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The Role of Instructional Leadership in Enhancing Learning Innovation Through Teachers' Pedagogical Competence: A Systematic Literature Review

Risha Rismayani
Universitas Negeri Padang, Indonesia
Hadiyanto
Universitas Negeri Padang, Indonesia
Sulastri
Universitas Negeri Padang, Indonesia

Corresponding Author: risha.rismayani1@gmail.com

Abstract

Improving the quality of learning has become a major concern in 21st century education, requiring teachers to develop innovative, creative, and student-centered learning practices. Learning innovation is essential for fostering critical thinking, creativity, collaboration, and communication skills among students. However, the successful implementation of learning innovation is influenced by various factors, including instructional leadership and teachers' pedagogical competence. This study aims to examine the role of instructional leadership in enhancing learning innovation through teachers' pedagogical competence. The study employed a Systematic Literature Review (SLR) approach by analyzing relevant scholarly articles related to instructional leadership, pedagogical competence, and learning innovation. The findings indicate that instructional leadership plays a significant role in strengthening teachers' pedagogical competence through academic supervision, continuous professional development, professional learning communities, and the creation of a supportive school culture. Enhanced pedagogical competence enables teachers to design and implement innovative learning strategies, integrate educational technology, and apply student-centered approaches effectively. Furthermore, pedagogical competence serves as a crucial link between instructional leadership and learning innovation, facilitating the translation of leadership practices into improved classroom instruction. The study concludes that sustainable learning innovation can be achieved through the synergy

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between effective instructional leadership and strong pedagogical competence. Therefore, schools should prioritize the development of instructional leadership and teachers' pedagogical competence as strategic efforts to improve the quality of learning and educational outcomes.

Keywords: Instructional leadership; Learning innovation; Pedagogical competence; Teachers; Educational quality.

INTRODUCTION

Education is one of the most strategic sectors in improving the quality of human resources and supporting national development. In response to the rapid advancement of science and technology, as well as the dynamics of an increasingly globalized society, educational institutions are expected to produce graduates who possess not only strong academic knowledge but also critical thinking, creativity, communication, collaboration, and problem-solving skills. These competencies, commonly referred to as twenty-first-century skills, have become essential for addressing the challenges of the Fourth Industrial Revolution (Industry 4.0) and Society 5.0. Therefore, schools are required to develop innovative, adaptive, and student-centered learning processes to achieve educational goals effectively (Hallinger, 2022; Leithwood et al., 2023).

One of the primary indicators of educational success is the quality of classroom instruction. High-quality learning is not only reflected in the achievement of learning objectives but also in teachers' ability to create meaningful, engaging, and relevant learning experiences that address students' needs. In this context, learning innovation has become a critical factor in enhancing the effectiveness of the teaching and learning process. Learning innovation encompasses the use of innovative strategies, methods, instructional models, learning media, and educational technologies that promote student engagement and foster higher-order thinking skills (Fullan, 2021; OECD, 2023).

The rapid development of digital technology has significantly transformed teaching and learning practices in schools. The integration of information and communication technologies enables teachers to develop more interactive, flexible, and collaborative instructional approaches. Previous studies have shown that technology integration, when combined with appropriate pedagogical strategies, can improve students' learning motivation, classroom participation, and academic achievement (Trust & Whalen, 2021; Redecker, 2022). Nevertheless, the successful implementation of technology-based learning innovation largely depends on teachers' ability to design, facilitate, and manage effective instructional processes.

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Teachers play a central role in implementing learning innovation. Their capacity to create creative and innovative learning experiences is strongly influenced by their professional competencies, particularly pedagogical competence. Pedagogical competence includes the ability to understand students' characteristics, design instructional activities, implement effective teaching strategies, utilize educational technology, and conduct continuous assessment. Teachers with strong pedagogical competence are generally more capable of developing student-centered learning environments and adapting instructional strategies to accommodate students' diverse characteristics and learning needs (Darling-Hammond et al., 2022; König et al., 2023).

Pedagogical competence not only functions as a technical teaching skill but also serves as the foundation for developing learning innovation. Teachers who understand students' learning needs are better prepared to design creative, contextualized, and meaningful instructional models. Furthermore, strong pedagogical competence enables teachers to integrate digital technologies, implement Project-Based Learning (PjBL), Problem-Based Learning (PBL), and differentiated instruction, all of which have become key priorities in the implementation of Indonesia's *Merdeka Curriculum*. Previous research has consistently demonstrated that pedagogical competence is closely associated with teachers' ability to generate effective and sustainable learning innovation (Koehler et al., 2022; Scherer et al., 2023).

Despite its importance, teachers' ability to develop pedagogical competence and implement learning innovation cannot be separated from the support provided by the school environment. One of the most influential factors in strengthening teachers' professional competence is school leadership. Over the past several decades, instructional leadership has emerged as one of the most extensively studied leadership approaches in educational research due to its significant contribution to improving instructional quality and student learning outcomes (Hallinger, 2022; Liu & Hallinger, 2024).

Instructional leadership is a leadership approach that focuses on improving the quality of teaching and learning by strengthening teachers' professional capacity and cultivating a positive academic culture within schools. As instructional leaders, school principals are responsible not only for administrative management but also for planning, guiding, monitoring, and continuously evaluating instructional activities. Instructional leadership is implemented through academic supervision, teacher professional development, the establishment of Professional Learning Communities (PLCs), and the creation of school environments that encourage innovation and collaboration (Bellibaş et al., 2021; Shaked, 2023).

Numerous studies have reported that instructional leadership positively contributes to

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improving teachers' competence and instructional quality. School principals who actively conduct academic supervision and provide professional guidance enhance teachers' motivation to improve their instructional practices and adopt innovative teaching approaches. Furthermore, instructional leadership promotes a reflective school culture that encourages teachers to engage in continuous professional learning and self-improvement (Gümüş et al., 2022; Shatzer et al., 2023).

The relationship between instructional leadership and learning innovation is generally indirect. Teachers' implementation of innovative instructional practices is often the result of enhanced pedagogical competence developed through professional development programs, academic supervision, and other capacity-building initiatives facilitated by school principals. In other words, pedagogical competence serves as the mechanism that links instructional leadership to learning innovation. The more effectively instructional leadership is implemented, the greater the opportunity for teachers to strengthen their pedagogical competence, which ultimately promotes innovative and high-quality learning practices (Qian et al., 2023; Urick et al., 2024).

Although numerous studies have investigated instructional leadership, pedagogical competence, and learning innovation independently, research integrating these three variables within a single conceptual framework remains relatively limited, particularly in the context of Indonesian education. Therefore, this article aims to comprehensively examine the role of instructional leadership in promoting learning innovation through teachers' pedagogical competence based on recent empirical studies. This review is expected to contribute to the theoretical development of educational management by providing a more integrated understanding of the relationships among these constructs. Furthermore, the findings are expected to offer practical implications for school principals, teachers, and educational policymakers seeking to improve instructional quality and educational outcomes.

RESEARCH METHOD

This study employed a Systematic Literature Review (SLR) approach to comprehensively examine the role of instructional leadership in enhancing learning innovation through teachers' pedagogical competence. The SLR method was selected because it provides a systematic, transparent, and comprehensive synthesis of existing knowledge derived from relevant empirical studies. Furthermore, this approach enables researchers to identify relationships among variables, recognize existing research gaps, and propose directions for future research. The review process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, which are widely recognized for ensuring the transparency, rigor, and validity of

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systematic literature reviews.

The data sources consisted of scientific articles published in reputable national and international journals addressing instructional leadership, teachers' pedagogical competence, and learning innovation. A comprehensive literature search was conducted using several academic databases, including Google Scholar, Scopus, ERIC, and ScienceDirect. The search strategy employed a combination of keywords such as *instructional leadership*, *pedagogical competence*, *learning innovation*, *teacher competence*, and *school leadership*, together with their Indonesian and English equivalents. Only articles published between 2020 and 2025 were included to ensure that the review reflected current educational developments and recent empirical evidence.

The article selection process followed the four stages of the PRISMA framework: identification, screening, eligibility, and inclusion. During the identification stage, all articles retrieved from the selected databases were compiled, and duplicate records were removed. The screening stage involved reviewing article titles, abstracts, and keywords to determine their relevance to the objectives of the study. Articles that met the initial screening criteria were subsequently subjected to a full-text assessment during the eligibility stage to evaluate their methodological quality and relevance. Finally, during the inclusion stage, only studies that satisfied all predetermined inclusion criteria were selected for further analysis.

To enhance the credibility and trustworthiness of the review findings, each selected article was critically evaluated based on its methodological rigor, topical relevance, and contribution to the advancement of educational theory and practice. The synthesized findings were analyzed using a descriptive-analytical approach to explain how instructional leadership contributes to learning innovation through the enhancement of teachers' pedagogical competence. By integrating evidence from recent empirical studies, this systematic literature review provides a comprehensive conceptual understanding of the synergistic relationship between school leadership and teacher competence in improving the quality of teaching and learning.

RESULT

A. Instructional Leadership

Instructional leadership refers to a leadership approach that primarily focuses on improving the quality of teaching and learning within schools. Rather than emphasizing administrative functions, instructional leadership concentrates on essential educational components, including curriculum implementation, teaching and learning processes, student assessment, teacher evaluation and professional development, the provision of high-quality instructional services, and the establishment of professional learning communities (Lahiya, 2025).

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This leadership model positions teaching and learning as the school's central priorities and encourages continuous instructional improvement.

According to Hallinger (2005), instructional leaders are recognized as influential school leaders who successfully transform underperforming schools by creating strong academic cultures. They cultivate high expectations for both teachers and students while fostering an environment that supports collaboration, professional growth, and academic excellence. Through their leadership, principals encourage continuous reflection on instructional practices and promote a shared commitment to improving student learning outcomes.

Previous studies have also demonstrated a positive relationship between instructional leadership and teachers' performance. For example, Faizah et al. (2020) found that effective instructional leadership significantly enhances teachers' professional practices by providing guidance, supervision, and ongoing professional support. Such leadership enables teachers to improve instructional quality and encourages the adoption of innovative teaching strategies.

Overall, leadership can be understood as a process of influencing, guiding, and motivating individuals to achieve organizational goals through the active involvement of a leader. Within educational settings, leadership extends beyond organizational management to include the development of collaborative school cultures, effective teamwork, and the achievement of educational objectives.

Instructional leadership represents a specialized form of educational leadership that directly emphasizes the improvement of teaching quality and student learning outcomes. In this role, school principals serve not only as organizational leaders but also as instructional role models, mentors, and facilitators for teachers. Their responsibilities include supporting curriculum development, strengthening teachers' pedagogical competence, supervising classroom instruction, and creating a positive learning environment. Consequently, instructional leadership plays a critical role in enhancing educational quality by improving teachers' instructional performance, which ultimately contributes to better student achievement through strengthened teaching and learning practices.

B. Teachers' Pedagogical Competence

Teachers' competence refers to a combination of knowledge, skills, attitudes, and professional behaviors that educators are required to possess, master, and demonstrate in carrying out their professional responsibilities, as stipulated in Law No. 14 of 2005 on Teachers and Lecturers. Furthermore, Government Regulation No. 74 of 2018 on Teachers specifies that

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teachers are expected to develop several core competencies, one of which is pedagogical competence. This competency is considered fundamental because it directly influences teachers' ability to manage effective teaching and learning processes.\

The concept of pedagogy has its roots in several languages, including the Dutch paedagogiek, the English pedagogy, and the Greek term paedagogos, which combines paedos (child) and agogos (to lead, guide, or accompany). Etymologically, pedagogy refers to the process of guiding and educating learners by providing them with moral values, knowledge, and practical skills necessary for their personal and academic development. Within the educational context, pedagogical competence equips teachers with the professional capacity required to facilitate meaningful learning experiences and establish effective interactions with students (Khofifah & Ulfah, 2023).

Similarly, Lestari et al. (2023) define pedagogical competence as one of the essential professional competencies that enables teachers to effectively manage the learning process. This competency encompasses understanding students' characteristics and learning needs, designing and implementing instructional activities, assessing learning outcomes, and facilitating the development of students' diverse potentials to support their holistic growth.

Based on these perspectives and supported by the national legal framework, pedagogical competence can be understood as a core professional capability that enables teachers to organize and facilitate high-quality learning. It involves a comprehensive understanding of learners' cognitive, emotional, and social characteristics, the ability to design and deliver effective instruction, the implementation of appropriate assessment strategies, and continuous efforts to develop students' abilities and potential. Consequently, pedagogical competence serves as the foundation for effective teaching practices and plays a crucial role in improving both instructional quality and student learning outcomes.

C. Learning Inovation

Learning innovation refers to the introduction and implementation of new or improved ideas, methods, strategies, or educational practices aimed at enhancing the quality of teaching and learning. According to the Indonesian Dictionary (Kamus Besar Bahasa Indonesia), innovation is defined as the introduction of something new or different from existing practices, which may take the form of ideas, methods, tools, or products that provide meaningful improvements within a particular context. Innovation does not necessarily involve creating entirely original concepts; rather, it often entails adapting, modifying, or refining existing approaches to make them more

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effective, relevant, and responsive to current needs (Harahap, 2025).

In the educational context, learning innovation encompasses the development and application of new ideas, strategies, or actions related to curriculum design, instructional methods, learning media, and assessment practices to address educational challenges and improve learning quality. Syifa and Julia (2023) describe learning innovation as the implementation of novel ideas or practices in curriculum and instructional processes that are designed to solve educational problems and enhance teaching effectiveness. Therefore, educational innovation extends beyond technological advancement and includes pedagogical improvements that support more engaging, meaningful, and student-centered learning experiences.

Based on these perspectives, learning innovation can be understood as a continuous process of improving educational practices in response to emerging challenges within the teaching and learning process. Rather than focusing solely on creating entirely new approaches, learning innovation emphasizes the adaptation, refinement, and effective application of existing ideas to achieve better educational outcomes. Consequently, educational challenges serve as the primary catalyst for innovation, motivating educators to continuously develop instructional practices that are more effective, relevant, and responsive to the evolving needs of learners.

D. Relationship among Instructional Leadership, Pedagogical Competence, and Learning Innovation

The literature consistently demonstrates a strong interrelationship among instructional leadership, teachers' pedagogical competence, and learning innovation. These three constructs are interconnected and collectively contribute to improving instructional quality and educational outcomes. Instructional leadership serves as the driving force that creates supportive conditions for teachers' professional growth, while pedagogical competence functions as the mechanism through which leadership influences innovative classroom practices.

Instructional leadership directly affects teachers' pedagogical competence by providing continuous academic supervision, professional development opportunities, mentoring, and constructive feedback. School principals who prioritize instructional improvement encourage teachers to reflect on their teaching practices, strengthen their instructional knowledge, and adopt effective pedagogical strategies. Such leadership practices foster a collaborative school culture that supports continuous professional learning and instructional excellence. As teachers receive consistent guidance and support, their pedagogical competence develops progressively, enabling them to respond effectively to diverse student needs and changing educational demands.

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Improved pedagogical competence subsequently facilitates the implementation of learning innovation. Teachers with strong pedagogical knowledge are better equipped to design learner-centered instruction, integrate educational technologies, employ active learning approaches, and implement authentic assessment strategies. These competencies enable teachers to create engaging and meaningful learning environments that promote students' critical thinking, creativity, collaboration, and problem-solving skills. Consequently, pedagogical competence acts as a bridge between leadership practices and classroom innovation.

Previous empirical studies have consistently reported positive relationships among these variables. Effective instructional leadership enhances teachers' professional competence, which in turn increases their capacity to implement innovative instructional practices. This indicates that pedagogical competence plays a mediating role in explaining how instructional leadership contributes to learning innovation. Rather than influencing innovation directly, instructional leadership primarily strengthens teachers' professional capabilities, which subsequently translate into improved instructional practices and innovative learning experiences.

Overall, the reviewed literature suggests that sustainable learning innovation cannot be achieved solely through leadership or teacher competence independently. Instead, it emerges from the synergy between effective instructional leadership and continuously developed pedagogical competence. School principals who establish a supportive instructional environment, encourage professional collaboration, and invest in teachers' continuous learning create favorable conditions for educational innovation. Therefore, strengthening instructional leadership and enhancing teachers' pedagogical competence should be regarded as complementary strategies for improving instructional quality and achieving long-term educational excellence.

DISCUSSION

A. The Role of Instructional Leadership in Developing Teachers' Pedagogical Competence

Instructional leadership is widely recognized as one of the most influential models of educational leadership because it places the improvement of teaching and learning quality at the center of school leadership practices. Within this perspective, school principals are expected to perform not only administrative functions but also serve as instructional leaders who actively guide, support, and facilitate teachers in enhancing their instructional practices. Hallinger (2022) argues that instructional leadership emphasizes curriculum management, instructional supervision, and continuous professional development as essential strategies for improving educational quality.

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One of the most significant manifestations of instructional leadership is the implementation of academic supervision. Through systematic and continuous supervision, school principals are able to identify teachers' professional needs, provide constructive feedback, and assist teachers in improving their classroom instructional practices. Regular academic supervision also creates opportunities for teachers to reflect critically on their teaching performance, evaluate instructional effectiveness, and continuously strengthen their pedagogical competence.

Beyond academic supervision, instructional leadership is reflected in the organization of various professional development initiatives, including training programs, workshops, seminars, coaching, and mentoring activities. These initiatives are designed to enhance teachers' capacity to understand students' diverse characteristics, design effective instructional plans, integrate educational technology, and implement appropriate assessment strategies. Bellibaş et al. (2021) reported that school principals who consistently practice instructional leadership significantly increase teachers' participation in professional learning activities and collaborative development programs.

Instructional leadership also contributes to establishing a positive school culture that supports continuous learning and professional collaboration. A collaborative school environment encourages teachers to exchange experiences, discuss instructional challenges, and collectively develop innovative solutions to improve teaching effectiveness. Such conditions foster the development of Professional Learning Communities (PLCs), which provide sustainable opportunities for collaborative inquiry, reflective practice, and continuous improvement of teachers' pedagogical competence.

Overall, the synthesis of the reviewed literature indicates that instructional leadership plays a strategic role in strengthening teachers' pedagogical competence through academic supervision, continuous professional development, and the creation of a supportive school culture that promotes collaboration, reflective practice, and ongoing instructional improvement. These leadership practices establish the professional conditions necessary for teachers to enhance their instructional capabilities and effectively respond to evolving educational challenges.

B. The Role of Teachers' Pedagogical Competence in Promoting Learning Innovation

Pedagogical competence is widely recognized as one of the fundamental professional competencies that teachers must possess to perform their instructional responsibilities effectively. It encompasses the ability to understand students' characteristics, master learning theories and instructional principles, develop curricula, design and implement effective learning activities,

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integrate educational technologies, conduct comprehensive assessments, and facilitate students' holistic development. Within the context of contemporary education, pedagogical competence extends beyond technical teaching skills; it represents a critical professional capacity that enables teachers to develop learning innovations that are responsive to students' needs and evolving educational demands (Lestari et al., 2023; Sari & Handayani, 2023).

The shift from teacher-centered learning to student-centered learning has fundamentally transformed teachers' instructional roles. In student-centered classrooms, learners are regarded as active participants who construct knowledge through meaningful learning experiences rather than passive recipients of information. Consequently, teachers are expected to possess strong pedagogical competence to design learning experiences that accommodate students' diverse characteristics, learning preferences, and developmental needs. According to Kurniasih (2023), teachers with well-developed pedagogical competence are better able to manage instructional processes flexibly and adaptively, resulting in more effective and learner-centered educational practices.

Numerous empirical studies consistently demonstrate a close relationship between pedagogical competence and teachers' capacity to develop learning innovation. Teachers with higher levels of pedagogical competence are more capable of identifying students' learning needs, selecting appropriate instructional approaches, and designing creative and contextually relevant learning strategies. Dewi (2022) reported that pedagogical competence significantly influences teachers' ability to design innovative instructional practices that enhance student engagement. Similarly, Fitriani (2022) found that teachers possessing strong pedagogical competence are more successful in creating active learning environments that foster the development of twenty-first-century skills.

Pedagogical competence also plays a crucial role in the successful implementation of innovative instructional models that are increasingly adopted in schools. Approaches such as Problem-Based Learning (PBL), Project-Based Learning (PjBL), Discovery Learning, Inquiry Learning, and Blended Learning require teachers to systematically design learning activities, effectively facilitate student interaction, and employ assessment strategies aligned with instructional objectives. Andriyani et al. (2021) demonstrated that the implementation of Problem-Based Learning, supported by teachers' pedagogical competence, significantly improves students' critical thinking and problem-solving abilities. Likewise, Nugroho and Prasetyo (2022) emphasized that pedagogical competence is a determining factor in the successful implementation of authentic assessment within project-based learning environments.

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Beyond implementing innovative instructional models, pedagogical competence also contributes to teachers' ability to develop creative learning resources and instructional media. Teachers with strong pedagogical knowledge are better equipped to select, adapt, and design instructional materials that correspond to students' characteristics and intended learning outcomes. Hasanah (2023) argued that well-developed pedagogical competence encourages teachers to utilize diverse learning resources creatively, thereby making classroom instruction more engaging, interactive, and meaningful. Appropriate instructional media not only enhance students' motivation and attention but also increase their participation throughout the learning process.

In the era of digital transformation, pedagogical competence has become increasingly important for supporting technology-enhanced learning innovation. Effective integration of information and communication technologies requires teachers not only to possess technical digital skills but also to understand how technology can be meaningfully incorporated into instructional practices. Teachers with strong pedagogical competence are better able to select appropriate digital tools, design technology-supported learning activities, and create interactive and collaborative learning environments. Syifa and Julia (2023) found that the successful implementation of technology-based learning largely depends on teachers' pedagogical competence in managing instructional processes. These findings are supported by Hasanah (2023), Pratiwi (2023), and Suryani et al. (2023), who identified pedagogical competence as a key determinant of successful technology integration in twenty-first-century education.

Furthermore, pedagogical competence enables teachers to implement differentiated instruction, which has become a central component of Indonesia's Merdeka Curriculum. Differentiated instruction requires teachers to recognize differences in students' characteristics, interests, readiness levels, and learning needs so that instructional activities can be tailored to individual learners. Lestari et al. (2023) suggested that teachers' ability to implement differentiated instruction is strongly influenced by their level of pedagogical competence. Teachers with higher pedagogical competence are more capable of developing instructional strategies that accommodate learner diversity while improving students' overall learning experiences.

Pedagogical competence is also closely associated with teachers' capacity for reflective practice and continuous instructional evaluation. Competent teachers do not merely implement lesson plans but also critically evaluate the effectiveness of their instructional strategies and make continuous improvements to enhance learning quality. Miftah and Syamsurijal (2024) emphasized that reflective practice represents a fundamental dimension of

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pedagogical competence that stimulates the development of instructional innovation. Through ongoing reflection, teachers can identify weaknesses in their teaching practices and develop innovative solutions to improve instructional effectiveness.

A growing body of empirical evidence further indicates that pedagogical competence contributes not only to instructional quality but also to improved student learning outcomes. Sari and Handayani (2023) found a positive relationship between teachers' pedagogical competence and students' academic achievement. These findings suggest that learning innovation generated through strong pedagogical competence benefits both instructional processes and overall student performance. In this regard, pedagogical competence functions as a critical mechanism linking effective teaching practices with enhanced educational outcomes.

Overall, the synthesis of the reviewed literature indicates that pedagogical competence constitutes the fundamental foundation for the development of learning innovation. It enables teachers to create instructional practices that are creative, adaptive, collaborative, and learner-centered through the implementation of innovative teaching models, effective technology integration, the development of engaging learning resources, and the application of differentiated instruction. Consequently, higher levels of pedagogical competence enhance teachers' capacity to generate sustainable learning innovation that improves both instructional quality and student achievement. Therefore, strengthening teachers' pedagogical competence should remain a strategic priority for improving educational quality and supporting the ongoing transformation of teaching and learning practices.

C. The Mediating Role of Teachers' Pedagogical Competence in the Relationship between Instructional Leadership and Learning Innovation

The synthesis of the reviewed literature indicates that the relationship between instructional leadership and learning innovation is not direct but is mediated by teachers' pedagogical competence. Within educational settings, instructional leadership functions as a driving force that establishes a supportive school environment for teachers' professional development. At the same time, pedagogical competence serves as the mechanism through which school leadership practices are translated into innovative instructional practices. In other words, the effectiveness of instructional leadership in fostering learning innovation largely depends on its capacity to strengthen teachers' pedagogical competence (Werdiningsih et al., 2023; Ningrum et al., 2025).

From a conceptual perspective, instructional leadership places the improvement of

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teaching and learning quality at the core of school leadership. School principals are expected not only to perform administrative and managerial responsibilities but also to actively develop teachers' professional capacity through academic supervision, professional mentoring, instructional evaluation, and the cultivation of a positive learning culture within the school. These leadership practices directly contribute to improving teachers' pedagogical competence, particularly in lesson planning, classroom management, educational technology integration, and student assessment (Prakoso, 2021; Setiawati, 2021).

The pedagogical competence developed through instructional leadership subsequently becomes the primary foundation for teachers to generate learning innovation. Teachers with strong pedagogical competence are better able to identify students' learning needs, select appropriate instructional strategies, develop creative learning resources, and effectively integrate digital technologies into classroom instruction. These capabilities enable teachers to design learning experiences that are more engaging, interactive, and aligned with the demands of twenty-first-century education. Consequently, pedagogical competence serves as a bridge connecting school leadership practices with meaningful improvements in classroom instruction (Fitriani, 2022; Hasanah, 2023).

This conceptual framework suggests that instructional leadership does not directly produce learning innovation. Instead, it first enhances teachers' professional capacity by strengthening their pedagogical competence. The more effectively school principals implement instructional leadership practices, the greater the opportunity for teachers to improve their professional capabilities. Improved pedagogical competence subsequently encourages teachers to develop innovative instructional practices that contribute to higher educational quality.

Empirical evidence supports this relationship. Ramadhan et al. (2022) reported that school principals who consistently practice instructional leadership improve instructional quality by strengthening teachers' professional competence. Their findings indicate that continuous academic supervision enables teachers to refine classroom practices, enhance reflective thinking, and develop more innovative instructional strategies. These findings suggest that improving pedagogical competence is one of the primary outcomes of effective instructional leadership.

In addition to academic supervision, instructional leadership contributes to pedagogical competence through continuous professional development (CPD) initiatives. School principals acting as instructional leaders encourage teachers to participate in training programs, seminars, workshops, mentoring activities, and Professional Learning Communities (PLCs). These

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professional learning opportunities allow teachers to update their knowledge, improve instructional skills, and exchange best practices with colleagues. Hastuti et al. (2024) found that teachers who actively participate in continuous professional development demonstrate significantly higher levels of pedagogical competence than those with limited involvement in such activities.

Furthermore, the collaborative school culture fostered through instructional leadership plays a significant role in strengthening teachers' pedagogical competence. Principals who cultivate collaborative environments encourage teachers to share professional experiences, discuss instructional challenges, and engage in collective reflection on classroom practices. Such collaborative cultures not only enhance pedagogical competence but also stimulate the emergence of innovative instructional ideas that can be implemented in classroom settings (Santoso, 2021; Syahminan et al., 2024).

The pedagogical competence acquired through these professional development processes subsequently becomes the primary driver of learning innovation. Teachers with strong pedagogical competence are more capable of implementing innovative instructional approaches, including Project-Based Learning (PjBL), Problem-Based Learning (PBL), Inquiry Learning, Discovery Learning, and Blended Learning. Moreover, they are more successful in integrating digital technologies to promote active student engagement. Syifa and Julia (2023) found that teachers with higher levels of pedagogical competence are considerably more effective in integrating educational technology into classroom instruction than those with lower levels of pedagogical competence.

Within the implementation of Indonesia's Merdeka Curriculum, pedagogical competence has become increasingly important because teachers are expected to implement differentiated instruction that accommodates students' diverse characteristics, interests, readiness levels, and learning needs. Effective differentiated instruction requires teachers to conduct diagnostic assessments, design flexible instructional strategies, and provide learning experiences tailored to individual learners. These competencies can only be achieved when teachers possess strong pedagogical competence and receive continuous support through effective instructional leadership (Lestari et al., 2023; Kurniasih, 2023).

The literature synthesis also indicates that pedagogical competence functions as a mediating variable that strengthens the influence of instructional leadership on learning innovation. Sulistyowati et al. (2023) reported that the positive effect of instructional leadership on instructional quality becomes substantially stronger when teachers demonstrate high levels of pedagogical competence. This finding suggests that effective instructional leadership alone is

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insufficient to generate meaningful learning innovation unless it is accompanied by continuous improvement in teachers' pedagogical competence. Conversely, teachers with strong pedagogical competence are more capable of translating school policies and leadership initiatives into innovative classroom practices.

These findings are consistent with Rahman (2023), who reported that teachers receiving continuous support from school principals through academic supervision and professional mentoring are more likely to engage in reflective practice and develop innovative teaching strategies. Continuous reflection enables teachers to evaluate instructional effectiveness, identify areas requiring improvement, and adapt their teaching practices to meet students' evolving learning needs.

Overall, the reviewed literature confirms that teachers' pedagogical competence is the key mechanism linking instructional leadership with learning innovation. Instructional leadership provides the strategic direction, professional support, and organizational conditions necessary for teacher development, while pedagogical competence enables teachers to transform these supports into effective and innovative instructional practices. Therefore, efforts to improve learning innovation should extend beyond educational policies and the provision of learning facilities by prioritizing instructional leadership that systematically strengthens teachers' pedagogical competence. The synergy between effective instructional leadership and strong pedagogical competence creates favorable conditions for sustainable learning innovation and ultimately contributes to improving the overall quality of education.

CONCLUSION

Based on the findings of this systematic literature review, it can be concluded that instructional leadership plays a pivotal role in improving the quality of teaching and learning through the enhancement of teachers' pedagogical competence. Instructional leadership, implemented through academic supervision, continuous professional development, the establishment of Professional Learning Communities (PLCs), and the creation of a supportive school culture, significantly contributes to strengthening teachers' professional capacity and instructional effectiveness. In this context, school principals function not only as administrative managers but also as instructional leaders who facilitate teachers' continuous professional growth and promote instructional excellence.

The review further indicates that teachers' pedagogical competence constitutes the fundamental basis for the development of learning innovation. Teachers with strong pedagogical

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competence are better equipped to understand students' characteristics, design instruction that addresses diverse learning needs, implement innovative teaching models, integrate educational technologies, and conduct effective assessments. These competencies enable teachers to create learning environments that are creative, interactive, collaborative, and learner-centered, ultimately enhancing both instructional quality and student learning outcomes.

Furthermore, this review confirms that teachers' pedagogical competence serves as the mediating mechanism linking instructional leadership and learning innovation. Effective instructional leadership enhances teachers' pedagogical competence through sustained academic supervision, mentoring, and professional development initiatives. Improved pedagogical competence subsequently enables teachers to develop and implement innovative instructional practices that respond to the demands of twenty-first-century education. Consequently, the positive influence of instructional leadership on learning innovation becomes more substantial when supported by high levels of teachers' pedagogical competence.

The findings also suggest that improving learning innovation cannot be achieved solely through educational policy reforms or the provision of instructional resources. Instead, sustainable educational improvement requires the integration of effective instructional leadership with the continuous development of teachers' pedagogical competence. Therefore, schools should strengthen instructional leadership practices that prioritize teaching and learning while simultaneously providing ongoing professional development opportunities for teachers. Such integrated efforts will foster sustainable learning innovation and contribute to the continuous improvement of educational quality.

FUTURE DIRECTIONS

Although this systematic literature review provides a comprehensive understanding of the relationships among instructional leadership, teachers' pedagogical competence, and learning innovation, several opportunities remain for future research. First, future studies should empirically validate the conceptual framework proposed in this review by examining the mediating role of teachers' pedagogical competence using quantitative approaches, such as Structural Equation Modeling (SEM) or Partial Least Squares Structural Equation Modeling (PLS-SEM). Such analyses would provide stronger empirical evidence regarding the causal relationships among these variables.

Second, future research should extend the investigation to different educational contexts, including primary, secondary, and higher education institutions, as well as schools with diverse

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geographical, cultural, and socioeconomic characteristics. Comparative studies across educational settings and countries would enhance the generalizability of existing findings and provide a broader understanding of how contextual factors influence the effectiveness of instructional leadership.

Third, researchers are encouraged to incorporate additional variables that may strengthen or explain the relationship between instructional leadership and learning innovation. Potential mediating or moderating variables include teachers' digital competence, professional commitment, organizational learning culture, teacher self-efficacy, innovative work behavior, school climate, and organizational support. Examining these variables may contribute to the development of a more comprehensive theoretical framework.

Finally, considering the rapid advancement of digital transformation and artificial intelligence in education, future studies should explore how instructional leadership can support teachers in integrating emerging technologies into instructional practices. Investigating the role of instructional leadership in promoting AI-supported learning, digital pedagogical competence, and technology-enhanced instructional innovation would provide valuable insights for educational leaders seeking to improve teaching quality in the context of twenty-first-century education.

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