International Journal of Learning, Teaching and Educational Research
Vol. 24, No. 3, pp. 366-382, March 2025
https://doi.org/10.26803/ijlter.24.3.18
Received Jan 19, 2025; Revised Mar 12, 2025; Accepted Mar 17, 2025

Factors Affecting Teachers' Implementation of Innovative Pedagogies: A Systematic Literature Review

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Abstract. Innovative pedagogy is essential for meeting the demands of modern education, yet its implementation among teachers faces significant challenges. This systematic literature review explores the factors influencing the adoption of innovative teaching practices, providing a comprehensive synthesis of recent studies published between 2021 and 2024. Following a structured methodology based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines, 13 peer-reviewed articles were selected from Scopus and Web of Science databases. Key findings reveal that individual factors, such as digital competence, self-efficacy, and intrinsic motivation, play a crucial role in enabling teachers to embrace innovative methods. At the institutional level, leadership support, organizational climate, and access to resources significantly impact teachers' readiness for change. Systemic factors, including supportive education policies, professional development opportunities, and socioeconomic conditions, further determine the sustainability of pedagogical innovation. Barriers such as technostress, resistance to change, and resource limitations remain prevalent, particularly in under-resourced contexts. This review emphasizes the need for a multifaceted approach that integrates individual, institutional, and systemic strategies to create an environment conducive to innovative teaching. The findings offer actionable insights for policymakers, educators, and researchers to bridge gaps in current practices and support transformative education. Future studies should focus on comparative and longitudinal analyses to deepen understanding and enhance the scalability of innovative pedagogical frameworks.

Keywords: Individual and Systemic Factors; Influence; Innovative Pedagogy; Innovative Teaching; Systematic Literature Review

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1. Introduction

Driven by technological advancements, globalization, and the need for student-centered learning approaches, the field of education is undergoing profound transformations (Bhuttah et al., 2024; Hamadneh et al., 2025). Traditional teaching methodologies, often rooted in content-heavy, instructor-led instruction, are increasingly challenged by innovative pedagogical approaches that emphasize active learning, engagement, and adaptability (Ahmad et al., 2023; Peng et al., 2023). The widespread integration of blended learning, artificial intelligence (AI)-assisted instruction, flipped classrooms, and gamification has reshaped educational landscapes, shifting instructional practices toward more interactive and personalized learning experiences (Santos-Villalba et al., 2020; Wu et al., 2021). These advancements align with Education 4.0, which promotes lifelong learning, problem-solving abilities, and digital literacy to prepare students for an increasingly technology-driven workforce (Basri et al., 2024; Schmid et al., 2022). While the potential of pedagogical innovation is widely recognized, effective implementation of innovative teaching methods remains a significant challenge across different educational contexts, institutions, and disciplines (Doeden & Smidt, 2024; Yang, 2022; Zakaria et al., 2024).

Although extensive research has explored the benefits and applications of innovative pedagogy, existing studies reveal that teachers continue to face multiple barriers in integrating these strategies into their instructional practices (Beni et al., 2023; Hanaysha et al., 2023). Scholars emphasize that factors such as teacher preparedness, institutional leadership, access to digital resources, and policy alignment significantly influence the extent to which educators can effectively implement student-centered, technology-enhanced teaching methods (Lima et al., 2024; Meizatri et al., 2023). However, much of the literature remains fragmented, with many studies focusing on isolated aspects of pedagogical innovation rather than providing a holistic perspective that integrates multiple influencing factors (Luque-Martínez et al., 2024; Stumbrienė et al., 2024). Furthermore, systemic barriers, including restrictive education policies, socioeconomic disparities, and unequal digital access, have not been sufficiently examined in relation to teachers' ability to implement pedagogical innovations at scale (Garba & Abdulhamid, 2024). The lack of an integrated approach to understanding these factors presents a research gap, as the successful adoption of innovative pedagogy depends on the interactions between teacher-related, institutional, and systemic influences rather than any single dimension in isolation.

To address these gaps, this study aims to systematically analyze the key factors influencing the implementation of innovative pedagogy by synthesizing research on teacher-related, institutional, and systemic influences. While prior studies have examined specific aspects such as digital literacy, technological access, and curriculum design, there remains a need to understand how these elements interact to enable or hinder pedagogical transformation (Hanaysha et al., 2023; Sofwan et al., 2024). This study conducts a systematic literature review (SLR) to synthesize existing research comprehensively, highlight the challenges, and offer evidence-based recommendations for improving the scalability and sustainability

of innovative teaching approaches across diverse educational settings. By examining these multidimensional factors, this research seeks to contribute to a more nuanced understanding of the obstacles and enablers that shape pedagogical transformation in contemporary education.

This study presents several key contributions to the fields of educational research, pedagogy, and policy development. First, it introduces a holistic framework that integrates teacher, institutional, and systemic influences, offering a comprehensive understanding of pedagogical innovation beyond previous studies that focused on isolated factors (Luque-Martínez et al., 2024; Stumbrienė et al., 2024). Second, by categorizing and analyzing barriers and enablers, this study provides practical insights for educators, policymakers, and institutional leaders on how to facilitate effective pedagogical transformation (Sofwan et al., 2024; Zakaria et al., 2024). Third, this research offers policy and institutional recommendations, bridging the gap between theory and practice by identifying strategies for teacher training, leadership engagement, and systemic policy reforms that support innovation in teaching and learning (Doeden & Smidt, 2024; Llorent-Vaquero et al., 2024). In addition, this study contributes to global discussions on education reform by synthesizing evidence from various socioeconomic and cultural contexts, allowing for comparative insights on how different education systems navigate the challenges and opportunities of pedagogical transformation (Garba & Abdulhamid, 2024; Hanaysha et al., 2023). Finally, this review serves as a foundation for future research, highlighting unexplored dimensions of innovative pedagogy and suggesting directions for longitudinal studies that assess their long-term impact on student learning, teacher development, and education policy effectiveness (Lima et al., 2024; Muniandy & Abdullah, 2023).

The relevance of these three factors—teacher-related, institutional, and systemic influences—lies in their interdependent nature, as successful pedagogical transformation requires coordinated efforts across multiple levels. Teachers are at the forefront of instructional change, making their competence, motivation, and adaptability crucial to the success of student-centered, technology-enhanced learning models (Almuhanna, 2024; Hanaysha et al., 2023; Papakostas et al., 2021; Peng et al., 2023). However, without institutional support, including leadership engagement, curriculum flexibility, and access to professional development, even highly motivated educators may struggle to sustain innovative teaching practices (Chou et al., 2018; Meizatri et al., 2023). Beyond the school or university level, broader systemic factors—including national education policies, funding mechanisms, and socioeconomic conditions—shape the feasibility of pedagogical innovation (Luque-Martínez et al., 2024; Stumbrienė et al., 2024). Educational institutions in low-resource environments often face significant structural limitations that hinder their ability to implement technology-driven, interactive teaching approaches, making policy interventions essential to closing the digital divide and promoting inclusive, future-ready education systems (Zakaria et al., 2024). Examining these interconnected dimensions enables researchers and practitioners to develop comprehensive strategies that address both immediate classroom needs and long-term systemic improvements in education.

To achieve these objectives, this study is guided by the following research questions:

1. What factors influence teachers' implementation of innovative pedagogies?
2. How do institutional conditions support or hinder the adoption of innovative teaching practices?
3. What systemic barriers and policy-level interventions impact the scalability and sustainability of innovative pedagogical approaches?

This study contributes empirical and theoretical insights that inform education policy, institutional decision-making, and teacher development by systematically addressing these questions. This research aims to foster more dynamic, inclusive, and technologically advanced learning environments that are sustainable in diverse educational, economic, and cultural contexts through an in-depth examination of the challenges and enablers of pedagogical transformation.

2. Methodology

This SLR follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. PRISMA has three key characteristics: (a) it helps define research questions clearly for systematic reviews, (b) it establishes inclusive and exclusive criteria, and (c) it facilitates research access across multiple databases within a specified timeframe (Sierra-Correa & Cantera Kintz, 2015). Therefore, PRISMA serves as an effective framework for this SLR in identifying factors affecting teachers' implementation of innovative pedagogies for data analysis.

2.1 Article Search Strategy

This study followed the essential steps of the systematic review process to gather a substantial body of relevant literature. The process began with keyword selection, followed by identifying related terms using dictionaries, thesauri, encyclopedias, and previous research. All relevant terms were compiled, and search strings were developed for the Scopus and Web of Science databases (as shown in Table 1). This initial phase of the SLR yielded 1,105 publications relevant to the study topic from the two databases.

Table 1: String key

Database	Keyword
Scopus	TITLE-ABS-KEY (*factors* OR *influence* AND *innovative AND pedagogy* OR *innovative AND teaching*)
World of Science (WoS)	(''factors'' OR ''influence'' AND ''innovative AND pedagogy'' OR ''innovative AND teaching'')

2.2 Selection Criteria

Several filtering stages were applied to the initially obtained articles to ensure the selection of appropriate and relevant articles. First, studies had to be directly relevant to the research topic, focusing on barriers, enablers, or determinants affecting teachers' engagement with innovative teaching practices. Articles that only discussed student learning outcomes without addressing teachers'

pedagogical approaches were excluded to maintain a teacher-centric perspective. Second, only peer-reviewed journal articles indexed in Scopus and WoS were considered to ensure high academic rigor and credibility. This selection excluded conference papers, book chapters, and grey literature, which may lack the same level of peer review scrutiny.

Third, the publication period was limited to January 2021–December 2024, ensuring that the review captures recent trends, technological advancements, and evolving pedagogical strategies. Given the rapid transformation of educational technology and policy, older studies may not accurately reflect contemporary challenges and opportunities faced by teachers. Fourth, only studies published in English were considered to ensure consistency in interpretation and accessibility. This decision was made to facilitate a coherent analysis of findings without the risk of misinterpretation due to translation issues. The inclusive and exclusive criteria are shown in Table 2.

Table 2: Inclusive and exclusive criteria

Criterion	Inclusive	Exclusive
Focus	Articles that are relevant to the research topic, focusing on barriers, enablers, or determinants affecting teachers' engagement with innovative teaching practices	Articles that discussed student learning outcomes without addressing teachers' pedagogical approaches
Literature type	Journal (Article)	Conference papers, Book chapters, grey literature
Timeline	2021–2024	Publications before 2021
Language	English	Language other than English

2.3 Article Selection Process

PRISMA's process is divided into four key phases: identification, screening, eligibility, and data abstraction. During the identification phase, relevant studies are located through database searches. The screening phase involves comparing these studies against predefined criteria to exclude irrelevant or low-quality research. In the eligibility phase, the remaining studies are carefully assessed to ensure they meet the inclusion criteria. Finally, data abstraction focuses on extracting and synthesizing data from the included studies to derive reliable and meaningful conclusions. This structured process ensures that the systematic review is rigorously conducted, yielding dependable findings that inform future research and practical applications.

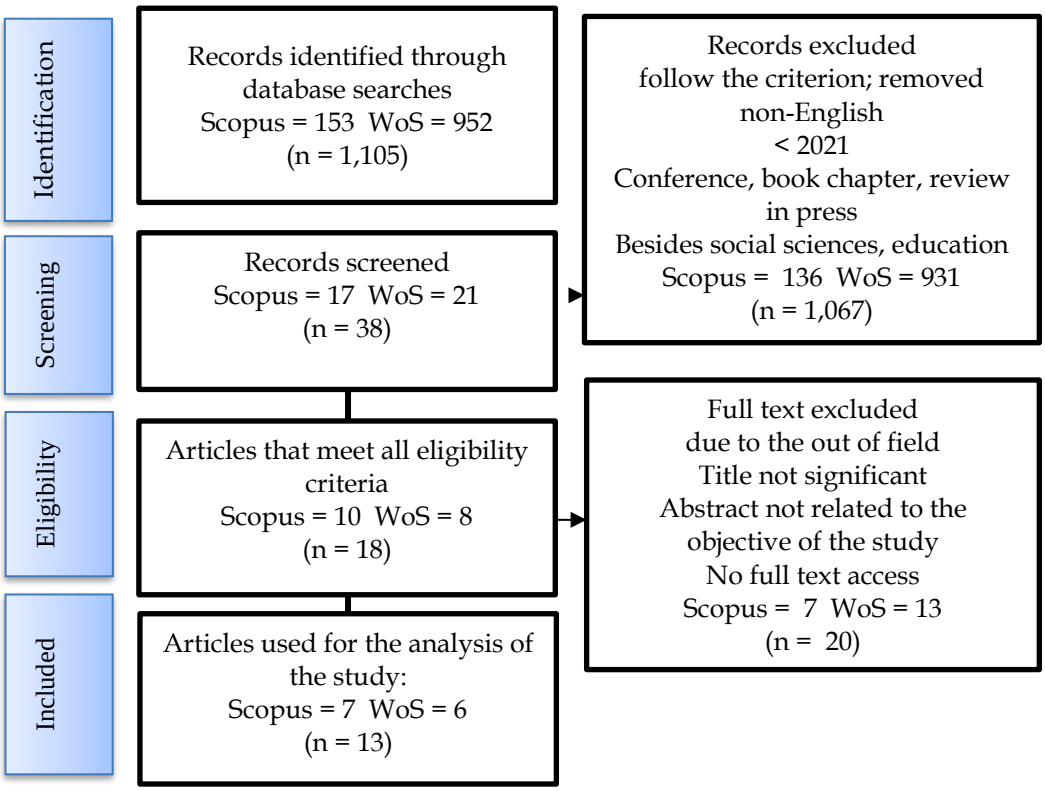

Figure 1: Flowchart of the article selection process

During the review process, 38 articles were initially shortlisted for evaluation. However, various exclusion criteria were applied at different stages of the analysis. Articles were excluded for several reasons, including the study's irrelevance to the research field, titles that did not significantly address the main research question, and abstracts that failed to align with the study's objectives. In addition, some articles were excluded due to the unavailability of full-text access, which hindered a thorough evaluation of their content. As a result, 20 articles were excluded, leaving 13 studies for further consideration. These 13 studies were included in the qualitative analysis as they were highly relevant to the research objectives and provided sufficient data for a detailed qualitative evaluation. This focused selection facilitated a more in-depth exploration of the research topic, enabling a comprehensive understanding of the subject and contributing valuable insights to the overall analysis.

2.3 Quality Assessment

Two experts conducted a quality assessment during the article selection process. In cases of disagreement, a third expert was consulted until a consensus was reached. This method follows the approach described by Wu et al. (2018).

2.4 Data Analysis

Finally, the remaining articles underwent a thorough and detailed analysis to exclude those not relevant to the research objectives. Following this systematic search and filtering process, a total of 13 articles were selected (Table 3).

Table 3: List of selected articles

Authors	Objective	Key Findings
Wu et al. (2021)	To explore factors influencing rural teachers' innovative behavior in integrating technology.	Peer support, organizational environment, and information literacy positively impact innovation; technostress is a significant barrier.
Peng et al. (2023)	To identify factors affecting ICT integration among in-service teachers.	Self-efficacy, digital competence, and attitudes toward technology predict successful ICT integration.
Sofwan et al. (2024)	To examine factors affecting teachers' innovative behavior in technology integration.	Self-efficacy and institutional support are critical predictors of teachers' technology adoption behavior.
Hidayat et al. (2023)	To analyze factors influencing creativity among English teachers in Indonesia.	Teaching experience, intrinsic motivation, and technological integration foster creativity in teaching.
Wang et al. (2023)	To examine ICT teaching competency development among pre-service teachers.	Faculty and infrastructure support are essential for developing ICT teaching skills.
Meizatri et al. (2023)	To examine leadership and readiness for innovation in rural Indonesian schools.	Change leadership and readiness for change are critical enablers of school-level innovation.
Zhang et al. (2024)	To investigate organizational climate's role in teaching innovation among preschool teachers.	Organizational climate enhances innovation, mediated by teaching efficacy.
Chou et al. (2024)	To evaluate AI adoption in teaching among higher education faculty.	Organizational innovation identification and innovative intentions strongly predict AI-supported teaching behavior.
Al-Mughairi and Bhaskar (2023)	To explore motivators and barriers for adopting ChatGPT in higher education.	Timesaving, professional development, and personalization are motivators; privacy concerns and technostress are barriers.
Manjunath and Leelavathi (2024)	To explore technological integration into Indian higher education.	Industry collaboration, gamification, and virtual reality engagement foster innovative practices in higher education.
Doeden and Smidt (2024)	To assess barriers to adopting innovative ELT strategies in rural Laos.	Socioeconomic constraints, limited training, and resources hinder innovation; culturally relevant training improves adoption.
Liu and Yodmongkol (2023)	To review factors influencing blended learning adoption in higher education.	Teacher attitudes, course design, and technological frameworks are crucial for successful implementation.
Al-Adwan et al. (2024)	To analyze higher education teachers' perspectives on technology integration.	Technostress and traditional teaching practices hinder innovation; self-efficacy and perceived usefulness positively influence adoption.

3. Result

The implementation of innovative pedagogy among teachers is influenced by a complex interplay of individual, institutional, and systemic factors. Understanding these multidimensional influences provides a comprehensive framework for analysing how educators navigate the opportunities and challenges associated with transforming teaching practices. This section discusses the findings across these dimensions, highlighting their interconnectedness and implications for fostering innovation in education.

3.1 Individual Factors

The importance of individual factors influencing the implementation of innovative pedagogy is well-documented across multiple studies. Table 4 provides an overview of individual factors influencing innovative pedagogy.

Table 4: Individual factors influencing innovative pedagogy

Individual Factors	Wu et al. (2021)	Peng et al. (2023)	Wang et al. (2023)	Sofwan et al. (2024)	Hidayat et al. (2023)	Zhang et al. (2024)	Chou et al. (2024)	Al-Mughairi & Bhaskar (2023)	Manjunath & Leelavathi (2024)	Doeden & Smidt (2024)	Liu & Yodmongkol (2023)
Digital competence	✓	✓	✓								✓
Self-efficacy		✓		✓	✓	✓					
Intrinsic motivation					✓			✓	✓	✓	
Teaching experience					✓				✓	✓	
Attitudes toward innovation		✓					✓	✓			✓
Creative self-efficacy						✓	✓				
Knowledge transfer				✓						✓	
Adaptability							✓	✓	✓		
Barriers (technostress, resistance to change)	✓							✓			✓

Digital competence is discussed in four studies and is a frequently highlighted factor as it directly impacts teachers' ability to integrate technology into their teaching practices. Wu et al. (2021) emphasized that digital competence enhances confidence and instructional quality, while Peng et al. (2023) noted its role in mediating attitudes and ICT adoption. Wang et al. (2023) further highlighted the impact of pre-service training on improving digital skills, with Liu and Yodmongkol (2023) recognizing digital competence as essential for implementing blended learning models.

Self-efficacy is another widely studied factor, reported in four studies as a significant determinant of teachers' readiness to adopt innovative practices. Sofwan et al. (2024) identified it as a predictor of technology adoption, while

Hidayat et al. (2023) linked self-efficacy to creativity, enabling educators to implement dynamic and engaging strategies. Zhang et al. (2024) emphasized its mediating role between organizational climate and teaching innovation, showcasing its importance in fostering transformative practices. Intrinsic motivation also features prominently in four studies, reflecting its critical role in encouraging teachers to adopt innovative methods. Hidayat et al. (2023) observed that intrinsic motivation drives teachers to engage in student-centered and creative approaches, while Al-Mughairi and Bhaskar (2023) linked it to the adoption of advanced technologies such as AI tools. Manjunath and Leelavathi (2024) emphasized its role in fostering collaboration and creativity, particularly in higher education contexts.

Additional factors, such as creative self-efficacy and adaptability, are discussed in two studies each, underscoring their significance in fostering innovation. Chou et al. (2024) and Zhang et al. (2024) demonstrated that creative self-efficacy enables teachers to develop engaging and innovative lesson plans. Adaptability, as highlighted by Al-Mughairi and Bhaskar (2023), Chou et al. (2024), and Manjunath and Leelavathi (2024), is crucial for overcoming challenges and integrating new technologies into teaching practices. Barriers such as technostress and resistance to change are reported in three studies, with Wu et al. (2021) identifying technostress as a major challenge in resource-constrained schools. Liu and Yodmongkol (2023) emphasized that resistance to systemic changes impedes innovation, while Doeden and Smidt (2024) noted that lack of confidence among teachers in disadvantaged areas limits the adoption of new strategies. These findings demonstrate that digital competence, self-efficacy, and intrinsic motivation are the most frequently discussed factors, highlighting their critical role in supporting innovative pedagogical practices.

3.2 Institutional Factors

Institutional factors significantly influence the implementation of innovative pedagogy, as shown in Table 5.

Table 5: Institutional factors influencing innovative pedagogy

Institutional Factors	Wu et al. (2021)	Peng et al. (2023)	Wang et al. (2023)	Sofwan et al. (2024)	Meizatri et al. (2023)	Zhang et al. (2024)	Chou et al. (2024)	Al-Mughairi & Bhaskar (2023)	Manjunath & Leelavathi (2024)	Doeden and Smidt (2024)	Liu and Yodmongkol (2023)
Leadership and management	✓				✓				✓		
Organizational climate	✓			✓		✓	✓				
Resource availability	✓							✓	✓		✓
Professional development programs			✓	✓						✓	

Institutional Factors	Wu et al. (2021)	Peng et al. (2023)	Wang et al. (2023)	Sofwan et al. (2024)	Meizatri et al. (2023)	Zhang et al. (2024)	Chou et al. (2024)	Al-Mughairi & Bhaskar (2023)	Manjunath & Leelavathi (2024)	Doeden and Smidt (2024)	Liu and Yodmongkol (2023)
Policy support					✓	✓	✓				
Collaboration and peer support	✓									✓	
Technology integration strategies	✓						✓	✓	✓		✓
Barriers at the institutional level	✓							✓	✓		✓

Leadership and management are emphasized in three studies as critical in enabling innovation. Meizatri et al. (2023) highlighted that change leadership fosters institutional readiness for innovation, while Zhang et al. (2024) discussed distributed leadership as a means of empowering teachers to experiment with new approaches. Similarly, Chou et al. (2024) emphasized the role of leadership in driving the adoption of advanced technologies, including AI-supported teaching practices.

Four studies reported that organizational climate is a key factor in enabling innovation. Wu et al. (2021) emphasized that a supportive organizational environment enhances collaboration and teacher motivation to adopt innovative practices. Zhang et al. (2024) found that a positive organizational climate fosters teaching efficacy, which mediates the relationship between institutional support and innovation. Sofwan et al. (2024) noted that institutions fostering a culture of innovation positively influence teachers' willingness to adopt technology-enabled pedagogy, further underlining its importance.

Resource availability is highlighted in four studies as a critical enabler of innovative pedagogy. Wu et al. (2021) noted that insufficient infrastructure and limited access to ICT tools are significant barriers, particularly in resource-constrained schools, and Al-Mughairi and Bhaskar (2023) pointed out resource limitations in higher education as a challenge to adopting advanced tools like ChatGPT. Manjunath and Leelavathi (2024) emphasized that industry collaboration can mitigate infrastructural gaps, while Liu and Yodmongkol (2023) stressed that robust technological infrastructure is essential for implementing blended learning models effectively.

Professional development programs are discussed in three studies, with Wang et al. (2023) highlighting the importance of ICT-focused training in improving teachers' readiness for innovation. Sofwan et al. (2024) emphasized the value of aligning training programs with teachers' professional goals, particularly in

primary education, while Doeden and Smidt (2024) noted that culturally relevant training for rural teachers addresses specific challenges and encourages the adoption of innovative practices. Barriers such as technostress, resistance to change, and inadequate funding are reported in four studies as significant challenges. Wu et al. (2021) identified technostress as a major issue, while Liu and Yodmongkol (2023) highlighted systemic resistance and lack of policy alignment as obstacles. Al-Mughairi and Bhaskar (2023) and Manjunath and Leelavathi (2024) noted that insufficient funding and infrastructural gaps exacerbate these challenges, underscoring the need for strategic resource allocation and leadership to address these barriers effectively.

3.3 Systemic Factors

Systemic factors play a critical role in shaping the adoption and sustainability of innovative pedagogy, with various studies highlighting (as shown in Table 6) their influence across dimensions such as education policy frameworks, technological infrastructure, training and knowledge transfer systems, socioeconomic contexts, cultural expectations, systemic incentives, and barriers.

Table 6: Systemic factors influencing innovative pedagogy

Systemic Factors	Wu et al. (2021)	Peng et al. (2023)	Wang et al. (2023)	Sofwan et al. (2024)	Meizatri et al. (2023)	Zhang et al. (2024)	Chou et al. (2024)	Al-Mughairi & Bhaskar (2023)	Manjunath & Leelavathi (2024)	Doeden & Smidt (2024)	Liu & Yodmongkol (2023)	Al-Adwan et al. (2024)
Education policy frameworks					✓	✓	✓		✓			✓
Technological infrastructure	✓							✓	✓		✓	✓
Training and knowledge transfer systems			✓	✓						✓		
Socioeconomic contexts	✓							✓	✓	✓		
Cultural expectations								✓	✓	✓		
Incentives and recognition								✓	✓			
Barriers at the systemic level	✓							✓	✓	✓	✓	✓

Education policy frameworks are addressed in five studies; this emphasizes their importance in promoting teacher autonomy and flexibility, which encourages experimentation with new teaching methods. Meizatri et al. (2023) highlighted that those policies supporting creativity and technological advancements, such as

AI-supported pedagogy, positively influence teaching innovation. However, as Al-Adwan et al. (2024) noted, gaps in policy alignment with digital transformation act as barriers to technology adoption.

Five studies discussed technological infrastructure as a critical enabler of innovative pedagogy. Wu et al. (2021) identified inadequate ICT resources as a significant barrier to technology integration into teaching, while Al-Mughairi and Bhaskar (2023) pointed out that infrastructural gaps hinder the adoption of advanced tools such as ChatGPT in higher education. Liu and Yodmongkol (2023) emphasized the necessity of robust technological infrastructure for implementing blended learning, and Manjunath and Leelavathi (2024) stressed the importance of collaboration with industry to address infrastructural challenges.

Three studies addressed training and knowledge transfer systems, focusing on their role in equipping teachers with the necessary skills for innovation. Wang et al. (2023) demonstrated that systemic training initiatives focused on ICT competencies significantly enhance teachers' readiness to adopt modern pedagogical methods. Sofwan et al. (2024) noted the importance of tailored training programs that address specific teacher needs, while Doeden and Smidt (2024) emphasized that culturally relevant training supports the adoption of innovative methods in rural areas. Four studies reported on socioeconomic contexts, with systemic inequalities in resource distribution and training accessibility identified as major barriers, particularly in rural and underprivileged schools.

Three studies discussed cultural expectations and systemic incentives and how they influence the implementation of innovative pedagogy. Doeden and Smidt (2024) and Manjunath and Leelavathi (2024) highlighted the importance of aligning teaching innovations with cultural norms to ensure acceptance and effectiveness. Zhang et al. (2024) emphasized that culturally sensitive practices foster teaching innovation. Al-Mughairi and Bhaskar (2023) and Manjunath and Leelavathi (2024), noted that incentives such as recognition and professional development opportunities motivate the adoption of innovative teaching practices. Despite these enablers, five studies discussed systemic barriers such as technostress, resistance to change, and inadequate funding, which remain significant obstacles. Wu et al. (2021) identified technostress as a widespread issue in resource-limited settings, while Liu and Yodmongkol (2023) highlighted systemic resistance and lack of policy alignment as barriers to innovation. Addressing these challenges through strategic planning, resource allocation, and policy alignment is essential for fostering sustainable educational innovation.

4. Discussion

The findings from this SLR confirm that digital competence, self-efficacy, and institutional support are fundamental drivers of innovative pedagogy. However, these factors do not function independently; their interactions can either reinforce or hinder pedagogical innovation, depending on the context. While prior studies highlight their individual significance (Peng et al., 2023; Zhang et al., 2024), the SLR findings suggest that their combined effects deserve deeper exploration. For

example, digital competence can enhance teachers' confidence in using technology, but without institutional support and professional development opportunities, its full potential may remain untapped, leading to resistance or ineffective adoption (Wu et al., 2021). Similarly, while self-efficacy is a strong predictor of innovation adoption (Sofwan et al., 2024), its effectiveness can be limited in resource-scarce environments where access to technology and training is inadequate (Wang et al., 2023). The synthesis of findings underscores the importance of examining these variables in diverse educational and socioeconomic conditions to provide a holistic understanding of their interplay in pedagogical transformation.

Moreover, while barriers such as technostress and socioeconomic disparities are well-documented (Doeden & Smidt, 2024; Liu & Yodmongkol, 2023), their implications for pedagogical innovation require further scrutiny. The SLR findings highlight that technostress often emerges as a barrier to adoption, yet its relationship with digital competence and institutional support remains underexplored. Teachers who possess strong digital skills may experience less technostress, while those in underfunded institutions may face compounded challenges that exacerbate stress and hinder innovation (Al-Mughairi & Bhaskar, 2023). In addition, socioeconomic constraints not only limit access to technological resources but also widen the digital literacy gap, thereby creating disparities in pedagogical innovation (Manjunath & Leelavathi, 2024). The synthesis of studies suggests that targeted interventions, such as digital inclusion policies, systemic funding models, and professional development initiatives, are crucial for addressing these barriers and promoting a more enabling environment for innovative teaching.

The findings of this study have several implications for educators, policymakers, and institutional leaders. First, integrating digital competency training within teacher education programs is essential to reduce technostress and enhance innovation adoption. Schools and universities should prioritize continuous professional development programs that equip teachers with technological and pedagogical skills tailored to their teaching environments (Meizatri et al., 2023).
Second, institutional leaders must ensure that educational policies support and incentivize innovation. Organizational climates that encourage experimentation with new teaching methods, combined with access to resources and peer support networks, can enhance teachers' confidence and willingness to engage in pedagogical transformation (Zhang et al., 2024). Policymakers should focus on reducing socioeconomic barriers by implementing technology grant programs, particularly for under-resourced schools, to ensure equitable access to digital tools. In addition, collaborative partnerships between governments, technology providers, and educational institutions should be fostered to facilitate affordable and sustainable technological integration (Li et al., 2024).

Lastly, further empirical research is needed to assess the long-term effectiveness of policy interventions and professional development initiatives. Future studies should explore how systemic factors, such as national education policies and economic conditions, influence the sustainability of innovative teaching methods

over time (Livingston & Macfarlane, 2023). By aligning institutional efforts with supportive policy frameworks, the barriers to pedagogical innovation can be mitigated, ultimately enhancing teaching effectiveness and student outcomes.

5. Limitations of the Study

Despite the valuable insights provided by this study, several limitations must be acknowledged. First, the findings are constrained by the scope and methodologies of the selected studies because they rely on an SLR. The heterogeneity of educational contexts covered in the review also poses challenges when drawing universally applicable conclusions. Second, while this study identifies key enablers and barriers, it does not include empirical validation through field studies or experimental research, limiting its ability to assess real-world applicability. Third, the interaction effects among individual, institutional, and systemic factors require further investigation, as the current analysis primarily examines these dimensions separately. Future research should employ mixed methods approaches, incorporating both qualitative and quantitative methodologies, to provide a more comprehensive understanding of the dynamics influencing innovative pedagogical practices.

6. Conclusion

The implementation of innovative pedagogy is influenced by a dynamic interplay of factors spanning individual, institutional, and systemic levels. Despite the widespread acknowledgment of these factors, certain challenges hinder progress. Barriers such as technostress, resistance to change, and socioeconomic disparities limit the adoption of innovative practices. In addition, the insufficient alignment of policies with technological advancements and resource constraints exacerbates these challenges, particularly in underprivileged and resource-constrained contexts. Addressing these challenges requires an integrative approach that aligns teacher training, institutional support, and policy interventions.

Future research should prioritize comparative studies across diverse educational contexts to identify universally applicable strategies and region-specific interventions. Greater emphasis on longitudinal studies would provide insights into the sustained impacts of innovative teaching practices. Investigating the role of emerging technologies and their integration into pedagogy could also yield valuable contributions, particularly in understanding how to address challenges such as technostress and resistance. Policymakers and educators may benefit from evidence-based frameworks that align resources, training programs, and policy measures to support innovation effectively. Comprehensive approaches addressing these areas could significantly enhance the adoption and sustainability of innovative pedagogical practices across various educational systems.

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