Indonesian Journal of Educational Science (IJES)
ISSN 2622-6197 (Online)
DOI : 10.31605/ijes.v8i1.6283

Volume 8, No. 1 Maret 2026
ISSN 2655-4402 (Cetak)
Hal. 116 - 124

Navigating Artificial Intelligence (AI) in Online Learning: Teachers' Readiness in Focus

[1*]Lu'mu Taris, [1]Ruslan, [2]Meili Yanti
[1]State University of Makassar, Makassar, Indonesia
[2]Universitas Sulawesi Barat, Majene, Indonesia

[*]*e-mail: profesorlumu@gmail.com*

(***Recieved:*** *02-12-2025;* ***Revision:*** *11-02-2026;* ***Accepted:*** *05-02-2026;* ***Publish:*** *31-03-2026)*

Abstract

The study investigated teachers' readiness to integrate Artificial Intelligence (AI) into online learning environments, with a particular focus on addressing the limited empirical evidence regarding AI readiness among teachers in semi-rural and developing educational environments. While previous research has primarily examined AI literacy and perception in urban or pre-tenured teacher environments, there is still a lack of context-specific understanding of teacher readiness in office, especially in areas with limited technology infrastructure such as Majene Regency, Indonesia. This study examines readiness through three dimensions: conceptual knowledge, technical competence, and professional attitudes towards AI. Using a qualitative descriptive approach, data was collected from fifty high school teachers through document analysis, reflective narratives, and observations to ensure methodological triangulation. These findings suggest that even though teachers show a positive attitude towards AI and recognize its pedagogical potential, their conceptual understanding and technical competence remain. Teachers face challenges in configuring AI tools, interpreting learning analytics, and aligning AI applications with instructional objectives. The study contributes to the literature by providing context-specific empirical evidence on AI readiness in semi-rural educational settings and highlighting the gap between positive attitudes and actual competencies. These findings emphasize the need for practice-oriented professional development, the integration of AI literacy into teacher education programs, and policy support to ensure effective and ethical implementation of AI in online learning.

Keywords: *AI; Online Learning; Instructional; Teacher*

Menavigasi Kecerdasan Buatan (AI) dalam Pembelajaran Online: Kesiapan Guru dalam Fokus

Abstrak

Studi ini menyelidiki kesiapan guru untuk mengintegrasikan Kecerdasan Buatan (AI) ke dalam lingkungan belajar online, dengan fokus khusus untuk mengatasi bukti empiris yang terbatas mengenai kesiapan AI di antara guru di lingkungan pendidikan semi-pedesaan dan berkembang. Sementara penelitian sebelumnya terutama meneliti literasi dan persepsi AI di lingkungan guru perkotaan atau pra-jabatan, masih ada kurangnya pemahaman spesifik konteks tentang kesiapan guru dalam jabatan, terutama di daerah dengan infrastruktur teknologi terbatas seperti Kabupaten Majene, Indonesia. Penelitian ini mengkaji kesiapan melalui tiga dimensi: pengetahuan konseptual, kompetensi teknis, dan sikap profesional terhadap AI. Dengan menggunakan pendekatan deskriptif kualitatif, data dikumpulkan dari lima puluh guru SMA melalui analisis dokumen, narasi reflektif, dan observasi untuk memastikan triangulasi metodologis. Temuan ini menunjukkan bahwa meskipun guru menunjukkan sikap positif terhadap AI dan mengakui potensi pedagogisnya, pemahaman konseptual dan kompetensi teknis mereka tetap ada. Guru menghadapi tantangan dalam mengonfigurasi alat AI, menafsirkan analitik pembelajaran, dan menyelaraskan aplikasi AI dengan tujuan instruksional. Studi ini berkontribusi pada literatur dengan memberikan bukti empiris spesifik konteks tentang kesiapan AI dalam pengaturan pendidikan semi-pedesaan dan menyoroti kesenjangan antara sikap positif dan kompetensi aktual. Temuan ini menekankan perlunya pengembangan profesional yang berorientasi pada praktik, integrasi literasi AI ke dalam program pendidikan guru, dan dukungan kebijakan untuk memastikan implementasi AI yang efektif dan etis dalam pembelajaran online.

Kata kunci: *AI; Pembelajaran Online; Instruksional; Guru*

1. Introduction

Artificial Intelligence has emerged as a transformative force within the educational landscape, offering new possibilities for enhancing teaching and learning processes in digital environments by enabling personalized instruction, automating administrative tasks, and providing data-driven insights into student performance, which facilitates adaptive learning pathways and real-time feedback mechanisms that cater to diverse student needs (Fabiana & Fabian, 2025). Despite this potential, the successful integration of AI in education is contingent upon educators' psychological and pedagogical preparedness, as well as their ability to navigate the technical and ethical complexities inherent in these technologies, which necessitates a comprehensive understanding of the pedagogical implications and potential barriers to adoption such as the digital divide, lack of training, and insufficient institutional backing that can hinder effective implementation in diverse educational contexts.

Recent studies have highlighted that while educators often value AI for its efficiency and adaptability in supporting personalized learning, their actual readiness is frequently constrained by conceptual gaps and uncertainty about ethical use (FİLİZ et al., 2025; Malacapay, 2025). These limitations often stem from a lack of structured training and professional development, which are essential for building the competence and confidence required to integrate technology effectively into pedagogical practice (Alshorman, 2024; Dayagbil et al., 2025). Such findings indicate that exposure to AI tools alone is insufficient; rather, teachers need guided opportunities to integrate technology with pedagogical practice, ensuring that their engagement is both ethical and effective within their specific instructional contexts. Online learning environments, in particular, present unique opportunities and challenges for AI adoption, requiring educators to possess not only technological proficiency but also pedagogical adaptability to leverage AI tools for remote instruction and student engagement (Cubio, 2025; Granström & Oppi, 2025). However, the rapid integration of these technologies also raises critical ethical considerations regarding algorithmic bias, data privacy, and the potential erosion of teacher agency, necessitating that educators develop robust AI literacies to navigate the complexities of responsible implementation strategies that address technical and integration challenges, training and support issues, and ethical and fairness concerns that must be addressed to ensure responsible and sustainable adoption in educational settings.

In this regard, there remains limited empirical evidence concerning how in-service teachers in semi-rural regions develop readiness to integrate AI into actual classroom practices, particularly in the context of online learning. Existing research has not sufficiently explored how contextual factors such as infrastructure limitations, access to training, and institutional support shape teachers' readiness in these settings. Furthermore, prior studies tend to focus on general AI awareness or literacy, rather than examining readiness as a multidimensional construct that includes conceptual, technical, and attitudinal components. This creates a gap in understanding how these dimensions interact in shaping teachers' ability to implement AI meaningfully in instructional practice.

Therefore, this study aims to assess the current state of teachers' readiness to adopt AI technologies, identifying specific gaps in knowledge, skills, and support systems that must be addressed to facilitate effective implementation in online learning contexts. By examining the interplay between teachers' conceptual understanding, technical skills, and attitudinal dispositions, this research seeks to identify the critical barriers and facilitators that impact the successful adoption of AI technologies in educational settings and provides a framework for developing targeted interventions that enhance the psychological and pedagogical

preparedness of educators to effectively navigate the complexities of AI integration and foster successful collaboration between educators and AI technologies.

This research seeks to answer the following questions: What pedagogical strategies guide teachers in integrating and implementing AI in their teaching practices in K-12 education, and what psychological and pedagogical factors influence teachers' integration of AI in K-12 education?. This study reinforces the importance of teachers' readiness as a fundamental prerequisite for the successful integration of Artificial Intelligence into online learning. By highlighting the interconnected roles of conceptual knowledge, technical competence, and professional attitudes, this research contributes to a deeper understanding of how educators can navigate digital transformation effectively. The findings not only reflect local educational contexts but also offer valuable insights for broader international discourse on educational innovation. Ultimately, strengthening teachers' readiness is essential to ensuring that AI serves as a meaningful pedagogical partner rather than merely a technological tool.

To achieve this, the following sections detail the methodological approach used to investigate the psychological and pedagogical factors influencing teachers' readiness to embrace or resist AI integration in instructional settings (FİLİZ et al., 2025). The qualitative descriptive design was chosen to facilitate a rich, detailed exploration of the subjective experiences and pedagogical reasoning processes that underpin teachers' decision-making regarding AI adoption (Abdelaziz et al., 2023; FİLİZ et al., 2025). This design allows for a comprehensive examination of the complex interplay among individual beliefs, pedagogical strategies, and external support structures that shape educators' willingness and ability to use AI technologies effectively in their instructional practices (Aghaziarati et al., 2023; FİLİZ et al., 2025).

The integration of artificial intelligence in K-12 education has garnered significant attention as scholars examine the multifaceted factors influencing teachers' readiness to adopt these technologies. Scholars have emphasized that successful adoption is not merely a matter of technical access but is deeply rooted in educators' technological, pedagogical, and content knowledge, as well as in their attitudes toward the transformative potential of AI in schooling contexts (Yue et al., 2024). Research indicates that teachers' technological, pedagogical, and content knowledge competencies are crucial for implementing effective pedagogical practices in AI-enhanced learning environments, while their attitudes toward teaching AI serve as key determinants of their acceptance of these new subjects (Yue et al., 2024). Specifically, the Technological Pedagogical Content Knowledge framework provides a foundational lens for understanding how technological knowledge intersects with pedagogical expertise and subject-matter content, suggesting that effective AI integration requires a dynamic interplay among these core components (Yulin & Danso, 2025).

This dynamic interplay suggests that teachers must possess a sophisticated understanding of how to align AI tools with specific learning objectives and content requirements to enhance student outcomes (Arvin et al., 2023; FİLİZ et al., 2025). Pedagogical beliefs, which encompass the underlying principles teachers hold about teaching and learning, further shape this alignment by influencing instructional choices and openness to innovation (Ofem et al., 2025). Research demonstrates that the adoption and integration of AI technologies in K-12 classrooms are significantly influenced by teachers' interpretations and applications of these tools (Kashif et al., 2025). However, while some research on AI adoption in higher education exists, studies examining AI integration in K-12 settings are scarce, leaving a gap in the literature on the internal and external factors that influence teachers' acceptance and use of AI tools in school settings (Hazzan-Bishara et al., 2025). This

gap in the literature calls for a comprehensive study to examine the internal and external factors that affect teachers' acceptance and use of AI (Hazzan-Bishara et al., 2025). Internal factors, such as self-efficacy and intrinsic motivation, are recognized in other contexts as key drivers of behavior, yet research specifically addressing how these factors shape teachers' adoption of AI in educational settings is limited (Hazzan-Bishara et al., 2025).

External factors, such as the availability of credible information sources and institutional support, also remain largely underexplored despite their potential to enhance teacher awareness and foster an environment conducive to successful implementation (Hazzan-Bishara et al., 2025). Consequently, understanding the specific drivers of teachers' perceptions and adoption of AI tools is essential for addressing the slow pace of AI integration in educational platforms and the lack of such technologies in many schools worldwide(Hazzan-Bishara et al., 2025). This study addresses this critical need by investigating the psychological and pedagogical determinants that shape educators' willingness to embrace AI technologies, thereby establishing a domain-specific framework for understanding the cognitive-behavioral pathways that connect technological perceptions to adoption behaviors (FİLİZ et al., 2025; Lin et al., 2025). Theoretical frameworks such as the Technology Acceptance Model and the Theory of Planned Behavior provide robust structures for examining these cognitive-behavioral pathways by linking perceived usefulness, ease of use, and behavioral intentions to actual adoption outcomes (Du et al., 2024; Hazzan-Bishara et al., 2025).

Specifically, the Technology Acceptance Model has been extended in recent educational research to incorporate both external variables, such as exposure to credible information, and internal determinants, revealing that teachers' perceptions of usefulness are significantly shaped by the quality of the information they receive (Hazzan-Bishara et al., 2025)

2. Method

2.1.Research Design

This study adopts a qualitative descriptive design, grounded in a pragmatic epistemological perspective, to explore teachers' readiness to integrate Artificial Intelligence (AI) in online learning. Unlike phenomenological approaches that aim to capture the essence of lived experiences, or case study designs that focus on in-depth analysis of bounded systems, this study seeks to provide a comprehensive, context-sensitive description of teachers' readiness as it manifests in everyday instructional practices.

The choice of qualitative descriptive design is based on the nature of the research problem, which does not aim to interpret deep subjective meanings (as in phenomenology) nor to examine a single bounded case in detail (as in case study), but rather to map patterns of readiness across multiple participants within a specific educational context. This approach allows the researcher to remain close to the data while producing findings that are directly applicable to educational practice and policy.

From an epistemological standpoint, this study is situated within a pragmatic paradigm, emphasizing practical understanding and actionable knowledge. Readiness to integrate AI is viewed not as a purely subjective phenomenon, but as a multidimensional construct shaped by knowledge, skills, and professional attitudes within specific institutional and technological contexts. Therefore, a qualitative descriptive approach is considered most appropriate to capture these dimensions in a naturalistic and practice-oriented manner.

Indonesian Journal of Educational Science (IJES)
ISSN 2622-6197 (Online)
DOI : 10.31605/ijes.v8i1.6283

Volume 8, No. 1 Maret 2026
ISSN 2655-4402 (Cetak)
Hal. 116 - 124

2.1.1. Data Sources and Participants

Data were obtained from teachers involved in online teaching across various educational institutions. Participants were selected purposively based on their experience with digital learning platforms and exposure to AI-based instructional tools.

2.1.2. Data Collection Procedures

Data collection was conducted through multiple qualitative techniques to ensure data triangulation and enhance the credibility of the findings. The study employed document analysis of instructional materials and institutional reports to examine institutional policies and instructional practices related to AI integration. In addition, written reflective narratives provided by participating teachers were collected to capture their personal experiences, perceptions, and challenges in implementing AI-based tools.

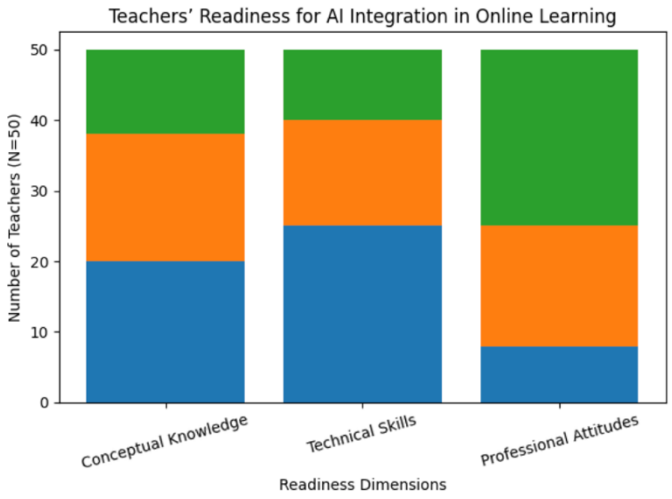
Furthermore, observational records of online teaching practices were used to document real-time instructional interactions and technology use. The combination of these methods enabled a comprehensive understanding of teachers' readiness for integrating Artificial Intelligence in online learning environments. These methods enabled comprehensive data triangulation and enhanced the credibility of the findings.

2.1.3. Data Analysis

The collected data were analyzed using thematic analysis. The analysis process involved data familiarization, initial coding, theme development, and interpretative synthesis. The resulting themes were categorized into three major dimensions: conceptual knowledge, technical competence, and professional attitudes.

3. Results

This section presents the study's findings based on a thematic analysis of data collected from 50 senior high school teachers in Majene Regency, Indonesia. The analysis revealed three major themes representing teachers' readiness for integrating Artificial Intelligence (AI) in online learning: (1) limited conceptual understanding, (2) constrained technical competence, and (3) positive professional attitudes toward innovation. These themes reflect teachers' experiences, perceptions, and challenges in adopting AI-based instructional tools. Specifically, the theme of limited conceptual understanding highlighted that while teachers recognized the term "Artificial Intelligence," they often lacked a deep grasp of the underlying mechanisms and specific applications relevant to their subject areas.



Graphic 1. Teachers Readiness for AI Integration in Online Learning

3.1. Limited Conceptual Understanding of Artificial Intelligence

Most participants demonstrated a basic awareness of Artificial Intelligence, but lacked in-depth conceptual understanding. Teachers commonly associate AI with automated systems, chatbots, and online applications, without understanding underlying mechanisms such as data processing, machine learning, and adaptive algorithms.

Several participants expressed uncertainty regarding AI concepts. One teacher stated:

> *"I often use AI-based applications, but I do not really understand how they work. I only know that they help me prepare materials and assessments."*

Another participant explained:

> *"AI sounds very advanced, and sometimes I feel it is more suitable for technology experts than for teachers like me."*

These statements indicate that insufficient theoretical knowledge limited teachers' confidence in selecting and evaluating appropriate AI tools. Consequently, many teachers relied on trial-and-error approaches rather than pedagogically informed decision-making.

3.2. Constrained Technical Competence in Using AI Tools

The second major theme relates to teachers' limited technical skills in operating AI-based educational platforms. Although most participants were familiar with basic digital tools, they experienced difficulties when using advanced features such as adaptive learning systems, automated feedback generators, and learning analytics dashboards.

Participants frequently reported challenges in system configuration, data interpretation, and content customization. One teacher commented:

> *"I can use simple applications, but when the system becomes more complex, I feel confused and afraid of making mistakes."*

Another teacher noted:

> *"Sometimes the platform provides many data, but I do not know how to read and use it for improving my teaching."*

These findings suggest that limited practical training and a lack of technical support hindered teachers' ability to maximize the pedagogical potential of AI. As a result, AI was often used only for basic functions rather than as an integrated instructional tool.

3.3. Positive Professional Attitudes toward AI Integration

Despite conceptual and technical limitations, most participants demonstrated positive attitudes toward AI integration. Teachers generally perceived AI as a useful resource for enhancing learning efficiency, personalization, and student engagement.

Many participants expressed enthusiasm for learning new technologies. One teacher stated:

> *"I believe AI can help me teach better, especially in online classes. I just need more guidance and practice."*

Another participant remarked:

> *"Students are more interested when I use digital tools. It motivates me to continue learning."*

These positive attitudes indicate teachers' openness to innovation and willingness to adapt to technological changes. However, some participants also expressed concerns related to data privacy, ethical issues, and reduced human interaction. One teacher explained:

> *"I worry that students may depend too much on technology and lose direct communication with teachers."*

This reflects teachers' awareness of the need to balance technological efficiency with human-cantered pedagogy.

3.4. Institutional and Contextual Factors Influencing Readiness

The analysis also revealed that teachers' readiness was strongly influenced by institutional and contextual conditions. Participants highlighted limited internet connectivity, inadequate devices, and insufficient technical support as major barriers to effective AI implementation.

Several teachers emphasized the importance of professional development programs. One participant stated:

> *"We need continuous training, not only once. Technology develops very fast, and we must keep learning."*

Others pointed to the role of school leadership. As one teacher noted:

> *"When the school supports us and provides facilities, we feel more confident to try new methods."*

These findings indicate that teachers' readiness is not solely an individual issue but is shaped by systemic support and organizational culture.

3.5. Interrelationship among Knowledge, Skills, and Attitudes

The final theme highlights the interconnected nature of teachers' knowledge, technical skills, and attitudes. Participants with better conceptual understanding tended to demonstrate higher confidence and more innovative practices. Conversely, teachers with limited knowledge often depended on simple tools despite having positive attitudes.

One participant reflected:

> *"I am motivated to use AI, but sometimes my limited skills stop me from exploring more."*

This interrelationship suggests that professional development programs should address cognitive, technical, and affective dimensions simultaneously to ensure holistic readiness.

3.6. Technical Competence in Using AI-Based Tools

Teachers demonstrated basic proficiency in using simple AI applications, including plagiarism-detection systems, automated quiz platforms, and content-generation tools. However, many experienced difficulties in operating advanced adaptive learning systems and learning analytics dashboards. Participants reported challenges related to system configuration, data interpretation, and prompt design for generative AI tools. These limitations restricted the pedagogical potential of AI integration. These operational barriers often resulted in superficial usage patterns where AI tools were employed for administrative tasks rather than transformative instructional purposes.

4. Discussion

This study uncovers a distinct readiness paradox while teachers exhibit high affective openness toward AI innovation, this positive attitude is decoupled from a robust theoretical-pedagogical foundation. The novelty of these findings lies in the identification of blind adoption tendencies, where teachers select AI tools based on commercial appeal rather than instructional alignment. Consequently, this research argues that teacher education must shift from basic technical training to a critical-pedagogical framework that empowers educators to navigate the commercialized landscape of educational technology.

Technical challenges highlight the importance of practice-oriented professional development. Training initiatives should emphasize authentic classroom applications, data interpretation skills, and pedagogically informed prompt engineering. Participants' ethical concerns demonstrate awareness of responsible technology use. Addressing these concerns

requires institutional frameworks that regulate data governance, transparency, and algorithmic accountability. Furthermore, institutional support emerged as a central determinant of readiness. Educational institutions that invest in infrastructure, promote collaborative learning communities, and encourage pedagogical experimentation foster more sustainable innovation. Rather than replacing teachers, AI should be conceptualized as a collaborative partner that enhances instructional effectiveness.

Human judgment, empathy, and creativity remain indispensable components of high-quality online education. This perspective aligns with frameworks such as TPACK, which emphasize the need to integrate technology, pedagogy, and content knowledge to achieve effective instructional design.

5. Conclusion

Beyond its practical implications, this study offers a significant theoretical contribution by refining the construct of 'AI Readiness' within teacher professional frameworks. It demonstrates that readiness is not a monolithic technical state but a triadic interplay between conceptual, technical, and attitudinal dimensions. Specifically, this research advances the TPACK (Technological Pedagogical Content Knowledge) framework by asserting that AI integration requires a distinct 'AI-Pedagogical Reasoning'—a theoretical layer that mediates the gap between positive attitudes and actual classroom implementation. This suggests that existing digital literacy models must be evolved to include evaluative-critical competencies to prevent technology-driven pedagogy

References

Abdelaziz, H. A., Ankit, H. A. A. A., Almekhlafi, A. G., Aderibigbe, S. A., Alawani, A. S., & Goyol, A. B. (2023). Professional Development Needs and Challenges Faced by K-12 Teachers in Delivering Effective Online Education in the United Arab Emirates. *International Journal of Learning Teaching and Educational Research*, *22*(4), 434. https://doi.org/10.26803/ijlter.22.4.24

Aghaziarati, A., Nejatifar, S., & Abedi, A. (2023). *Artificial Intelligence in Education: Investigating Teacher Attitudes*. *1*(1), 35. https://doi.org/10.61838/kman.aitech.1.1.6

Alshorman, S. (2024). THE READINESS TO USE AI IN TEACHING SCIENCE: SCIENCE TEACHERS' PERSPECTIVE. *Journal of Baltic Science Education*, *23*(3), 432. https://doi.org/10.33225/jbse/24.23.432

Arvin, N., Hoseinabady, M., Bayat, B., & Zahmatkesh, E. (2023). *Teacher Experiences with AI-based Educational Tools*. *1*(2), 26. https://doi.org/10.61838/kman.aitech.1.2.5

Cubio, M. J. V. (2025). The Influence of Privacy, Bias, and Surveillance Concerns on Teachers' Willingness to Use Artificial Intelligence in Education. *International Journal of Research and Innovation in Social Science*, 3192. https://doi.org/10.47772/ijriss.2025.903sedu0240

Dayagbil, F. T., Boholano, H. B., & Sumalinog, G. G. (2025). Are they in or out? Exploring pre-service teachers' knowledge, perceptions, and experiences regarding artificial intelligence (AI) in teaching and learning. *Frontiers in Education*, *10*. https://doi.org/10.3389/feduc.2025.1665205

Du, H., Sun, Y., Jiang, H., Islam, A. Y. M. A., & Gu, X. (2024). Exploring the effects of AI literacy in teacher learning: an empirical study. *Humanities and Social Sciences Communications*, *11*(1). https://doi.org/10.1057/s41599-024-03101-6

Fabiana, M. G., & Fabian, G. G. (2025). Connecting education in the new emerging trends: Educators' artificial intelligence awareness and readiness for integration in teaching and learning. *International Journal of Research Publication and Reviews*, *6*(6), 2416. https://doi.org/10.55248/gengpi.6.0625.2058

FİLİZ, O., Kaya, M. H., & Adıgüzel, T. (2025). Teachers and AI: Understanding the factors influencing AI integration in K-12 education. *Education and Information Technologies*. https://doi.org/10.1007/s10639-025-13463-2

Granström, M., & Oppi, P. (2025). Assessing teachers' readiness and perceived usefulness of AI in education: an Estonian perspective. *Frontiers in Education*, *10*. https://doi.org/10.3389/feduc.2025.1622240

Hazzan-Bishara, A., Kol, O., & Levy, S. (2025). The factors affecting teachers' adoption of AI technologies: A unified model of external and internal determinants. *Education and Information Technologies*. https://doi.org/10.1007/s10639-025-13393-z

Kashif, M., Ammar, M., Sellami, A., Chiu, T. K. F., Abbasi, S. A., & Ahmad, Z. (2025). Teachers' perspectives on AI integration in K-12 education: challenges, opportunities, and preliminary assessment model – a systematic review. *Computers in the Schools*, 1. https://doi.org/10.1080/07380569.2025.2602507

Lin, T., Zhang, J., & Xiong, B. (2025). Effects of Technology Perceptions, Teacher Beliefs, and AI Literacy on AI Technology Adoption in Sustainable Mathematics Education. *Sustainability*, *17*(8), 3698. https://doi.org/10.3390/su17083698

Malacapay, M. C. (2025). AI literacy, preparedness, and use motives of elementary education pre-service teachers of a state university in the Philippines. *Edelweiss Applied Science and Technology*, *9*(9), 1120. https://doi.org/10.55214/2576-8484.v9i9.10059

Ofem, U. J., Orim, F. S., Edam-Agbor, I. B., Amanso, E. O. I., Eni, E., Ukatu, J. O., Ovat, S. V., Osang, A. W., Dien, C. A., & Abuo, C. B. (2025). Teachers' preparedness for the utilization of artificial intelligence in classroom assessment: the contributory effects of attitude toward technology, technological readiness, and pedagogical beliefs with perceived ease of use and perceived usefulness as mediators. *Frontiers in Education*, *10*. https://doi.org/10.3389/feduc.2025.1568306

Yue, M., Jong, M. S., & Ng, D. T. K. (2024). Understanding K–12 teachers' technological pedagogical content knowledge readiness and attitudes toward artificial intelligence education. *Education and Information Technologies*, *29*(15), 19505. https://doi.org/10.1007/s10639-024-12621-2

Yulin, N., & Danso, S. D. (2025). Assessing Pedagogical Readiness for Digital Innovation: A Mixed-Methods Study. *arXiv (Cornell University)*. https://doi.org/10.48550/arxiv.2502.15781