolation by giving teachers structured opportunities to exchange knowledge and experience. (Schipper et al., 2022), in research with teacher educators, indicate that lesson study can support professional learning when implementation conditions are adequate and the process remains focused on learning. This finding strengthens the importance of designing follow-up activities with clear goals, realistic time, and instructional evidence that participants can discuss. Without these conditions, a learning community or lesson study can become a routine meeting with little impact. Sustaining innovation therefore requires collaboration to be designed as carefully as classroom observation itself.

Changes in knowledge and practice through lesson study are influenced by the knowledge sources available to teachers. (Benedict et al., 2023), through a systematic review, indicate that lesson study can support teacher learning when participants have access to curriculum resources, evidence about student learning, expert knowledge, and peers' experience. This provides a practical direction for supervision follow-up: principals need to help teachers obtain resources that correspond to the problem identified. Media-related difficulties may require examples and practice; problems of student engagement may require classroom evidence and alternative strategies. Needs-based follow-up makes supervision more likely to generate changes that teachers can sustain.

The effectiveness of lesson study and other collaborative forms also depends on how participants understand the activity. (Uffen et al., 2022), using a cultural-historical activity theory lens, show that teachers' attitudes toward and understanding of lesson study are at least as important as the way the procedure is carried out. This matters for growth mindset because follow-up will not be effective if teachers interpret coaching, repeat observation, or group discussion as an additional burden or punishment. Principals need to communicate that these activities are normal components of professional development. When their purpose is understood as support for instructional improvement, participation can move from administrative compliance toward active professional learning.

Teacher reflection is important for maintaining continuity in follow-up. (Nguyen et al., 2023), in a

case study of EFL teachers, found that lesson study can increase awareness of the value of joint planning, observation, and reflection, while also revealing constraints that can reduce its benefits. This is consistent with the present case, where reflection served as the basis for identifying improvement needs after supervision. Principals should therefore ensure that follow-up does not replace teachers' voices. Effective coaching and mentoring help teachers formulate problems, assess alternatives, and select realistic actions, preserving teachers' ownership of professional change.

(Wijayatiningsih et al., 2022) illustrate that teacher professional development through lesson study in Indonesian Muhammadiyah schools can be organized through collaborative cycles close to classroom practice. This local context is important because it demonstrates that collaborative follow-up can be adapted within Indonesian school organizations. At SDN Mundu 01, activities such as sharing good practice, in-house training, and learning communities can be positioned as direct continuations of supervision findings. Professional-development agendas are then informed not only by general school programs but also by authentic instructional problems identified through observation and teacher reflection.

When follow-up concerns technology use, structured training can strengthen teachers' competence. (Munawaroh et al., 2022), in research with primary-school teachers, demonstrate the effectiveness of a digital-competence training program in improving participants' digital competence. The implication is that principals need to distinguish problems that can be addressed through simple feedback from those requiring new competence. If a teacher lacks skills in designing or using particular technologies, repeat observation without training may merely reproduce the same difficulty. Training followed by practice and observation, by contrast, creates an opportunity to examine whether new competence is actually enacted in instruction.

Overall, follow-up prevents growth mindset from remaining an abstract positive attitude. (Yeager et al., 2022), through large-scale research, show that teachers' mindset context helps explain why a growth-mindset intervention may work differently across environments. This evidence reminds us that belief change needs consistent systems of support. In the case, such consistency appears through repeated cycles of observation, feedback, reflection, development support, renewed practice, and monitoring. The contribution of academic supervision is therefore not a claim that a single observation causes innovation; rather, supervision creates a recurring professional-learning ecology in which teachers experience concrete evidence that instructional practice can be developed.

4. CONCLUSION

This article shows that academic supervision can function as a professional-development mechanism when it is implemented as a systematic, dialogic, and improvement-oriented cycle. Planning, pre-observation, classroom observation, feedback, reflection, and follow-up create a sequence through which teachers identify strengths and development needs. Within the process, growth mindset is visible in openness to feedback, willingness to improve, courage to test new strategies, and constructive responses to instructional challenges. These changes are then manifested in more varied teaching methods, greater use of instructional media and technology, and more diverse learning activities.

Follow-up is critical to sustainability because it converts supervision results into the next learning opportunity. Coaching, mentoring, lesson study, learning communities, workshops, in-house training, individual support, repeat observation, and sharing of good practice can be used flexibly according to teacher needs. The managerial implication is that principals should position supervision not as a periodic appraisal event but as a diagnostic and developmental system connected to competence-building programs. Teachers, in turn, need to be treated as professional learners who participate in reflection and follow-up decisions rather than as passive recipients of evaluation.

Because the findings derive from a single primary-school case, their interpretation is context-bound and is not intended as a causal generalization to all schools. Future research could examine the supervision–growth mindset–innovation pattern across schools with different characteristics and use longitudinal or mixed-method designs to trace changes in practice over time. Further studies could also compare the effectiveness of different follow-up forms for teachers with different development needs. Such work would deepen understanding of academic supervision as a connection among instructional leadership, teacher professional learning, and sustainable innovation.

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