

Reconceptualizing English Language Teacher Expertise in the Age of Artificial Intelligence: Developing a Global, Evidence-Based Framework for AI-Pedagogical Competencies, Ethical AI Readiness, and Human-Centered Digital Pedagogy in Teacher Education

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ARTICLE INFORMATION	ABSTRACT
Article history: Published: October 2026 Keywords: Artificial Intelligence in Education English Language Teaching (ELT) Teacher Expertise AI-Pedagogical Competencies Ethical AI Readiness Human-Centered Digital Pedagogy Teacher Education Digital Literacy AI Literacy Educational Technology Framework Data Ethics in Education Global Education Policy	The rapid integration of artificial intelligence (AI) into education has fundamentally transformed English language teaching (ELT), challenging traditional conceptions of teacher expertise and professional competence. While AI-powered tools have offered significant opportunities for personalized learning, adaptive feedback, and enhanced learner engagement, they have also introduced complex pedagogical, ethical, and professional demands that existing teacher competency frameworks did not adequately address. This study responded to the growing need for a comprehensive and globally relevant framework that defined the competencies required for effective and responsible AI integration in ELT. The purpose of the study was to reconceptualize English language teacher expertise by developing an evidence-based framework that integrated three core dimensions: AI-pedagogical competencies, ethical AI readiness, and human-centered digital pedagogy. Drawing on a synthesis of empirical research, expert insights, and international best practices, the study identified the essential knowledge, skills, and dispositions teachers needed to navigate AI-enhanced learning environments. It further examined gaps in teacher preparation, particularly in relation to ethical awareness, data literacy, and the pedagogical use of AI tools. The proposed framework emphasized the importance of balancing technological innovation with the relational and humanistic aspects of language education. It positioned teachers not only as users of AI but as critical decision-makers who interpreted algorithmic outputs, safeguarded learner rights, and designed inclusive, meaningful learning experiences. Additionally, the framework highlighted the need for global coherence in teacher education by providing adaptable guidelines that could inform curriculum design, professional development, and policy across diverse educational contexts. The study contributed to both theory and practice by offering a structured model that aligned AI integration with pedagogical effectiveness and ethical responsibility. Ultimately, it supported the development of a future-ready ELT workforce capable of leveraging AI in ways that enhanced learning while preserving the human-centered values at the core of education.

1. Introduction

Artificial intelligence (AI) has rapidly become one of the most transformative forces in contemporary education, reshaping how teachers teach and how learners access knowledge. In English language teaching (ELT), AI-driven tools such as intelligent tutoring systems, automated writing evaluators, adaptive learning platforms, and large language models are increasingly integrated into instructional practices. These technologies offer unprecedented opportunities to personalize learning, enhance feedback, and support multilingual learners, aligning with global calls for more inclusive and technology-supported education (Luckin, Holmes, Griffiths, & Forcier, 2016). As AI continues to permeate the ELT classroom, teachers must navigate not only new tools but also new pedagogical possibilities and constraints.

Artificial Intelligence (AI) has proven highly effective in supporting the development of critical thinking by creating adaptive learning environments, offering real-world problem simulations, and delivering immediate, targeted feedback that strengthens analytical and problem-solving skills. However, the findings also highlight significant challenges, particularly the risk of overreliance on AI, which may diminish independent reasoning, creativity, and originality if learners depend too heavily on automated outputs. While AI offers efficiency and personalized support, traditional methods such as debates and peer collaboration continue to provide unique benefits especially in fostering emotional intelligence and deeper interpersonal engagement indicating that a balanced integration of AI and human-centered learning strategies is essential for cultivating robust critical thinking skills (Langat, 2025).

The concept of teacher expertise is undergoing significant redefinition in this AI-enhanced landscape. Traditionally, English language teacher expertise has been grounded in pedagogical content knowledge, linguistic competence, methodological flexibility, and reflective practice. However, with the emergence of AI, these traditional domains are no longer sufficient on their own. Scholars argue that digital transformation challenges educators to expand their professional knowledge base to include technological and data literacies as core competencies (Tsai & Chai, 2020). AI requires teachers to engage with algorithmic processes, interpret automated feedback, and make pedagogical decisions informed by data generated by AI systems tasks that were previously outside the boundaries of ELT expertise.

The integration of AI in language education highlights an urgent need for global, evidence-based standards that define AI-pedagogical competence. While frameworks such as UNESCO's ICT Competency Framework for Teachers and the European Commission's outline broad digital competencies, they do not sufficiently address the specific pedagogical, ethical, and disciplinary demands of AI in ELT (UNESCO, 2018; Redecker, 2017). The absence of ELT-specific guidelines leaves teachers and teacher educators without a cohesive vision of what effective, responsible, and human-centered AI integration should look like. As a result, many educators are navigating AI adoption through trial and error, which can undermine both teaching quality and learner outcomes. Teacher education programs are also struggling to keep pace with the rapid advancement of AI tools. While many programs have incorporated general digital literacy modules, few have systematically integrated AI literacy or AI-pedagogy into pre-service or in-service training. Research suggests that teacher education institutions often lack the expertise, curriculum frameworks, and policy support needed to prepare teachers for AI-rich learning environments (Zawacki-Richter, Marín, Bond, & Gouverneur, 2019). This gap between technological change and teacher preparation risks creating a future workforce of educators who are technologically underprepared and ethically vulnerable when deploying AI in the classroom.

Ethical AI readiness has emerged as one of the most pressing issues in modern teacher education. AI systems, while powerful, raise significant concerns related to data privacy, algorithmic bias, transparency, and equity. Educators need the capacity to critically evaluate AI tools, understand their limitations, and advocate for ethical practices that protect learners from harm. Scholars emphasize that without ethical AI training, teachers may inadvertently perpetuate inequalities or adopt tools that compromise learners' rights and dignity (Holmes, Bialik, & Fadel, 2019). Ethical readiness must therefore become a core component of teacher expertise in the AI era.

The rise of AI has additionally amplified the importance of human-centered digital pedagogy. As automation and intelligent systems handle more instructional tasks, the uniquely human aspects of teaching such as empathy, emotional support, cultural responsiveness, and relationship-building become even more critical. Human-centered pedagogy emphasizes designing learning experiences that prioritize student agency, well-being, and identity development, ensuring that AI serves as a tool that enhances, rather than replaces, meaningful human interaction (Selwyn, 2019). This approach safeguards the relational foundation of language learning, which remains deeply social and dialogic.

Given the global nature of AI adoption, there is growing recognition that a unified, evidence-based framework is necessary to guide teacher development. Such a framework would help ensure that competencies related to AI-pedagogy, ethics, and human-centered digital teaching are consistently understood and applied across diverse educational settings. Global frameworks also provide coherence for policy development, accreditation standards, and curriculum design in teacher education institutions worldwide. As AI continues to evolve, a shared set of professional standards becomes essential for maintaining quality and equity in ELT practices. Despite its potential, AI integration in ELT has exposed significant inequalities in access, training, and implementation. Teachers in different regions and school systems face varying levels of technological infrastructure, institutional support, and professional development opportunities. These disparities can create uneven learning experiences for students and hinder global educational progress. Addressing such inequities requires a research-informed understanding of what competencies teachers need and how these can be cultivated within diverse contexts.

The shifting landscape also calls for teacher educators themselves to develop new capabilities. As key leaders in preparing the next generation of teachers, they must understand AI's pedagogical affordances, ethical challenges, and role in shaping future classroom practices. However, research shows that teacher educators often feel equally unprepared for AI integration and express uncertainty about how to embed AI literacy and human-centered digital pedagogy into their programs (Yin et al., 2023). Strengthening teacher educator expertise is therefore a necessary step toward building a sustainable and future-ready teaching workforce.

Overall, the emergence of AI in English language education marks a pivotal moment in redefining teacher expertise. The transformative potential of AI necessitates that teachers possess not only technical proficiency but also ethical discernment, critical thinking, and a deep commitment to human-centered teaching. Yet the absence of a global, evidence-based framework leaves significant gaps in teacher preparation, practice, and policy. Addressing this gap is essential for ensuring that AI enhances language learning in ways that are pedagogically sound, equitable, and aligned with the human values at the core of education.

1.2 Problem Statement

Despite the rapid integration of Artificial Intelligence (AI) in education, there is currently no globally validated framework that clearly defines what English language teachers must know, be able to do, and critically understand how to use AI effectively and ethically in their pedagogical practice. Existing digital competency models provide only broad guidelines and fail to address the unique demands of AI-driven language learning environments, including algorithmic bias, responsible data use, AI-supported assessment, and human-centered instructional design. As a result, English language teachers often adopt AI tools without adequate pedagogical, ethical, or technical preparation, leading to inconsistent practices, potential misuse of AI, and unequal learning experiences. This gap underscores the urgent need for a comprehensive, evidence-based, and internationally relevant framework that can guide teacher education programs, inform policy development, and support teachers in navigating AI-enhanced language teaching responsibly and professionally.

1.3 Research Purpose

The purpose of this study was to develop a comprehensive, evidence-based framework that reconceptualizes English language teacher expertise in the age of artificial intelligence. Specifically, the study aimed at identifying, define, and validate the AI-pedagogical competencies, ethical AI readiness, and human-centered digital pedagogy principles required for effective and responsible AI integration in English language teaching. By synthesizing empirical evidence, expert perspectives, and global best practices, the research seeks to produce an internationally relevant framework that can guide teacher education programs, inform professional development initiatives, and support policymakers in strengthening teacher capacity for AI-enhanced learning environments.

1.4 Research Questions

This study was guided by the following research questions, which were designed to address the gaps in understanding English language teacher expertise in the age of artificial intelligence and to inform the development of a comprehensive, evidence-based framework. The questions focus on identifying essential AI-pedagogical competencies, assessing ethical AI readiness, exploring principles of human-centered digital pedagogy, and validating a global framework for teacher preparation and professional practice.

- What AI-pedagogical competencies are essential for English language teachers to effectively integrate artificial intelligence into their instructional practice?
- What level of ethical AI readiness do English language teachers and teacher educators currently possess, and what gaps exist in their preparation?
- What principles of human-centered digital pedagogy should guide the responsible use of AI in English language teaching and teacher education?
- How can these competencies, ethical guidelines, and pedagogical principles be synthesized into a comprehensive, evidence-based framework for AI-enhanced English language teacher expertise?
- To what extent is the proposed framework perceived as relevant, valid, and applicable by global experts in ELT, AI in education, and teacher education?

1.5 Significance of the Study:

The significance of this study lies in its potential to transform English language teacher education by providing a clear, evidence-based framework for AI integration that is both pedagogically sound and ethically informed. First, the study offers practical guidance for teacher educators and curriculum designers in structuring pre-service and in-service training programs that equip teachers with the competencies necessary to navigate AI-enhanced learning environments. By defining AI-pedagogical skills, ethical readiness, and human-centered digital pedagogy, the framework can help teachers make informed, responsible decisions when integrating AI into their classrooms.

Second, the study contributes to policy development by offering globally relevant standards for AI competency in English language teaching. Policymakers and educational authorities can use the framework to establish benchmarks, accreditation criteria, and professional development initiatives that ensure consistency and quality in teacher preparation across diverse contexts.

Third, the study has implications for learners, as well-prepared teachers are more likely to implement AI tools effectively, fostering personalized, engaging, and ethically responsible learning experiences. The research also addresses potential equity gaps by highlighting areas where teacher preparation may need strengthening to ensure that all students benefit from AI-enhanced instruction.

Finally, this study advances the scholarly understanding of teacher expertise in the AI era. It bridges theoretical and practical knowledge, integrating insights from AI literacy, ethical technology use, and human-centered pedagogy, thereby contributing to global discussions on the future of teacher competence, professional standards, and innovative educational practice.

1.6 Definition of Key Terms

AI-Pedagogical Competencies: The knowledge, skills, and practices that enable English language teachers to effectively integrate artificial intelligence tools into teaching and learning, including selection of appropriate technologies, designing AI-enhanced activities, interpreting AI-generated data, and adapting pedagogy to optimize learner outcomes (Luckin et al., 2016).

Ethical AI Readiness: The preparedness of teachers to use AI responsibly, encompassing awareness of data privacy, algorithmic bias, transparency, and equity considerations, ensuring alignment with professional and moral standards (Holmes, Bialik, & Fadel, 2019).

Human-Centered Digital Pedagogy: An instructional approach prioritizing learners' agency, emotional well-being, cultural responsiveness, and engagement, emphasizing the balance between AI-supported tasks and meaningful human interaction (Selwyn, 2019).

English Language Teacher Expertise: The set of professional knowledge, skills, attitudes, and reflective practices enabling teachers to facilitate effective English language learning. In the AI era, this includes digital literacy, AI literacy, and ethical decision-making capacities.

Framework: A structured, evidence-based model that organizes competencies, principles, and guidelines to guide teacher practice, professional development, and policy in AI-enhanced English language teaching.

Artificial Intelligence (AI): Computer systems capable of performing tasks that typically require human intelligence, such as language processing, adaptive feedback, automated assessment, and predictive analytics, used in education to enhance personalization, efficiency, and data-driven decision-making.

2. Literature Review

2.1 The Evolution of Teacher Expertise in ELT

The evolution of teacher expertise in English language teaching (ELT) has traditionally been rooted in models such as Pedagogical Content Knowledge (PCK), which emphasizes the interplay between content knowledge and pedagogical strategies. PCK enables teachers to translate complex linguistic content into accessible learning experiences, taking into account learner differences, second language acquisition processes, and sociocultural contexts (Shulman, 1987). In the ELT domain, this encompasses grammar instruction, vocabulary teaching, pronunciation practice, error correction strategies, and scaffolding learners' communicative competence. While PCK provides a robust foundation, it was developed prior to the widespread integration of digital technologies and artificial intelligence (AI), limiting its applicability in modern AI-mediated classrooms.

Technological Pedagogical Content Knowledge (TPACK) extended the PCK framework to include technological proficiency, acknowledging that effective teaching requires the integration of digital tools with content and pedagogy (Mishra & Koehler, 2006). In ELT, TPACK guides teachers in utilizing multimedia resources, learning management systems, and online assessment tools. However, the introduction of AI-driven systems, such as adaptive learning platforms and large language models, introduces additional layers of complexity. Teachers are now expected to interpret algorithmic feedback, evaluate AI-generated content

critically, and navigate ethical challenges that TPACK does not explicitly address (Tsai & Chai, 2020). Consequently, while TPACK provides a conceptual starting point, it does not fully capture the competencies required in AI-enhanced ELT environments.

Historically, teacher expertise was also characterized by professional autonomy in decision-making, classroom management, and instructional design. In AI-mediated classrooms, this autonomy is influenced by intelligent systems that deliver content, assess learner performance, and provide personalized pathways. Studies from North America and Europe indicate that teachers often feel tensions between maintaining pedagogical control and relying on AI-generated recommendations (Luckin et al., 2016). The evolving teacher role necessitates a reconceptualization of expertise to include technological literacy, AI evaluation skills, and ethical decision-making capacities. Without this expanded understanding, educators may struggle to mediate AI-driven instruction effectively.

Empirical research demonstrates that teacher expertise in AI-mediated contexts is multidimensional, encompassing cognitive, technical, and ethical competencies. Teachers must integrate linguistic knowledge, pedagogical strategies, and technological skills while considering ethical implications, such as algorithmic bias, fairness, and data privacy. Comparative studies across Europe, North America, and East Asia reveal that teacher education programs rarely address these interconnected competencies systematically, often leaving teachers to develop AI-related skills through informal experimentation or self-directed learning (Zawacki-Richter, Marin, Bond, & Gouverneur, 2019). This indicates a pressing need for evidence-based frameworks that extend beyond traditional models of teacher expertise.

The limitations of PCK and TPACK in AI contexts highlight the need for new conceptualizations of teacher expertise. Current frameworks insufficiently account for teachers' responsibilities in interpreting AI outputs, maintaining professional agency, and ensuring that AI-supported instruction is equitable and pedagogically sound. Studies in Asia and Sub-Saharan Africa demonstrate that teachers who receive inadequate preparation in AI literacy and ethical guidelines are less confident in adopting AI tools, potentially compromising learning outcomes (Holmes, Bialik, & Fadel, 2019). This gap underscores the importance of reconceptualizing teacher expertise to include AI-specific competencies, ethical readiness, and human-centered digital pedagogy.

2.2 Artificial Intelligence in English Language Education

Artificial intelligence has emerged as a transformative force in English language education, providing adaptive learning, personalized feedback, and analytics-driven instructional support. Large language models (LLMs), such as ChatGPT, are widely used for generating text, supporting writing exercises, and facilitating conversational practice, while adaptive learning platforms tailor tasks to learners' proficiency levels (Holstein, McLaren, & Aleven, 2019). Learning analytics tools enable teachers to visualize learner engagement, track performance trends, and make data-informed instructional decisions. Studies across North America, Europe, Asia, and Africa demonstrate that these AI tools can enhance engagement, promote individualized learning, and support differentiated instruction, particularly in heterogeneous classrooms (Luckin et al., 2016).

Despite these opportunities, AI integration significantly alters teacher roles. Teachers are no longer the sole sources of knowledge but act as moderators, evaluators, and facilitators in AI-enhanced learning environments. Research in Europe and East Asia indicates that teachers may experience tension between relying on automated feedback and exercising pedagogical judgment (Tsai & Chai, 2020). While AI can improve efficiency and provide rapid feedback, overreliance may undermine teacher agency and reduce opportunities for authentic human interaction. This dynamic emphasizes the need for reconceptualized expertise that balances technological proficiency with pedagogical and ethical considerations.

AI tools have shown measurable benefits for learning outcomes, particularly in fostering critical thinking, problem-solving, and learner autonomy. In Singapore and the United States, studies reveal that students using AI-assisted writing tools engage in iterative refinement, demonstrating increased metacognitive awareness and analytical reasoning (Langat, 2025). However, these advantages are contingent upon teacher mediation. Without guidance on critically evaluating AI outputs, learners risk passive acceptance of AI-generated content, potentially reducing creativity and analytical depth. This illustrates the critical interplay between teacher expertise and AI effectiveness.

The global distribution of AI in ELT highlights disparities in access and professional preparedness. Teachers in well-resourced regions, such as Europe and North America, have greater access to professional development, digital infrastructure, and AI-supported platforms, whereas educators in Sub-Saharan Africa and parts of Latin America face limited resources and inconsistent training (Zawacki-Richter et al., 2019). Such inequities affect both teacher confidence and learner outcomes, underscoring the need for frameworks that address diverse contexts and support equitable AI integration.

AI has also transformed assessment practices, enabling automated scoring, adaptive quizzes, and predictive analytics. Studies in the United Kingdom and Australia indicate that while these tools can enhance formative assessment and provide timely feedback, teachers often lack the skills to interpret complex data and integrate it meaningfully into instruction (Holmes et al., 2019). Without structured guidance, AI's potential for data-informed pedagogical improvement remains underutilized, pointing to gaps in teacher preparation and professional development programs.

2.3 AI-Pedagogical Competencies

AI-pedagogical competencies encompass the knowledge, skills, and dispositions that enable teachers to leverage AI effectively and ethically. Central to these competencies is AI literacy, which includes understanding algorithmic processes, interpreting AI outputs critically, and recognizing limitations and biases inherent in automated systems (Holstein et al., 2019). Research from Europe and North America demonstrates that teachers often lack structured opportunities to develop these competencies, leading to uneven classroom implementation and potential misuse of AI tools.

Instructional design for AI-supported lessons requires deliberate planning to balance automation with meaningful interaction. Teachers must scaffold AI-driven activities to suit learner proficiency and promote higher-order thinking. Studies in East Asia reveal that classrooms employing thoughtful AI integration experience improved learner engagement, critical thinking, and autonomy,

whereas unmediated AI use can reduce motivation and creativity (Luckin et al., 2016). This emphasizes the importance of professional development that addresses both technical skills and pedagogical judgment.

Critical evaluation of AI-generated content is another essential competency. Teachers must identify inaccuracies, biases, or inappropriate outputs and guide learners in assessing content validity. Empirical evidence from the United States and Europe indicates that teachers frequently struggle with this task, highlighting the need for structured training in critical AI literacy (Langat, 2025). Failure to develop these competencies may result in the perpetuation of misconceptions and compromised learning quality. The ability to integrate AI tools effectively into pedagogy requires reflective practice, data-driven decision-making, and collaboration with peers. Studies in Australia, Canada, and the UK demonstrate that teachers who engage in continuous reflection and share best practices achieve more successful AI-mediated learning outcomes (Zawacki-Richter et al., 2019). However, existing frameworks rarely provide guidance for these integrative processes, leaving a significant gap in preparing teachers for AI-enhanced ELT. Overall, AI-pedagogical competencies extend beyond technical proficiency to include critical evaluation, ethical reasoning, and pedagogical adaptation. Current teacher education programs often fail to address these multidimensional requirements systematically, revealing a clear gap in global teacher preparation for AI-mediated instruction (Holmes et al., 2019).

2.4 Ethical AI Readiness in Education

Ethical AI readiness refers to teachers' preparedness to use AI responsibly while addressing fairness, transparency, accountability, and privacy concerns in education. In ELT, AI tools often collect learner data, provide automated feedback, and generate content, raising ethical considerations that extend beyond traditional pedagogy. Research across Europe, North America, and Asia indicates that while teachers recognize these risks, they often lack systematic training to mitigate them effectively (Holmes, Bialik, & Fadel, 2019). The absence of structured ethical guidance increases the likelihood of inconsistent practices, potentially compromising equity and learner trust. Bias and fairness are central concerns in AI-mediated ELT. Algorithms trained on existing language corpora can unintentionally favor particular dialects, cultural expressions, or socio-economic groups, disadvantaging certain learners. Empirical studies in the United States and the United Kingdom show that teachers often struggle to identify or correct algorithmic biases, leading to unintentional reinforcement of inequalities (Binns, 2018). This demonstrates a critical gap: ethical AI training must equip teachers with the skills to detect bias and ensure equitable learning opportunities.

Data privacy and security represent another major dimension of ethical AI readiness. AI systems collect extensive learner information, including performance data, engagement metrics, and personal identifiers. European studies under the General Data Protection Regulation (GDPR) indicate that educators often report uncertainty regarding legal obligations and best practices for secure data management (Erdin, 2020). In contrast, teachers in regions with less stringent regulations, such as parts of Africa and Asia, face challenges in safeguarding student data, highlighting global disparities in ethical preparedness.

Transparency, accountability, and teacher agency are also essential components of ethical AI use. Teachers must understand how AI algorithms function, the assumptions underlying their outputs, and their limitations. Research in Australia and Canada shows that opaque systems can reduce teacher autonomy and undermine professional judgment (Holmes et al., 2019). Without clear guidance, educators may be hesitant to rely on AI tools or fail to intervene when outputs are flawed, revealing a gap in professional preparedness that current teacher education programs do not sufficiently address.

Global frameworks, such as UNESCO's AI in Education guidelines and OECD recommendations, provide high-level principles for ethical AI use, emphasizing fairness, accountability, and transparency (UNESCO, 2021). However, these guidelines are often abstract, lacking actionable strategies for classroom implementation, particularly in ELT. Comparative studies in Asia, Africa, and Europe demonstrate that teachers require practical tools, case studies, and localized strategies to operationalize these ethical principles effectively. This gap underscores the need for globally informed, contextually adaptable frameworks that embed ethical AI readiness within ELT teacher competencies.

2.5 Human-Centered Digital Pedagogy

Human-centered digital pedagogy emphasizes learner agency, empathy, and accessibility in digital and AI-enhanced learning environments. In ELT, integrating AI without attending to human-centered principles risks diminishing learner engagement and relational learning. Studies across North America, Europe, and East Asia indicate that AI tools can enhance personalization, yet learners' socio-emotional needs and opportunities for collaborative problem-solving are often neglected if teachers do not intentionally embed human-centered practices (Selwyn, 2019).

Learner agency is a cornerstone of human-centered pedagogy. AI platforms can provide adaptive feedback and individualized learning pathways, but these benefits are maximized when learners are encouraged to make meaningful decisions and reflect on their progress. Research in Singapore and Australia shows that students guided to interact critically with AI outputs develop higher-order thinking skills, whereas those using AI passively exhibit reduced engagement and diminished creativity (Holstein et al., 2019). This highlights a critical gap in teacher training: ensuring that AI integration promotes agency rather than passive learning.

Empathy and relational responsiveness remain critical despite AI automation. While AI systems can generate automated feedback, they cannot interpret emotional cues, motivation, or contextual challenges affecting language learning. Studies in the United States and Canada reveal that learners perceive instruction as more effective and motivating when teachers combine AI support with empathetic engagement, demonstrating the enduring importance of human facilitation (Luckin et al., 2016).

Accessibility is another key consideration. AI can provide tailored content for learners with varying proficiency levels, disabilities, or socio-cultural backgrounds. Research in Africa and Latin America, however, highlights disparities in access to digital infrastructure and AI tools, which undermines inclusivity (Zawacki-Richter et al., 2019). Teachers must therefore implement strategies that ensure equitable learning opportunities and bridge digital divides.

Promoting critical digital citizenship complements human-centered pedagogy. Teachers must help learners understand AI functionality, the implications of automated outputs, and responsible technology use. Evidence from Europe and North America

suggests that students guided in critical AI literacy exhibit enhanced analytical reasoning, ethical awareness, and informed decision-making (Langat, 2025). Despite its importance, critical digital citizenship remains underrepresented in current teacher education programs. Balancing automation with human interaction is essential in AI-enhanced ELT. Teachers need to determine which instructional tasks can be delegated to AI and which require direct facilitation to maintain relational and collaborative learning. Research in East Asia demonstrates that classrooms where teachers integrate AI thoughtfully while preserving human interaction achieve higher engagement, deeper learning, and improved skill development (Holmes et al., 2019). This underscores the need for teacher competencies that merge technological, pedagogical, and human-centered skills.

2.6 Existing Global Frameworks and Their Limitations

Several global frameworks provide guidance on digital and AI competencies for educators, yet they reveal important limitations when applied to ELT and AI-mediated learning. The UNESCO ICT Competency Framework outlines competencies for technology integration, including pedagogical alignment, collaborative learning, and professional development (UNESCO, 2018). While widely influential, the framework is general, failing to address AI-specific issues such as algorithmic literacy, critical evaluation of AI outputs, and ethical decision-making.

The European Commission's DigCompEdu framework specifies levels of digital competence for educators, including professional engagement, teaching, assessment, and learner empowerment (Redecker, 2017). Studies in Europe show that while DigCompEdu supports general digital adoption, it does not provide guidance for handling the complex ethical, pedagogical, and assessment-related challenges posed by AI tools. Teachers report difficulties adapting high-level competencies to AI-enhanced ELT, revealing a gap between framework recommendations and classroom realities.

The Asia-Pacific Economic Cooperation (APEC) frameworks emphasize digital literacy and 21st-century teaching skills, aiming to promote regional collaboration (APEC, 2019). However, implementation is inconsistent due to disparities in infrastructure, teacher training, and policy support. While these frameworks encourage innovation and technology adoption, they lack detailed guidance for ethical AI use, AI-pedagogical competencies, and human-centered pedagogy, particularly in language teaching.

Comparative research across Africa, Asia, and Latin America highlights a shared limitation among global frameworks: they are broad and technology-focused, insufficiently addressing the nuanced competencies required for AI-mediated ELT. Teachers often struggle to translate general principles into practical classroom strategies, particularly regarding ethical oversight, critical evaluation of AI outputs, and fostering learner agency (Zawacki-Richter et al., 2019).

The lack of a comprehensive, evidence-based framework specifically for English language teachers operating in AI-enhanced classrooms represents a critical gap. There is a need for models that integrate AI-pedagogical competencies, ethical readiness, and human-centered digital pedagogy, providing actionable guidance across diverse global contexts. Such frameworks should be adaptable to varying levels of digital infrastructure, teacher expertise, and cultural considerations, ensuring both efficacy and equity in AI-mediated ELT.

3. Conception /Theoretical Framework

3.1 Conception Framework

The conceptual framework for reconceptualizing English language teacher expertise in the age of artificial intelligence (AI) is rooted in the integration of AI-pedagogical competencies, ethical AI readiness, and human-centered digital pedagogy. At its core, the framework recognizes that teacher expertise cannot be reduced to technical proficiency alone. While the rapid adoption of AI in educational contexts necessitates that teachers possess strong technological skills such as understanding algorithms, leveraging AI for personalized learning, and interpreting data-driven insights these competencies are insufficient if divorced from ethical and pedagogical considerations. Technical mastery, in isolation, risks fostering a form of "instrumental expertise" where teachers can deploy AI tools effectively but may remain unaware of the societal and ethical implications of their use. This perspective aligns with UNESCO's AI Competency Framework for Teachers, which emphasizes not only knowledge of AI systems but also the human-centered and ethical application of these technologies (UNESCO, 2021). Thus, AI-pedagogical competence in this framework is conceived as a multidimensional construct that integrates both operational skills and the ability to critically apply these tools in language instruction.

Equally central to the framework is the dimension of ethical AI readiness, which mediates the relationship between technical competency and classroom practice. Teachers' awareness of bias, fairness, privacy, and the broader social implications of AI ensures that their integration of technology does not perpetuate inequities or compromise student rights. This component reflects the growing consensus in educational research that AI adoption without ethical literacy risks reproducing existing structural inequalities (Holstein, McLaren, & Aleven, 2019). Ethical AI readiness also emphasizes reflective decision-making, prompting teachers to interrogate both the tools they use and their pedagogical decisions, thereby fostering a critical consciousness akin to the principles of Freirean pedagogy. By embedding ethics as a mediating factor, the framework moves beyond descriptive competencies, advocating for teachers as active agents who exercise judgment and moral responsibility when deploying AI technologies.

The third dimension, human-centered digital pedagogy, ensures that AI integration is guided by pedagogical principles that prioritize learner agency, critical thinking, and collaborative knowledge construction. While AI has the potential to automate aspects of teaching, this dimension foregrounds the teacher's role in creating a learning environment that nurtures student autonomy and socio-ethical awareness. Critical digital pedagogy, which interrogates the social and political dimensions of technology, underpins this component, compelling educators to question power structures embedded in AI and digital tools (Bayne & Ross, 2014; Selwyn, 2016). By emphasizing reflective practice, human-centered pedagogy ensures that technological and ethical competencies translate into meaningful instructional strategies rather than mechanistic application. It also bridges the gap between global AI standards and local classroom realities, accommodating diverse socio-cultural contexts that influence how English language teachers perceive and enact AI-mediated pedagogy.

The framework is further strengthened by the inclusion of contextual and teacher-level moderating factors, which acknowledge that expertise does not develop in a vacuum. Institutional support, access to AI infrastructure, teacher beliefs, prior digital literacy, and

socio-cultural attitudes toward technology all shape the degree to which teachers can internalize and operationalize AI competencies and ethical principles. This recognition of external and individual determinants aligns with contemporary educational theory, which views teacher expertise as a dynamic interplay between competence, context, and agency (Shulman, 1986). By incorporating these moderating variables, the framework allows for nuanced, empirically testable hypotheses, such as exploring how teachers in resource-constrained contexts negotiate ethical and pedagogical challenges differently than those in technology-rich environments. Critically, the conceptual framework emphasizes outcomes that extend beyond teacher knowledge to include professional identity, classroom enactment, and student learning. Teacher expertise, as conceptualized here, is not merely the possession of skills but the ability to integrate AI responsibly into pedagogical practice, thereby enhancing learner outcomes and fostering ethical, reflective engagement with technology. This holistic approach positions teachers as both technologically competent and socially conscious practitioners, capable of navigating complex AI-mediated educational landscapes while maintaining human-centered values. Moreover, by situating AI competencies within ethical and pedagogical contexts, the framework addresses a critical gap in existing literature: the tendency for AI literacy initiatives to focus narrowly on technical skills without adequately preparing teachers for the socio-ethical and pedagogical implications of their use.

In sum, this conceptual framework represents a multidimensional, evidence-based approach to redefining English language teacher expertise in the AI era. Its critical strength lies in its integration of technical, ethical, and pedagogical dimensions, moderated by contextual and individual factors, and oriented toward practical classroom outcomes. It provides a coherent roadmap for both empirical research and the design of teacher education programs, ensuring that AI adoption in language classrooms is not only effective but also ethical, reflective, and human-centered. By situating teacher expertise at the intersection of technology, ethics, and pedagogy, the framework responds to contemporary challenges in educational practice and research, offering a global, adaptable model for preparing educators in a rapidly evolving digital landscape.

3.2 Theoretical Frameworks

3.2.1 Sociocultural Theory (SCT)

Sociocultural theory, rooted in Vygotsky's (1978) work, emphasizes the social and cultural contexts of learning, highlighting the mediating role of more knowledgeable others such as teachers in scaffolding learner development. In the context of AI-enhanced ELT, SCT remains highly relevant because AI tools do not replace the relational and interpretive functions of teachers; rather, they act as mediating artifacts within a socially constructed learning environment. Teachers guide learners in interpreting AI-generated outputs, evaluating automated feedback, and critically engaging with adaptive exercises, aligning with SCT's principle that cognitive development occurs through interaction with cultural tools and social mediation.

Critically, while traditional SCT focuses on human-human interactions, contemporary research extends the theory to human technology-human interactions, positioning AI as a mediating tool that enhances but does not substitute the teacher's scaffolding role (Kozulin et al., 2022). In ELT classrooms, teachers facilitate learners' engagement with AI by contextualizing content, providing socio-cultural perspectives on language use, and integrating collaborative peer activities alongside AI-driven tasks. However, the theory does not provide explicit guidance on ethical issues arising from AI, requiring complementary frameworks to address bias, data privacy, and human-centered digital pedagogy. Despite this limitation, SCT is foundational for framing the study because it emphasizes that AI should support, not replace, teacher mediation in fostering critical thinking, language competence, and autonomous learning.

3.2.2 Activity Theory (AT)

Activity theory, based on Engeström's (1987) cultural-historical activity system model, provides a holistic lens to understand the complex interplay between teachers, learners, tools, and institutional rules in AI-mediated classrooms. AT is particularly suitable for studying teachers' evolving practices with AI because it emphasizes that learning and teaching are socially and contextually situated activities shaped by tools, community norms, and objectives. In ELT, AI tools ranging from LLMs to adaptive learning platforms can be analyzed as artifacts mediating teaching and learning, highlighting tensions and contradictions between traditional pedagogical methods and AI-enhanced approaches.

Recent studies have applied AT to investigate AI adoption in education, revealing that teachers experience both affordances and constraints when integrating AI (Ren & Wu, 2025; Tan, 2024). For example, AI may streamline assessment or content generation but also disrupt conventional classroom hierarchies and decision-making. AT helps identify these contradictions and informs interventions by considering the systemic interaction of subjects (teachers), objects (learning goals), tools (AI systems), rules (curricular policies), and community (students, colleagues, administrators). Critically, AT offers a framework for mapping how teacher expertise evolves when new technologies enter established activity systems, making it highly relevant for developing a comprehensive framework of AI-pedagogical competencies.

3.2.3 Human-Centered Design (HCD) Theory

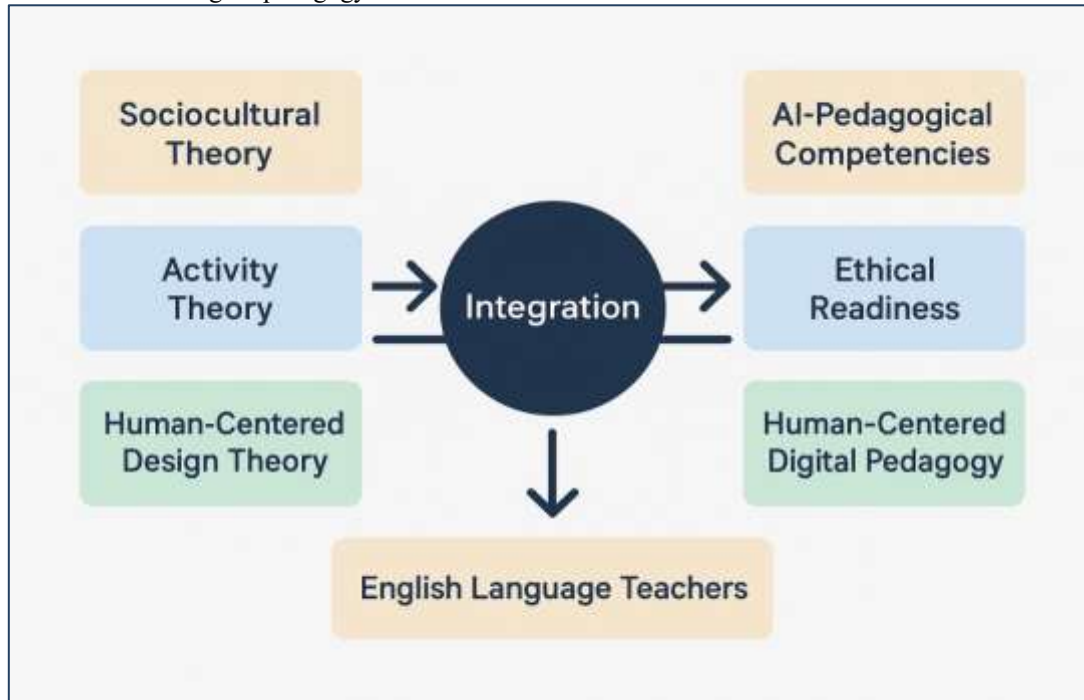
Human-centered design theory emphasizes designing systems, tools, and processes that prioritize the needs, abilities, and experiences of end-users. In education, HCD ensures that AI tools serve learners effectively while maintaining teachers' agency and pedagogical intentions. Applying HCD to ELT underscores that AI should enhance, rather than replace, teacher-mediated learning, fostering engagement, accessibility, and inclusivity. Teachers, in this framework, act as co-designers, tailoring AI applications to suit the cultural, linguistic, and cognitive needs of diverse learners (Küçükuncular, 2025).

Critically, HCD extends beyond usability, encompassing ethical considerations, learner-centeredness, and context-specific adaptation. In AI-mediated classrooms, this means designing AI-supported instructional tasks that balance automation with human interaction, ensuring feedback is meaningful, culturally appropriate, and promotes critical thinking. While SCT and AT address social and systemic aspects, HCD explicitly foregrounds user experience and ethical responsiveness, complementing other theories

to provide a robust basis for reconceptualizing teacher expertise. However, the approach requires careful integration with pedagogical theory to avoid reducing complex educational interactions to design problems alone.

Synthesis and Relevance to the Study Together, these three theories SCT, AT, and HCD a robust theoretical foundation for this study. SCT emphasizes teachers' mediating role in AI-enhanced learning, AT provides a systemic lens to analyze evolving teaching practices, and HCD ensures that AI tools and instructional designs remain learner-centered and ethically sound. Integrating these theories allows for a multi-dimensional reconceptualization of English language teacher expertise, capturing cognitive, social, technological, and ethical dimensions necessary for effective AI-pedagogical competencies.

Langat A, C 2026: diagrammatic model showing how these three theories integrate to inform AI-pedagogical competencies, ethical readiness, and human-centered digital pedagogy for ELT teachers.



3.2.4 Critical Digital Pedagogy

Concept and Foundations Critical Digital Pedagogy (CDP) is an approach to teaching and learning that emphasizes the intersection of technology, education, and social justice. Unlike conventional digital pedagogy, which often focuses on the use of digital tools and platforms to deliver content efficiently, CDP interrogates the power structures, inequalities, and ethical implications embedded in digital learning environments. Rooted in critical pedagogy theories, such as those of Paulo Freire, it encourages educators and learners to question who controls digital knowledge, how digital tools shape learning experiences, and whose voices are marginalized or amplified in online spaces. In this sense, CDP is not merely about integrating technology; it is about cultivating critical awareness of how technology affects learning, participation, and societal structures.

Practices and Implementation In practice, Critical Digital Pedagogy involves designing learning experiences that prioritize learner agency, inclusivity, and critical thinking. Educators employing CDP often use open educational resources, collaborative digital platforms, and participatory learning strategies to foster active engagement rather than passive consumption. They also address issues such as digital surveillance, algorithmic bias, and the commercialization of educational technologies, prompting learners to reflect on the social, political, and ethical dimensions of digital tools. By embedding reflective discussions, project-based learning, and collaborative problem-solving into digital curricula, CDP transforms the classroom into a space where learners critically examine both content and the medium through which it is delivered.

Implications and Challenges While Critical Digital Pedagogy offers transformative potential, it also presents several challenges. Teachers must be prepared to navigate technological limitations, institutional constraints, and varying levels of digital literacy among students. There is also the challenge of balancing technological innovation with critical reflection, ensuring that digital tools enhance rather than dominate the learning process. Despite these challenges, CDP has significant implications for fostering equitable, socially conscious education in the digital age. By cultivating critical digital literacies, it empowers learners to become thoughtful, reflective participants in an increasingly digital society, capable of questioning not just what they learn, but how and why they learn it.

3.2.5 AI Literacy Frameworks

AI Literacy Frameworks refer to structured approaches that equip individuals with the knowledge, skills, and critical understanding necessary to effectively interact with, evaluate, and create artificial intelligence (AI) systems. As AI technologies become increasingly integrated into education, work, and daily life, literacy in this domain goes beyond technical proficiency to include understanding the ethical, social, and cognitive implications of AI. These frameworks provide a roadmap for learners and educators to develop competencies that range from interpreting AI outputs to recognizing biases, limitations, and the potential societal impact of AI-driven decisions. In essence, AI literacy frameworks aim to cultivate not just users of AI, but informed and reflective participants in an AI-mediated world.

The design of AI literacy frameworks often emphasizes multidimensional learning, combining conceptual knowledge, practical skills, and critical reflection. Conceptual knowledge includes understanding fundamental AI principles, such as machine learning, natural language processing, and algorithmic decision-making. Practical skills involve the ability to interact with AI tools, analyze AI outputs, and, in some cases, develop simple AI models. Critical reflection encourages learners to question the reliability, fairness, and transparency of AI systems, fostering awareness of issues like algorithmic bias, privacy concerns, and the ethical dilemmas posed by automation. By integrating these dimensions, AI literacy frameworks provide a comprehensive approach to navigating the complexity of AI technologies responsibly.

AI literacy is increasingly being recognized as essential in educational contexts. Teachers and curriculum designers use these frameworks to scaffold AI-related learning, ensuring that students not only acquire technical competence but also develop critical thinking and ethical reasoning. For example, AI literacy frameworks can guide lesson design that encourages students to evaluate AI-driven recommendations, understand how AI models are trained, and reflect on how AI influences society. This approach positions students to become active learners and decision-makers rather than passive consumers of AI technology, promoting agency and accountability in a rapidly evolving digital landscape.

Despite their importance, implementing AI literacy frameworks poses challenges, including limited access to AI tools, insufficient teacher training, and varying levels of digital readiness among students. There is also the ongoing need to update frameworks to keep pace with rapid advancements in AI technologies. Nonetheless, these frameworks are crucial for fostering a generation capable of understanding, using, and critiquing AI in thoughtful and ethical ways.

By integrating conceptual, practical, and reflective dimensions, AI literacy frameworks ensure that learners are equipped not only to survive in an AI-driven world but to shape it responsibly and inclusively.

3.3 *Relevance of Both Frameworks in Modern Education*

Together, CDP and AI literacy frameworks create a comprehensive approach to digital education:

- **Empowerment and Agency:** Students are not passive consumers of technology but active participants who question, critique, and influence digital tools and systems.
- **Ethical and Social Responsibility:** Learners develop awareness of biases, surveillance, and inequities embedded in digital and AI technologies.
- **Critical Competence:** Combining reflection with technical skills ensures students can analyze, adapt, and innovate responsibly in digital and AI-driven environments.
- **Preparation for Future Challenges:** Both frameworks prepare learners to navigate complex, AI-mediated social, economic, and political systems with critical consciousness and ethical judgment.

4. Methodology

4.1 *Introduction*

This chapter presents the methodological procedures used in conducting the study titled *Reconceptualizing English Language Teacher Expertise in the Age of Artificial Intelligence: Developing a Global, Evidence-Based Framework for AI-Pedagogical Competencies, Ethical AI Readiness, and Human-Centered Digital Pedagogy in Teacher Education*. The chapter describes the research design, target population, sampling procedures, data collection techniques, instruments, document sources, and data analysis strategies. It also outlines measures taken to ensure trustworthiness and ethical compliance. Because the study sought to explore emerging, complex, and under-theorized aspects of AI-mediated English Language Teaching (ELT), a qualitative approach was adopted to capture rich, contextualized insights from experts and relevant documents across global educational landscapes.

4.2 *Research Design*

A qualitative exploratory research design was employed to investigate the evolving nature of teacher expertise within AI-enhanced ELT environments. The study sought to understand how AI reshapes pedagogical competence, ethical professional responsibilities, and human-centered teaching practices. Qualitative inquiry was suitable because it allows for in-depth exploration of expert perceptions, policy discourses, and conceptual trends that cannot be adequately captured through quantitative techniques. Given that AI integration in ELT is a rapidly developing field with limited established theory, the design supported an inductive process of building new knowledge and proposing an evidence-based global framework.

Three key qualitative strategies were used: (a) a systematic literature review to provide an empirical and theoretical foundation; (b) semi-structured interviews with selected experts; and (c) document analysis of relevant policy frameworks and guidelines. The combination of these strategies supported methodological triangulation, ensuring that data were derived from complementary and mutually reinforcing sources.

4.3 *Target Population*

The target population comprised individuals and documents representing three major knowledge domains essential to the research focus: ELT professionals with experience in language pedagogy, curriculum design, assessment, or teacher training.

AI specialists in education, including experts in artificial intelligence, machine learning, educational data science, and learning analytics. Teacher educators and policymakers responsible for teacher professional development, regulatory frameworks, and institutional or national guidelines governing technology use in education.

In addition to human participants, the population included global and national documents related to teacher professional standards, digital competency frameworks, AI ethics guidelines, and ELT curricular policies.

4.4 *Sampling Procedures*

Purposeful sampling was used to select information-rich participants with specialized expertise relevant to AI and ELT. Participants were chosen based on their professional experience, contributions to the field, and direct involvement with AI-mediated teaching or

policymaking. The sample included 27 experts: 10 ELT specialists, 8 AI-in-education experts, and 9 teacher educators or policy leaders from diverse regions including Asia, Africa, Europe, the Middle East, and North and South America.

Document sampling followed a criterion-based approach. Documents were included if they (a) addressed teacher competencies, AI integration, digital pedagogy, or ethics; (b) were published by credible organizations; and (c) had global or national relevance. A total of 26 documents met the criteria, including frameworks from UNESCO, OECD, APEC, TESOL, European Commission DigCompEdu, and various national education ministries.

The sampling strategy ensured global representation and enhanced the transferability of findings to multiple educational contexts.

4.5 Data Collection Methods

4.5.1 Systematic Literature Review

A systematic literature review (SLR) was conducted as the first phase of data collection. Using databases such as Scopus, ERIC, Google Scholar, and Web of Science, the researcher retrieved peer-reviewed articles, books, reports, and doctoral theses published between 2018 and 2025. Search terms included combinations of “AI in education,” “English language teaching,” “AI pedagogical competencies,” “ethical AI,” “human-centered pedagogy,” and “teacher expertise.” Studies were screened based on relevance, methodological rigor, and contribution to AI-era teacher competency discussions. The SLR provided the foundational conceptual categories that informed interview guide development and initial coding structures.

4.5.2 Expert Interviews

Semi-structured interviews formed the primary source of empirical data. The interviews allowed the researcher to explore participants’ perspectives on AI-pedagogical practices, required competencies, ethical challenges, and implications for teacher education. Interviews were conducted through Zoom, Google Meet, and face-to-face meetings depending on participant location and preferences.

Each interview lasted between 45 and 75 minutes and was audio-recorded with consent. Interviews were transcribed verbatim and verified for accuracy. The semi-structured format offered flexibility, enabling probing questions to elicit deeper insights while ensuring consistency across interviews.

4.5.3 Document Analysis

To triangulate interview findings, document analysis was conducted on global frameworks, institutional policies, national guidelines, ELT standards, and ethical AI publications. The documents provided insights into current expectations of teacher knowledge, digital skills, and professional conduct in technology-mediated environments. A document analysis protocol was used to extract data related to AI integration, ethics, digital pedagogy, and competency standards. This phase helped identify gaps between existing frameworks and the needs of AI-enhanced ELT classrooms.

4.6 Data Collection Instruments

4.6.1 Interview Protocol

An interview guide was developed based on insights from the literature review. It contained open-ended questions grouped into thematic areas: AI-pedagogical competencies, ethical AI readiness, human-centered teaching practices, and teacher education implications. The guide ensured coverage of core issues while allowing participants to expand on their experiences and knowledge.

4.6.2 Document Analysis Checklist

A rubric-based checklist guided the extraction of relevant information. Indicators included: treatment of AI competencies, references to ethical AI use, focus on human-centered pedagogy, and connections to ELT-specific needs.

4.7 Data Analysis Procedures

Thematic analysis, guided by Braun and Clarke’s six-step framework, was used to analyze interview transcripts, document extracts, and literature review outputs. NVivo qualitative analysis software supported the coding process.

4.7.1 Familiarization

The researcher repeatedly read transcripts and documents to identify initial impressions and patterns. Memos were written to capture emerging ideas.

4.7.2 Coding

A combination of inductive and deductive coding was applied. Inductive codes emerged from the data, while deductive codes were based on conceptual constructs identified in the literature review, such as AI literacy, bias awareness, and learner-centered design.

4.7.3 Theme Development

Codes were organized into preliminary themes. These themes reflected emerging understandings of AI-pedagogical competencies, ethical readiness, and human-centered pedagogy.

4.7.4 Reviewing Themes

Themes were refined by comparing them across data sources. Overlaps were merged, and divergent insights were retained to preserve complexity.

4.7.5 Defining and Naming Themes

Themes were defined clearly and given conceptual titles that aligned with the objectives of the study. Representative quotes were selected to illustrate thematic categories.

4.7.6 Framework Synthesis

The final themes were synthesized into a global evidence-based framework. The framework included domains, competency statements, and indicators suitable for integration into teacher education programs.

4.8 Trustworthiness of the Study

To ensure rigor, the study applied Lincoln and Guba's criteria of credibility, transferability, dependability, and confirmability.

Credibility Triangulation across interviews, documents, and literature strengthened validity. Member-checking was conducted by sharing summary findings with selected participants to verify accuracy.

Transferability Thick descriptions of participants, contexts, and documents allow readers to determine relevance to their own settings.

Dependability An audit trail documenting coding processes, analytic memos, and theme refinement decisions was maintained throughout the study.

Confirmability Reflexive journaling helped the researcher bracket personal biases. Themes were grounded in direct evidence from transcripts and documents.

4.9 Ethical Considerations

Ethical approval was obtained from the relevant institutional review board. Participants received informed consent forms detailing confidentiality, voluntary participation, and withdrawal rights. All data were anonymized and stored securely in encrypted digital folders. Recordings and transcripts will be retained for five years before secure deletion. Ethical standards were also applied to document handling, ensuring accurate representation of organizational guidelines without distortion.

4.10 Chapter Summary

This chapter has described the methodological processes underpinning the study. It detailed the qualitative exploratory design, sampling strategies, data collection methods, analysis techniques, and measures for trustworthiness and ethical integrity. Together, these methods ensured that the resulting framework is empirically grounded, theoretically informed, and practically relevant to the evolving competencies required of English language teachers in the age of artificial intelligence. The next chapter presents the findings of the study.

5. Data Presentation and Findings

The findings of this study derive from three interconnected data sources: expert interviews, documentary analysis, and the systematic literature review conducted in the initial phase of the research. The integration of these sources provides a multi-layered understanding of how artificial intelligence is reshaping English Language Teaching (ELT) and reconfiguring the professional competencies required of teachers. Analysis revealed that although AI has entered mainstream educational technologies, most ELT teachers and teacher educators have not yet developed the comprehensive skill sets needed to integrate AI responsibly, effectively, and humanely. The chapter presents themes derived from the triangulated data and illustrates how they interrelate to inform an emerging evidence-based framework for AI-pedagogical competencies, ethical AI readiness, and human-centered digital pedagogy. Participants consistently emphasized the rapid evolution of the field, noting that AI has moved from being a supplementary tool to a transformative force influencing curriculum, instruction, assessment, and teacher identity. This contextual complexity underpins the findings presented in this chapter.

A central theme emerging from the interviews was the redefinition of teacher expertise in AI-mediated ELT contexts, where traditional pedagogical knowledge is no longer sufficient. Experts noted that competencies once regarded as advanced such as digital literacy or multimedia integration are now baseline expectations. Newer competencies, such as understanding large language model behavior, designing AI-augmented lessons, curating AI-generated materials, and interpreting learning analytics, have become essential components of contemporary ELT practice. Participants expressed concern that most teacher education programs have not adapted quickly enough to incorporate these evolving needs. Document analysis confirmed this gap: although frameworks such as DigCompEdu and UNESCO ICT-CFT acknowledge digital competence, they rarely specify AI-related knowledge or skills in ways that reflect emerging realities. As a result, teachers often rely on personal experimentation, ad-hoc workshops, or online tutorials to fill competency gaps, creating significant disparities in capacity across institutions and regions.

A second prominent theme relates to the emergence of AI-pedagogical competencies as a distinctive domain within ELT professional standards. Interviewees emphasized that the integration of AI into classroom practices requires teachers to develop hybrid skills combining instructional design, digital fluency, prompt engineering, critical content evaluation, and adaptive mediation. Teachers increasingly serve as interpreters of AI outputs, responsible for assessing the accuracy, appropriateness, and pedagogical relevance of automatically generated content. Analysis revealed that effective AI-pedagogical competence involves not just knowing how to use tools but understanding when and why to use them in ways that enrich language learning. Experts noted that AI can enhance personalization, scaffold writing tasks, support multimodal learning, and provide real-time feedback—but only when mediated by a teacher who can contextualize the technology within pedagogical goals. Both literature and policy documents underscored that without teacher mediation, AI risks becoming a superficial add-on rather than a transformative learning enabler.

Ethical AI readiness emerged as another critical theme, with participants consistently highlighting concerns around bias, data privacy, algorithmic transparency, and teacher accountability. Interviews revealed that many ELT practitioners were unaware of how AI systems collect, store, and process student data, exposing potential vulnerabilities in safeguarding learners' rights. Several participants described experiences with AI tools producing biased or culturally distorted content, emphasizing the need for teachers to critically screen AI-generated materials. Document analysis showed that global guidelines—such as OECD AI Principles and UNESCO's Ethical AI recommendations—offer high-level direction but often lack actionable competencies tailored to ELT

contexts. The findings indicate that ethical readiness is not merely a policy issue but a pedagogical one: teachers must be trained to anticipate risks, engage learners in discussions about digital ethics, and model responsible technology use. Without this preparedness, AI integration may inadvertently reinforce inequities, normalize biased language patterns, or compromise student data security.

The theme of human-centered digital pedagogy also featured prominently in the data. Experts expressed strong concerns that excessive reliance on AI risks dehumanizing the learning experience and reducing opportunities for authentic communication—core principles of ELT. Participants argued that while AI can automate routine tasks, it cannot replace empathy, cultural awareness, or relational teaching practices. Human-centered digital pedagogy therefore requires teachers to intentionally design learning experiences that preserve student agency, promote critical digital citizenship, and foster meaningful interaction. Literature review findings suggest that AI should augment, not replace, the teacher's role in creating inclusive, dialogic, and emotionally supportive learning environments. Several interviewees emphasized the importance of guiding learners to understand AI's limitations, particularly regarding creativity, context interpretation, and socio-cultural nuance. Documentary evidence aligned with this concern, highlighting that most competency frameworks insufficiently articulate the relational dimension of technology-mediated language teaching. A further finding relates to the misalignment between existing global digital competency frameworks and the emerging needs of AI-enhanced ELT. Analysis of documents such as APEC's EdTech competencies, TESOL Technology Standards, DigCompEdu, and UNESCO ICT-CFT indicated a strong emphasis on generic digital skills but limited recognition of AI-specific pedagogical, ethical, or contextual demands. Interview participants from multiple regions noted that national frameworks tend to adopt these global models without adapting them to the unique characteristics of language learning or the complexities introduced by AI-driven tools. This misalignment results in teachers being trained for general digital competence but lacking the targeted expertise required to engage with AI responsibly and effectively. The data therefore highlight a significant policy gap: teacher education systems require updated, discipline-specific frameworks that articulate explicit AI-pedagogical competencies and ethical safeguards tailored to ELT. Data further revealed that teachers face significant professional identity shifts as AI becomes more integrated into ELT classrooms. Participants described feeling both empowered and threatened by AI tools. Some appreciated AI's ability to support lesson planning, generate materials, and provide immediate feedback to learners, freeing time for relational or creative aspects of teaching. Others feared that the growing capabilities of AI could diminish the value of human expertise, particularly in areas such as grammar explanation or vocabulary instruction. Thematic analysis showed that teachers who possessed strong conceptual and critical understanding of AI felt more confident and in control of its use, whereas those with limited AI literacy experienced anxiety, uncertainty, and resistance. Literature on technology adoption patterns aligns with these findings, demonstrating that teacher beliefs significantly influence integration outcomes. Thus, meaningful AI integration requires not only technical and pedagogical competencies but also emotional and identity support structures within teacher education.

The theme of contextual inequality in AI readiness emerged strongly across interviews and documents. Experts from lower-resource regions highlighted major challenges including limited infrastructure, unreliable internet connectivity, insufficient training opportunities, and lack of localized AI tools that reflect regional languages and cultures. Participants reported that even when global AI tools are accessible, they often reflect Anglophone biases and lack sensitivity to diverse linguistic norms. Document analysis showed that policy guidelines frequently assume universal access to digital infrastructure, an assumption that does not hold in many contexts. Literature review findings affirmed that digital divides extend beyond hardware access to include disparities in data literacy, teacher training, and institutional support. Consequently, the global AI competency framework emerging from this study must account for contextual diversity and emphasize flexible, adaptable indicators that can be implemented in varied educational environments.

Data also indicated that teacher education programs are not keeping pace with the rapid advancement of AI technologies. Interviewees reported that most pre-service and in-service programs still operate under traditional digital literacy models, focusing on basic ICT skills rather than advanced AI competencies. Some institutions offer short workshops on emerging AI tools, but these are often fragmented, tool-specific, and lack pedagogical grounding. Participants expressed a desire for structured, sustained professional development that integrates AI literacy, ethical awareness, and human-centered pedagogy.

Document analysis revealed that only a minority of national teacher education policies include explicit references to AI, and when they do, they tend to address it from a technological rather than pedagogical standpoint. This gap suggests an urgent need for curriculum reform that embeds AI-related competencies systematically within teacher education pathways.

The findings also highlighted that meaningful AI integration requires collaborative professional cultures rather than isolated teacher efforts. Experts emphasized the importance of communities of practice, interdisciplinary collaboration, and institutional support mechanisms to facilitate reflective and informed AI use. Interview participants described successful instances where ELT specialists collaborated with AI developers, educational technologists, or curriculum designers to co-create pedagogically sound and ethically responsible learning tools. Such collaborative structures helped teachers deepen their understanding of AI, navigate uncertainties, and build confidence in their ability to mediate technology effectively. Literature review evidence supports the notion that collective learning environments enhance innovation adoption and reduce resistance. However, document analysis revealed that most competency frameworks and policy guidelines do not explicitly promote collaborative learning structures, suggesting another area for improvement in global teacher education.

The final key finding relates to the need for an integrated global framework that synthesizes AI-pedagogical competencies, ethical AI readiness, and human-centered digital pedagogy into a coherent model tailored specifically to ELT. The triangulated data confirmed that these three domains are interdependent: AI-pedagogical skills without ethical awareness can lead to irresponsible use; ethical competence without human-centered design may produce mechanistic instruction; and human-centered pedagogy without AI literacy risks technological irrelevance. Participants expressed strong support for a framework that delineates clear competency domains, performance indicators, and implementation pathways adaptable to diverse global contexts. Documentary evidence highlighted the absence of such a framework in existing international standards. The findings therefore justify the development of an evidence-based, AI-era ELT teacher competency model presented in the next chapter.

5.1 Discussion, Proposed Global Framework, and Recommendations

The purpose of this study was to reconceptualize English language teacher expertise in the age of artificial intelligence by identifying the AI-pedagogical competencies, ethical AI readiness, and human-centered digital pedagogy principles required for effective and responsible teaching. This chapter discusses the findings in relation to existing literature, interprets their implications for ELT teacher education, and presents the proposed global framework derived from the study's triangulated data sources. The chapter concludes with context-specific, institutional, national, and global recommendations.

The findings indicate that teacher expertise in AI-enhanced ELT has expanded beyond traditional domains such as pedagogical knowledge, language proficiency, and digital literacy. AI's rapid integration into mainstream education has created new expectations for teachers to understand algorithmic behaviors, critically evaluate AI outputs, design AI-supported learning tasks, and mediate interactions between learners and intelligent technologies. This aligns with emerging research suggesting that AI transforms not only instructional processes but also the epistemic foundations of teaching, requiring teachers to adopt new forms of hybrid human-AI expertise. The study contributes to this discourse by showing that existing frameworks such as TPACK, DigCompEdu, and UNESCO ICT-CFT while valuable do not adequately address AI-specific competencies nor provide ELT-discipline-specific guidance.

A significant discussion point is the conceptual shift from "technology integration" to AI-informed pedagogy, which emerged in participant narratives. Unlike earlier forms of educational technology, AI does not merely deliver content or facilitate interaction; it analyzes learner data, generates language, simulates communication, and makes pedagogical suggestions. These capabilities blur the boundaries between teacher and tool, resulting in a reconfiguring of teacher agency. Teachers in this study stressed the importance of retaining decision-making authority and pedagogical judgment, resonating with scholarship on maintaining human-centeredness amidst automation. The findings thus challenge deterministic narratives that portray AI as inherently transformative and instead emphasize the mediating role of teacher expertise.

A deeper interpretation of the findings highlights that ethical AI readiness is not peripheral but central to teacher professionalism in the AI era. Participants repeatedly emphasized concerns related to data privacy, algorithmic bias, intellectual property, and equitable access to AI tools. This suggests that ethical competence is no longer the domain of administrators or policymakers alone; rather, it forms part of everyday pedagogical work. The study reveals that teachers frequently encounter ethically complex situations for example, whether and how to allow learners to use generative AI for writing assignments, how to verify authorship, or how to manage data generated by AI-driven learning platforms. Existing global guidelines, although informative, remain too abstract and insufficiently linked to classroom realities. The integration of ethical AI readiness as a core domain in the proposed framework addresses this gap by positioning teachers as ethical decision-makers and protectors of learner rights.

Human-centered digital pedagogy emerged as a vital dimension, offering a balancing force against the mechanistic tendencies of automated systems. Interpretation of findings shows that while AI can improve efficiency and personalization, it risks diminishing relational aspects of teaching and learner agency if used uncritically. Teachers emphasized that ELT is inherently communicative, relational, and culturally embedded—qualities that AI cannot replicate. Therefore, effective integration requires deliberate pedagogical choices that preserve empathy, dialogic interaction, and socio-emotional support. This aligns with theoretical perspectives from Critical Digital Pedagogy and Human-Centered Design, which argue that meaningful learning depends on human relationships rather than technological novelty.

Taken together, the findings highlight the need for a new integrated framework that synthesizes AI-pedagogical competencies, ethical readiness, and human-centered pedagogy into a coherent structure tailored to ELT. The proposed framework is intended to address the weaknesses of existing competency models, which typically treat technology as a generic domain or focus solely on digital skills without addressing AI's unique pedagogical and ethical implications. The framework also draws from sociocultural theory and activity theory, recognizing teaching as a mediated, dynamic activity shaped by tools, contexts, and human values.

Proposed Global Framework for AI-Era ELT Teacher Expertise The framework is organized into three interconnected domains, each consisting of four sub-domains derived from empirical and documentary evidence:

5.2 AI-Pedagogical Competencies

AI-pedagogical competencies encompass a wide set of knowledge and skills that enable educators to thoughtfully integrate artificial intelligence into teaching and learning. At the foundation lies a strong understanding of AI principles, including how algorithms operate, what kinds of data they rely on, and the limitations that shape their behavior. Teachers who recognize how AI systems make predictions, classify information, or generate content are better prepared to interpret system outputs accurately and help learners understand the underlying mechanisms. This literacy is crucial for dispelling misconceptions and for fostering a critical mindset toward emerging technologies.

Beyond conceptual understanding, educators must also be capable of designing AI-supported learning experiences that meaningfully enhance instruction. Effective integration involves identifying where AI tools can extend pedagogical goals such as personalizing learning pathways, providing targeted feedback, or enabling simulations while ensuring that these tools complement rather than replace sound teaching strategies. This design work requires balancing instructional objectives with the affordances and constraints of AI technologies, ensuring that their use is pedagogically purposeful rather than merely novel.

A key competency in this domain is the critical evaluation of AI-generated content. As generative AI becomes increasingly embedded in education, teachers must be able to assess the accuracy, relevance, and appropriateness of its outputs. This includes identifying potential misinformation, detecting hallucinations, and recognizing subtle biases embedded in algorithmic responses. Such scrutiny helps educators maintain academic integrity and ensures that AI-produced materials uphold disciplinary standards.

Finally, competent AI-pedagogy involves interpreting and acting on AI-driven learning analytics. AI systems can provide real-time insights into learners' progress, misconceptions, or behavioral patterns, but the value of these insights depends on teachers' ability to analyze them meaningfully. Educators must translate data patterns into actionable instructional decisions, such as adjusting lesson

pacing, offering targeted support, or redesigning learning tasks. This interpretive work requires both statistical reasoning and pedagogical sensitivity, ensuring that data-informed decisions always prioritize the learner's developmental needs.

5.3 Ethical AI Readiness

Ethical AI readiness refers to the capacity of educators to navigate the complex moral, legal, and social implications of using AI in educational contexts. Central to this readiness is the responsibility to safeguard data privacy, security, and intellectual property. Teachers must understand how student data is collected, stored, and used by AI systems, and they need to ensure compliance with institutional and legal frameworks. Protecting learners from breaches, misuse of personal information, and unauthorized data profiling is a fundamental requirement of ethical AI use.

A crucial component of ethical readiness is the ability to identify and mitigate algorithmic bias. AI tools are prone to replicating and amplifying biases present in their training data, which can manifest in unfair recommendations, skewed assessments, or inequitable learning experiences. Educators must therefore be vigilant, recognizing when outputs disadvantage certain learners or reinforce harmful stereotypes. By challenging biased patterns and advocating for more responsible design, teachers contribute to more just and inclusive digital learning environments.

Maintaining transparency and teacher agency is also essential in ethical AI adoption. Educators must ensure that learners understand when and how AI is being used in their learning process, avoiding practices that obscure algorithmic influence. At the same time, teachers must retain professional autonomy, using AI tools as supportive aids rather than decision-makers. Ethical readiness means resisting the over-automation of pedagogical judgments and preserving the teacher's role as an informed, reflective professional.

Another important dimension involves guiding learners in responsible AI practices and digital citizenship. As students increasingly encounter AI-mediated content and interactions, they require instruction on the ethical use of generative tools, critical assessment of AI outputs, and the management of their digital identities. Teachers play an integral role in cultivating these competencies, helping learners to become thoughtful, responsible participants in an AI-driven society.

5.4 Human-Centered Digital Pedagogy

Human-centered digital pedagogy emphasizes the irreplaceable value of human relationships, creativity, and agency in technologically enriched learning environments. A central priority is preserving learner agency, autonomy, and creativity, even as digital tools become more powerful and pervasive. Educators must design learning experiences that encourage students to make choices, generate original ideas, and pursue inquiry, ensuring that technology serves as a scaffold rather than a constraint. AI and digital tools should empower learners, not narrow their possibilities or diminish their ownership of learning.

This approach also foregrounds empathy, inclusion, and relational engagement as vital components of meaningful education. Digital contexts can sometimes distance learners from teachers or peers, so educators must intentionally cultivate interpersonal connection, emotional safety, and a sense of belonging. Human-centered pedagogy involves recognizing learners' diverse identities, experiences, and needs, integrating practices that support collaboration, compassion, and mutual understanding across digital spaces.

A thoughtful balance between automation and human judgment is also necessary. While AI can facilitate efficiency such as automating routine tasks or generating personalized suggestions educators must remain attentive to moments where human insight, ethical reasoning, and dialogic interaction are indispensable. Decisions about student learning require more than algorithmic logic; they require interpretation, negotiation, and relational expertise that AI cannot replicate. Human-centered pedagogy thus emphasizes the complementary roles of technology and teacher intuition.

Finally, designing accessible, equitable, and culturally responsive digital spaces is essential for ensuring that all learners can thrive. This involves selecting tools that meet diverse accessibility needs, constructing learning materials that reflect varied cultural perspectives, and eliminating digital barriers that marginalize certain groups. By prioritizing inclusivity and cultural relevance in digital design, educators create environments where learners from all backgrounds feel represented, valued, and empowered.

These domains are interconnected and mutually reinforcing. AI-pedagogical competence ensures effective instructional use; ethical readiness protects learners; and human-centered pedagogy ensures meaningful, humane learning experiences. The framework thus provides an integrated, globally applicable foundation for teacher education, curriculum design, professional development, and policy development.

5.5 Recommendations

5.5.1 Recommendations for Teacher Education Institutions

Teacher education programs should embed AI literacy, ethical AI training, and human-centered digital pedagogy within both pre-service and in-service curricula. Programs should prioritize practical, scenario-based training that exposes teachers to AI tools, ethical dilemmas, and classroom mediation strategies. Collaboration with computer scientists and AI developers can strengthen interdisciplinary understanding and produce more contextually relevant training content.

5.5.2 Recommendations for Schools and ELT Departments

Institutions should create professional learning communities where teachers collaborate, experiment with AI tools, and reflect on their practices. Schools should also implement clear policies on student use of AI, data privacy, and academic integrity. Administrators must provide ongoing technical support and allocate time for teachers to explore AI tools meaningfully, rather than expecting informal adoption.

5.5.3 Recommendations for National Policymakers

Governments should update teacher competency standards to explicitly incorporate AI-pedagogical skills and ethical AI readiness. National digital education policies should address infrastructure inequalities, ensuring equitable access to high-quality AI tools and connectivity. Policies must also require transparent procurement of AI systems, with attention to data ethics and algorithmic fairness.

5.5.4 Recommendations for International Organizations

Organizations such as UNESCO, OECD, TESOL, and APEC should collaborate to refine global AI-in-education guidelines that are more discipline-specific. They should support capacity-building initiatives, particularly for low-resource regions, and encourage the development of multilingual, culturally responsive AI tools. International coordination will help reduce regional gaps and support shared standards of ethical and pedagogical quality.

5.5.5 Recommendations for AI Developers and EdTech Companies

Developers should work closely with ELT professionals to design tools that reflect linguistic diversity, pedagogical goals, and ethical safeguards. Transparent documentation, bias testing, and accessible privacy information must become industry norms. Companies should also support co-creation initiatives, allowing teachers to shape the design of AI tools for classroom use.

6. Summary, Conclusions and Future Research

This final chapter synthesizes the study's overall contributions by summarizing the research purpose, methodology, and key findings; presenting conclusions drawn from the data; and proposing areas for future inquiry. The chapter highlights how the rapid integration of artificial intelligence into education is fundamentally transforming English Language Teaching (ELT), redefining teacher expertise, and reshaping the professional standards required for effective, ethical, and human-centered practice.

The purpose of this study was to reconceptualize English language teacher expertise in the age of artificial intelligence by identifying emerging AI-pedagogical competencies, ethical AI readiness requirements, and the human-centered digital pedagogy principles necessary for responsible and effective teaching. Through a qualitative exploration consisting of a systematic literature review, expert interviews, and document analysis, the study sought to develop an evidence-informed global framework responsive to the evolving conditions of AI-mediated ELT. The methodology enabled a deep, contextual examination of teacher experiences, policy realities, and conceptual trends, forming a foundation for a comprehensive reconceptualization of teacher professional competence in the AI era.

The findings presented in Chapter Four indicate that AI technologies are not simply new tools but transformative agents influencing pedagogical processes, teacher roles, professional identities, and ethical responsibilities. Across data sources, three integrative themes emerged: (1) AI-pedagogical competencies as a distinct and essential knowledge domain; (2) ethical AI readiness as a core dimension of teacher professionalism; and (3) human-centered digital pedagogy as a counterbalancing force ensuring meaningful, empathetic, and relational learning experiences. The study further demonstrated that current global competency frameworks such as DigCompEdu, TPACK, APEC standards, and UNESCO ICT-CFT are insufficient for the AI era because they lack explicit guidance on algorithmic awareness, bias mitigation, data ethics, and discipline-specific pedagogical mediation. The absence of ELT-specific AI competency guidance reflects a critical gap the study addresses through its proposed framework.

The discussion in Chapter Five emphasized that effective AI integration in ELT requires more than operational skill or tool familiarity. It demands conceptual understanding of AI behavior, critical evaluation skills, pedagogically grounded design of AI-enhanced lessons, and the ability to interpret AI-driven analytics responsibly. Teachers must act as ethical decision-makers, mediators of human-AI interaction, and guardians of learner autonomy and well-being. These demands extend far beyond traditional digital literacy frameworks and require a reconceptualization of teacher expertise that is holistic, ethically grounded, and pedagogically driven. The study's proposed global framework thus integrates AI-pedagogical competencies, ethical AI readiness, and human-centered pedagogy into a coherent model guide for teacher education, professional development, and policy formation.

7. Conclusions

This study concludes that ELT teacher expertise in the age of artificial intelligence is inherently multidimensional and cannot be effectively addressed through existing digital competence frameworks. AI introduces pedagogical, ethical, and relational complexities that require teachers to assume new forms of hybrid professional identity part educator, part data interpreter, part ethical guardian, and part designer of human-centered learning experiences. Teacher education institutions must therefore shift from traditional training models toward integrated programs that combine AI literacy, critical digital pedagogy, and ethical awareness.

A major conclusion is that ethical AI readiness is a non-negotiable component of contemporary teacher professionalism. Concerns related to bias, data privacy, authorship, and algorithmic influence permeate daily teaching interactions and cannot be relegated to policy documents alone. Without adequate ethical training, teachers risk unintentionally perpetuating inequities, compromising student rights, or delegating pedagogical authority to opaque technological systems. Thus, ethical readiness must be institutionalized and embedded into all levels of teacher preparation.

The study also concludes that human-centered digital pedagogy is essential in ensuring that AI enhances rather than diminishes the communicative, relational, and cultural richness of ELT. Teachers must intentionally preserve learner agency, creativity, and interpersonal connection, resisting the temptation to over-automate or rely excessively on machine-generated outputs. Ultimately, the integration of AI into ELT must support not supplant the deeply human work of language learning.

8. Recommendations for Future Research

While this study provides a foundational framework for understanding AI-era teacher expertise, several areas warrant deeper investigation. First, future research should conduct empirical validation of the proposed global framework across diverse educational contexts. Cross-cultural studies could examine how AI-pedagogical competencies manifest differently in regions with varying technological infrastructure, linguistic diversity, and educational policy environments.

Second, experimental or mixed-methods research could explore the impact of specific AI tools on language learning outcomes, teacher decision-making, and learner autonomy. Such studies would contribute practical evidence regarding effective and responsible AI use in ELT classrooms. Additionally, ethnographic or classroom-based studies could examine real-time human-AI interactions, providing nuanced insights into how teachers mediate AI tools during instruction.

Third, future research should explore teacher identity transformation in greater depth. As AI takes on traditionally human functions—such as evaluation and language modeling—teachers experience shifts in authority, confidence, and professional self-concept. Understanding these psychological and socio-professional dynamics is essential for designing responsive teacher training programs. Fourth, longitudinal studies could investigate how sustained exposure to AI tools influences learners' critical thinking, creativity, and ethical awareness. Such research would help determine whether AI enhances or erodes core cognitive and communicative capacities over time. Finally, scholars should examine the policy implications of AI integration at national and global levels. Comparative policy studies could evaluate the extent to which governments are prepared to support AI-era teacher development, and how global organizations might harmonize standards across borders. This line of inquiry is critical for reducing regional inequalities and ensuring equitable access to safe, effective AI-enhanced language education.

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