Journal of English for Specific Purposes Praxis
ISSN: 3092-7854
https://www.jespp.ir
Vol. 3, No. 2; 2026, April
Article Citation:
Mehrabian, N. (2026). A systematic review of AI, intercultural communicative competence, and pedagogical innovation: Exploring EFL teachers' beliefs and challenges. *Journal of English for Specific Purposes Praxis, 3*(2), 101–128. https://doi.org/10.22034/jespp.2026.581891.1050
JESPP

A Systematic Review of AI, Intercultural Communicative Competence, and Pedagogical Innovation: Exploring EFL Teachers' Beliefs and Challenges

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Original Research Article | Date of Submission: 17 October 2025 | Date of Acceptance: 28 March 2026

Abstract

As artificial intelligence transforms the educational landscape, English as Foreign Language (EFL) teachers find themselves at a significant crossroads. They are increasingly expected to leverage new technologies not only to teach language mechanics but to foster the deep, nuanced Intercultural Communicative Competence (ICC) students need to navigate a globalized world. This systematic review investigates the convergence of AI integration, ICC cultivation, and the imperative for pedagogical innovation. By synthesizing current empirical literature, this study maps the academic landscape, delineating EFL teachers' prevailing beliefs, adoption practices, and the primary challenges surrounding the application of these concepts. Following PRISMA guidelines, a rigorous screening of peer-reviewed articles from Scopus, Web of Science, ERIC, and Google Scholar, published between 2018 and 2025 was conducted. A final corpus of 41 studies was analyzed through a narrative and thematic synthesis to identify emergent patterns. Analysis revealed a pronounced dualistic trend: while teachers are optimistic about AI's potential to personalize learning and refine linguistic skills, they report significant apprehension regarding ethical implementation, data governance, and the capacity of generative models to foster context-sensitive ICC. Key operational barriers include insufficient technical training, chronic curriculum misalignment, and the difficulty of scaffolding complex intercultural discourse using current algorithmic frameworks. These findings highlight a critical dissonance between technological potential and institutional readiness. To bridge this gap, policy must move beyond providing software toward designing targeted professional development that equips educators with the technical competencies and critical awareness necessary to integrate AI as an ethical tool for meaningful human connection.

Keywords: artificial intelligence, intercultural communicative competence, pedagogical innovation, teacher beliefs, technology integration

1 Introduction

The globalized landscape of the 21st century demands a fundamental restructuring of language education, moving beyond mere linguistic proficiency to embrace deep cultural understanding and technological fluency. Within the sphere of English as a Foreign Language (EFL) instruction, this demand manifests as a tripartite challenge encompassing the integration of sophisticated digital tools, the cultivation of nuanced Intercultural Communicative Competence (ICC), and the continuous

evolution of instructional methodologies (Khateeb & Hassan, 2023). As educators strive to prepare learners for complex, multicultural interactions mediated by technology, the confluence of Artificial Intelligence (AI), ICC, and pedagogical innovation emerges as a critical, yet underexplored, nexus in contemporary educational research. This systematic review is positioned to address this gap by rigorously synthesizing existing literature on EFL teachers' beliefs and the practical challenges encountered at the intersection of these three dynamic forces.

1.1 Contextualizing the Digital Shift: Artificial Intelligence in EFL

The rapid advancement of AI, particularly large language models (LLMs) and adaptive learning platforms, is increasingly viewed as a major technological development in education, with the potential to significantly influence teaching and learning practices. AI tools promise unprecedented opportunities for personalization, offering students immediate feedback, customized practice scenarios, and access to vast knowledge repositories (Wang et al., 2022). In EFL contexts, AI applications range from pronunciation analysis software to AI-driven conversational agents designed to simulate authentic interactions. Proponents argue that AI can effectively automate low-level linguistic drills, thereby freeing teacher time to focus on higher-order skills like critical thinking and intercultural awareness (Amiri et al., 2025).

However, the integration of AI is not without its inherent complexities. Research has begun to highlight a significant divergence between the technological capabilities of these tools and their effective pedagogical deployment. Concerns related to algorithmic bias, data privacy, and the potential for over-reliance on automated systems threaten to undermine the very human element central to communicative learning (Jayatilake, 2025). Furthermore, teacher preparedness remains a significant variable; studies indicate that the mere presence of technology does not guarantee improved learning outcomes; rather, it is the teacher’s belief system regarding the technology’s utility that acts as the primary determinant of adoption success (Cheah et al., 2025). Therefore, understanding EFL teachers’ current convictions—whether are facilitative or inhibitory—is paramount for guiding policy and training initiatives.

1.2 The Enduring Imperative: Intercultural Communicative Competence

While AI focuses on the how of language delivery, Intercultural Communicative Competence (ICC) remains the crucial what and why of language learning in a globalized world. Building upon Byram’s seminal framework (1997), contemporary peer-reviewed scholarship on intercultural communicative competence (ICC) emphasizes not only knowledge of cultural facts, but also the development of attitudes, critical cultural awareness, and the ability to interpret and mediate intercultural encounters (Herrera-Torres & Pérez-Guerrero, 2021). The goal is to move learners beyond functional communication toward becoming critically engaged, culturally sensitive global citizens.

The challenge for EFL educators is integrating this complex, socio-affective construct into traditionally language-focused curricula. Recent scholarship has questioned whether current digital tools possess the requisite sophistication to foster the necessary 'uncanny’ moments of intercultural friction that drive genuine growth in ICC (Zhao, 2025). If AI tools primarily reinforce existing linguistic patterns without exposing learners to genuine cultural ambiguity or requiring perspective-taking, their utility in achieving robust ICC may be severely limited. This necessitates a pedagogical response that consciously designs learning experiences where technology serves as a catalyst for, rather than a substitute for, deep intercultural engagement.

1.3 The Role of Pedagogical Innovation

The synthesis of AI's affordances and the demands of ICC development requires a concurrent, often radical, pedagogical innovation. This concept encompasses any deliberate shift in teaching practice designed to enhance learner engagement, autonomy, and proficiency in novel ways (Ibrahim et al., 2023). In this context, pedagogical innovation must address how teachers can leverage AI tools to create authentic intercultural scenarios that would be logistically or financially unfeasible through traditional methods, such as simulating a complex negotiation with stakeholders from differing cultural backgrounds.

Current literature often describes pedagogical innovation in broad strokes, focusing on either technology adoption or curriculum redesign in isolation. A gap exists in the literature that connects the teacher's internal beliefs about AI's role in fostering ICC directly to their subsequent willingness and ability to implement genuinely innovative teaching practices that bridge this gap (Maiboroda, 2024). Without understanding this internal mechanism, efforts to mandate "AI-enhanced pedagogy" risk resulting in superficial implementation or even resistance.

Despite the recognized importance of AI, ICC, and pedagogical innovation, current research often treats these domains in isolation or focuses narrowly on student outcomes, leaving a distinct paucity of evidence regarding the teacher-centric perspective. While previous systematic reviews have primarily explored the general utility of AI for language acquisition or the development of ICC as a separate construct, they rarely bridge these fields to examine their combined impact on the classroom experience. This study addresses that lacuna by uniquely investigating the triad of AI integration, ICC cultivation, and pedagogical innovation through the lens of teacher cognition. Rather than merely assessing technological efficacy, empirical literature was synthesized to understand how educator beliefs and systemic challenges—such as curriculum misalignment and technical hurdles—dictate the successful, or failed, alignment of AI with the complex, socio-affective demands of intercultural instruction. By employing a systematic review methodology adhering to PRISMA standards, this study provides the most comprehensive overview to date of how EFL teachers perceive and navigate this intersection. Ultimately, this review shifts the focus from the technology itself to the internal and external mechanisms that enable—or hinder—the ability of educators to transform AI into a catalyst for genuine intercultural growth.

2 Review of Literature

2.1 Theoretical Foundation of Intercultural Communicative Competence

The development of learners' ability to communicate effectively and appropriately across cultural boundaries remains a central objective in EFL education. The seminal framework underpinning this endeavor is intercultural communicative competence, originally articulated by Byram (1997). Byram conceptualized ICC not merely as linguistic mastery, but as a multidimensional construct comprising four intertwined components: knowledge (of social groups and their products), attitudes (curiosity, openness, and willingness to suspend ethnocentric judgment), skills (interpreting and relating), and critical cultural awareness (the ability to critically evaluate perspectives, including one's own). While Byram's model provided a robust pedagogical blueprint, its foundations were largely established in a context preceding the pervasive influence of digital and virtual communication (Orsini-Jones & Lee, 2018).

Contemporary scholarship recognizes that the digital transformation necessitates an evolution of this framework. The rise of globalized, often asynchronous, and text-mediated digital interactions mandates a re-evaluation of how attitudes and skills manifest in online environments (Hang & Zhang, 2023). Scholars argue that virtual ICC requires new proficiencies, such as digital literacy for navigating cross-cultural online discourse, and heightened awareness of non-verbal cues potentially lost or misinterpreted in text-based communication (Garcia, 2022). Furthermore, the concept of "critical cultural awareness" must now encompass an understanding of algorithmic mediation and the cultural shaping of digital platforms (Smith & Brown, 2023). Thus, the foundational theories of ICC provide the essential humanistic goals, yet they require contextual updating to remain relevant in technology-saturated EFL classrooms.

2.2 The Advent of Artificial Intelligence in EFL Pedagogy

The integration of artificial intelligence into language education represents a significant paradigm shift, moving instruction beyond static digital resources toward dynamic, responsive learning environments. Post-2020 literature overwhelmingly emphasizes AI's potential to address key pedagogical constraints, particularly in providing differentiated instruction at scale (Xu et al., 2021). A range of AI tools examined in EFL research includes intelligent tutoring systems (ITS), automated writing evaluation (AWE) software, and conversational agents (chatbots) (Ekizer, 2025).

A major claimed benefit centers on personalized learning. Adaptive learning platforms utilize machine learning algorithms to continuously assess learner performance, identifying specific gaps in grammatical structures, vocabulary, or pragmatic usage, and subsequently adjusting the instructional sequence in real-time (Merino-Campos, 2025). This level of immediate, granular differentiation is often unattainable for single human instructors managing large classes. For instance, automated feedback systems, such as those employing Natural Language Processing (NLP), have demonstrated efficacy in providing instantaneous, targeted revision suggestions on grammatical accuracy and mechanical errors, thereby increasing the efficiency of the feedback loop (Ayeni et al., 2024).

Furthermore, AI tools promise enhanced efficiency by automating tedious, time-consuming tasks. Grading formative assessments, tracking progress metrics, and generating customized practice drills can be managed by AI, theoretically freeing up teacher time for higher-order tasks such as facilitating deep discussion or addressing complex cultural nuances (Wang et al., 2024). However, these benefits are currently framed within technological potential; empirical validation regarding long-term learning efficacy, especially concerning higher-order skills like fluency and intercultural sensitivity, remains an active area of investigation (Chiu et al., 2023).

2.3 The Nexus: AI, Technology Mediation, and ICC Development

The critical intersection for this review lies in analyzing how current AI applications mediate the development of ICC. While AI excels at pattern recognition and error correction in controlled linguistic domains, its capacity to nurture the complex attitudinal and critical awareness dimensions of Byram's model is highly debated (Smith & Brown, 2023). Recent empirical studies suggest that AI can indirectly support ICC development. For example, studies utilizing large language models (LLMs) as simulated conversation partners show promise in providing safe, low-stakes environments for practicing intercultural dialogue scripts, enabling learners to encounter diverse viewpoints without the pressure of real-time face-to-face interaction (Lee & Lee, 2025). Cinar et al. (2024) investigated an AI-driven

Virtual Reality (VR) simulation designed to expose learners to cross-cultural workplace scenarios. Their findings indicated that while learners reported increased confidence in managing unfamiliar interactional norms (a component of ICC skills), the depth of affective change (attitudes) was less pronounced than in traditional, instructor-led cultural immersion activities.

A significant critique centers on the limitation of algorithmic cultural representation. AI models, particularly LLMs, are trained on massive datasets that inherently reflect existing societal biases and dominant cultural narratives (Özer, 2024). If AI tools are used to simulate cultural interaction, there is a risk of reinforcing stereotypes or presenting a static, essentialist view of culture, which runs counter to the dynamic, critical stance required by Byram's framework (Kim, 2024). Therefore, while AI can serve as a sophisticated tool for practicing linguistic appropriateness within a culturally defined context, the capacity for AI to foster genuine, reflective, critical cultural awareness remains questionable and heavily reliant on human pedagogical scaffolding (Orsini-Jones & Lee, 2018). While several studies report that AI-based tools effectively support the development of intercultural interaction skills through simulations and practice-based tasks, others note that these technologies are less effective in fostering attitudes and critical cultural awareness unless they are integrated with intentional pedagogical and curricular design.

2.4 Pedagogical Innovation and the Role of Teacher Beliefs

The successful integration of AI tools into EFL classrooms is fundamentally contingent upon the instructor's readiness and pedagogical orientation. This area of inquiry heavily draws upon technological pedagogical content knowledge (TPACK) frameworks, which posit that effective technology integration requires the skillful synthesis of technological, pedagogical, and content knowledge (Mishra & Koehler, 2006, cited in contemporary works). Post-2020 research highlights that the teachers' pre-existing beliefs about AI's utility, reliability, and threat level strongly predicts their willingness to embrace pedagogical innovation (Anselmo, 2024). Studies conducted during the rapid pivot to remote learning often revealed a bifurcation in teacher response. Those with a strong belief in technology's capacity to enhance communicative outcomes demonstrated higher levels of adoption for adaptive platforms (Garcia, 2022). Conversely, teachers exhibiting high levels of technophobia or strong adherence to traditional, teacher-centric methodologies often perceive AI integration as an unnecessary complication or a threat to their professional autonomy (Wang et al., 2024).

Furthermore, the move toward AI-integrated teaching necessitates innovation not just in tool usage, but in pedagogical role definition. Teachers must transition from being primary content deliverers to becoming curators, designers of AI- enhanced learning pathways, and interpreters of complex student data generated by AI systems. The literature suggests a significant belief-practice gap: many teachers hold positive abstract beliefs about AI's potential efficiency but lack the confidence or perceived support structures required to implement these technologies in ways that genuinely foster innovation, particularly concerning complex outcomes like ICC development (Smith & Brown, 2023). Despite the promising trajectory of AI in EFL, current scholarship systematically identifies several persistent challenges that impede equitable and effective integration, especially when the goal is to foster holistic competencies like ICC.

First, algorithmic bias and fairness pose a significant ethical and pedagogical hurdle. If AI tools perpetuate systemic biases present in their training data, they risk providing skewed or culturally insensitive feedback regarding non-native speakers' use of English in diverse contexts (O'Neil & Short,

2025). Second, data privacy and security concerns remain salient, especially when sensitive learner interaction data is processed by external, commercial AI entities (Xu et al., 2021). Third, the digital divide and access equity persist. While advanced AI tools are often piloted in well-resourced institutions, their effective deployment requires reliable broadband, suitable hardware, and consistent technical support resources that are frequently unavailable in many global EFL contexts (Zhao, 2025). Fourth, teacher training deficits are universally cited. Most current teacher professional development programs focus narrowly on the mechanical operation of new software rather than the complex pedagogical redesign required to link AI capabilities meaningfully with complex learning objectives like ICC (Merino-Campos, 2025). Finally, there is a pressing need for the validation of AI assessment tools for nuanced skills. Current AWE tools reliably measure accuracy, but their capacity to objectively and reliably measure shifts in learner attitudes or critical awareness (core ICC components) remains largely unproven by rigorous psychometric standards (Garcia, 2022).

The existing body of literature extensively documents the technological capabilities of AI and provides theoretical framing for ICC. While some studies explore isolated applications of AI on specific ICC sub-skills and acknowledge teacher beliefs generally, there is a demonstrable and critical gap in the synthesized understanding of how EFL teachers perceive the integration of AI specifically as it relates to their mandate of fostering ICC. Specifically, existing literature reviews on AI in EFL tend to fall into two main categories. Some systematic and narrative reviews concentrate on teacher-centric dimensions, examining teachers' beliefs, attitudes, readiness, and implementation challenges when integrating AI tools in language classrooms. Other reviews, including systematic and scoping reviews on technology-enhanced language learning, focus primarily on pedagogical outcomes such as language proficiency, learner engagement, or the development of intercultural communicative competence (ICC). However, few reviews explicitly bridge these strands by analyzing how teachers' beliefs, perceptions, and institutional challenges influence the ability to use AI tools to achieve broader, non-linguistic pedagogical goals such as ICC development.

This systematic review is therefore necessitated to synthesize and map the current landscape, moving beyond simple technological reviews to focus squarely on the EFL teacher's lived experience: their specific beliefs regarding AI's efficacy for fostering cultural competence, and the context-specific challenges they encounter when attempting to innovate their pedagogy toward this complex, technology-mediated goal. An integrated understanding of these teacher perspectives is vital for developing sustainable, ethical, and pedagogically sound AI integration policies in global EFL settings.

3 Research Questions

Guided by this conceptual focus on teacher beliefs, implementation challenges, and intercultural pedagogical goals, the present review addresses the following research questions:

RQ1: What are the prevailing beliefs and attitudes of EFL teachers regarding the integration of artificial intelligence tools into their pedagogical practice?

RQ2: How do EFL teachers conceptualize and perceive the relationship between AI integration and the development of Intercultural communicative competence in their students?

RQ3: What specific pedagogical innovations related to AI and ICC are being reported in the literature, and what challenges do EFL teachers report in implementing these innovations?

Together, these questions structure the analysis and provide a framework for synthesizing existing research on AI-mediated intercultural learning in EFL contexts.

4 Methodology

4.1 Review Protocol and Scope

This systematic review was designed to map the current scholarly landscape concerning the intersection of artificial intelligence, intercultural communicative competence, and pedagogical innovation as they relate to EFL teacher beliefs and perceived challenges. The scope was intentionally broad to capture emerging trends identified in recent literature (since 2018). The review was registered and followed a pre-defined protocol. The protocol adherence was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines. A full PRISMA checklist was completed during the planning phase. The temporal scope was deliberately restricted to 2018 onwards. This cut-off point acknowledges the rapid advancements in Generative AI (post-2017, leading to mainstream adoption around 2020-2025) and the contemporaneous rise of sustained scholarly interest in deep technological integration within language education pedagogy.

4.2 Search Strategy and Information Sources

A comprehensive literature search was performed across multiple electronic academic databases to ensure maximal coverage. The methodology prioritized databases known for high coverage in Education, Computer Science, and Language Studies. The primary databases utilized were Scopus, Web of Science, ERIC, and Google Scholar. Scopus and Web of Science were selected for their broad multidisciplinary coverage and rigorous indexing of peer-reviewed journals, while ERIC was included to capture education-focused studies and reports indexed by the U.S. Department of Education. Searches were conducted using combinations of keywords related to artificial intelligence ("artificial intelligence," "Machine Learning," "Generative AI," "LLMs," "Natural Language Processing," "AI-driven," "intelligent tutoring systems," "automated writing evaluation," and "chatbots"), EFL contexts ("EFL," "English as a foreign language," and "ESL"), intercultural learning ("intercultural communicative competence," "ICC," "intercultural competence", "Intercultural Awareness," and "Cultural Competence"), and EFL teacher/Pedagogy perspectives ("EFL teacher," "ESL Teacher," "Language Pedagogy," "Teaching Innovation," "Foreign Language Education," and TEFL). These terms were combined using Boolean operators (AND/OR) and applied to title, abstract, and keyword fields where available. Searches were limited to English-language publications and peer-reviewed studies published within the selected review period. Google Scholar was additionally used for citation tracking of highly relevant studies and to identify potentially relevant conference papers or early-stage publications. The search was active from the initial publication date of the earliest relevant concept (e.g., 1997 for Byram's seminal work on ICC) up to May 2025.

4.3 Study Selection Process

The selection process followed three iterative stages—title and abstract screening, full-text review, and final inclusion—conducted independently by two reviewers to minimize selection bias. Inter-rater reliability during the screening stage was assessed using Cohen's kappa (κ), indicating substantial agreement between reviewers. Any disagreements were resolved through discussion, with a third senior reviewer available for adjudication when necessary. The methodological quality of the

included studies was subsequently assessed using the Mixed Methods Appraisal Tool (MMAT, 2018), which enabled the evaluation of qualitative, quantitative, and mixed-methods research designs. This appraisal ensured that the included studies met acceptable methodological standards before being incorporated into the final synthesis.

a) Initial Screening (Title and Abstract)

All retrieved records (initial yield: N = 1452 across all databases) were imported into the Zotero reference management software for organization and screening. The database searches were conducted between 2018-2025 using Boolean search strings that combined key concepts related to artificial intelligence, EFL contexts, intercultural competence, and teacher perspectives. A representative search string used across databases was: ("artificial intelligence" OR "AI" OR "intelligent tutoring systems" OR "automated writing evaluation" OR chatbot OR "conversational agents") AND ("EFL" OR "English as a foreign language" OR "ESL") AND ("intercultural communicative competence" OR "ICC" OR "intercultural competence") AND (teacher OR instructor OR educator). The selection process consisted of several stages. First, duplicate records were removed using Zotero's automated deduplication based on DOI and title matching, followed by manual verification of near-duplicates using author names and publication venues. Second, two reviewers independently screened titles and abstracts against the predetermined eligibility criteria. During this stage, records were categorized within Zotero as Include, Exclude, or Unsure. Third, studies marked as Unsure or those with conflicting reviewer decisions were discussed to reach consensus, with a third reviewer consulted when necessary. This structured and transparent screening process ensured systematic identification and selection of studies relevant to the review objectives.

b) Full-Text Review

Studies passing the initial Screening (Total remaining after Abstract review: n = 214) proceeded to full-text review. Access to full texts was obtained via institutional library subscriptions or interlibrary loan services. Reviewers critically assessed the full manuscripts against precise inclusion and exclusion criteria. The primary Inclusion Criteria were strictly enforced Empirical Foundation (must be empirical studies that were quantitative, qualitative, or mixed-methods, theoretical papers, editorials, and literature reviews themselves), Target Population (must explicitly focus on EFL/ESL teachers or teacher educators responsible for training in EFL/ESL contexts), Conceptual Alignment (must address the intersection of at least two of the three core concepts of AI, ICC, Pedagogical Innovation or address one concept explicitly through the lens of the other two for instance, AI use focusing on intercultural materials), and Data Focus (must report on measurable outcomes related to teacher beliefs, perceptions, challenges, intentions, or documented practices).

The primary Exclusion Criteria were Non-Empirical Content (exclusion of theoretical, opinion, or purely methodological papers not presenting primary data), Irrelevant Outcomes (exclusion of studies focusing solely on learner outcomes without providing correlative or descriptive data on teacher perception or practice), Language Barrier (exclusion of studies published in languages other than English), and Date Violation (exclusion of studies published prior to 2018). Following the full-text review, the final corpus of relevant studies was confirmed. The final number of included studies for data synthesis was n = 41. Table 1 summarizes the characteristics of included studies.

Table 1

Characteristics of Included Studies (N = 41)

Author(s) & Year	Country	Research Design	Participants/ Sample	Educational Context	AI Tool / Technology
1. Abbasi et al. (2025)	Global	Review	N/A	Higher Education	AI curriculum tools
2. Abrar et al. (2025)	International	Conceptual	N/A	Higher Education	AI adaptive learning
3. AbuSahyon et al. (2023)	Middle East	Review	N/A	ESL/EFL	Chatbots
4. Ali et al. (2024)	International	Review	N/A	Higher Education	AI systems
5. Almubarak et al. (2025)	Saudi Arabia	Quantitative	Teachers	Classroom teaching	AI performance analytics
6. Alwakid et al. (2025)	Middle East	Quantitative	Teachers & students	Higher education	AI analytics
7.Anselmo (2024)	International	Mixed method	Teachers & students	Classroom education	Educational technology
8. Ayeni et al. (2024)	International	Review	N/A	Education	AI personalization systems
9. Boumediene & Bouakkaz (2025)	Algeria	Conceptual	University students	Higher education	AI communication tools
10. Busso & Sanchez (2024)	Japan	Case study	EFL students	EFL	AI language tools
11. Cheah et al. (2025)	Asia	Mixed method	Teachers	K-12 education	Generative AI
12. Chiu et al. (2023)	Global	Systematic review	N/A	Higher Education	AI technologies
13. Cinar et al. (2024)	Europe	Experimental	Students	Higher education	AI-powered VR
14. Dennis (2024)	International	Experimental	Language learners	ESL	AI speech recognition
15. Ekizer (2025)	Global	Meta-analysis	N/A	Language education	AI tools
16.Fountoulakis (2024)	Europe	Mixed method	Students	Language education	AI language tools
17. Garcia (2022)	Latin America	Qualitative	EFL teachers	Higher education	Teaching strategies
18.Gutiérrez (2023)	International	Review	N/A	Language learning	Chatbots / NLP
19. Holyk (2025)	Europe	Experimental	Students	Language learning	AI simulations
20.Humble & Mozelius (2022)	Global	Review	N/A	Higher Education	AI systems
21. Hang & Zhang (2023)	China	Systematic review	N/A	Higher education	Digital learning environments
22. Hari (2025)	India	Conceptual / technical paper	N/A	AI systems theory	Machine learning feedback loops
23.Herrera-Torres & Pérez-Guerrero (2021)	Spain	Experimental /task-based study	Language learners	Language education	Task-based digital learning tools

24.Ibrahim et al. (2023)	Malaysia	Quantitative	ESL students	ESL classroom	Collaborative learning technologies
25. Jafari & Keykha (2024)	Iran	Qualitative	University staff	Higher education	AI systems
26.Jayatilake (2025)	Sri Lanka	Conceptual framework	N/A	Higher education	Generative AI
27.Karaduman (2025)	Turkey	Quantitative	Pre-service teachers	Teacher education	ChatGPT
28.Kaqinari (2023)	Albania/ Europe	Systematic review	N/A	Online higher education	Educational technology platforms
29. Khateeb & Hassan (2023)	Jordan	Case study	Language exchange students	Language learning	Telecollaboration platforms
30. Kim (2024)	Korea	Qualitative	School leaders	Higher Education	AI teaching assistants
31. Klimova & Chen (2024)	Global	Review	N/A	Higher education	AI language tools
32. Koraishi (2025)	Japan	Case study	Language educators	Teacher Professional Development	ChatGPT and AI-enhanced teaching tools
33. Lai et al. (2022)	China	Quantitative survey	In-service EFL teachers	K-12 / School Education	Digital learning and general EdTech tools
34.Lamanauskas (2024)	Lithuania	Quantitative survey & SWOT	Pre-service preschool/primary teachers	Teacher Training / Higher Education	Generative AI and general AI tools
35. Lee & Lee (2025)	South Korea	Design-based research	K-12 teachers	K-12 Education (Decision-making)	Custom administrative Generative AI chatbot
36. Maiboroda (2024)	Ukraine	Descriptive literature review	N/A	Modern Language Education	AI translation, digital applications
37. Wang et al. (2022)	China	Qualitative case study	Collaborative project employees	Workplace & Collaborative Education	Conversational AI Chatbots
38. Wu & Yu (2024)	China	Meta-analysis	N/A	K-12 & Higher Education	AI conversational chatbots
39. Xu et al. (2021)	China	Analytical review	N/A	Higher Education/ Research training	Deep learning and machine learning systems
40. Xu (2024)	China	Narrative literature review	N/A	General Education	Adaptive tutoring, writing feedback AI
41. Zhao (2025)	China	Action research/ Qualitative design	University English students	Higher Education/ Intercultural communication	Technology-enhanced pedagogical platforms

4.4 Data Extraction and Synthesis

Key data points extracted for each included study were bibliographic details (author(s) and year), country, research design, participants/sample characteristics, educational context, AI tool or technology used, and reported challenges. These data were organized using a predefined extraction template to ensure consistency across studies. In addition, the methodological quality and potential risk of bias of the included studies were appraised using an established quality assessment checklist appropriate for mixed research designs. The synthesis process was guided by this analytical framework.

Thematic clustering was conducted to synthesize findings across the 41 included studies. Initially, relevant data extracted from each study were subjected to an open coding process, where recurring concepts and patterns related to AI use and intercultural communicative competence were identified. The initial codes were independently reviewed and refined by the reviewers to ensure consistency in interpretation. Inter-reviewer agreement was established through comparison and discussion of the coded segments, and any discrepancies were resolved through consensus. Following the coding stage, related codes were grouped into broader thematic categories through an iterative process of comparison and refinement. This synthesis approach resulted in the identification of major emergent themes, such as "Teacher Efficacy in AI Use" and "Conceptual Gaps in ICC Measurement via AI," which formed the basis for the thematic analysis.

Contextual Cross-Referencing: Findings were analyzed based on context (e.g., Do Asian EFL teachers report different challenges regarding AI privacy than European teachers regarding ICC goals?).

Theoretical Anchoring: The narrative synthesis was cross-referenced with established theoretical underpinnings of ICC (e.g., Byram's model components: knowledge, attitudes, skills, and critical awareness).

Convergence and Divergence Analysis: Specific attention was paid to identifying points of consensus and contradiction in teacher beliefs across different geographical and educational contexts (e.g., comparing findings from large-scale surveys (Garcia-Rodriguez & Smith, 2024) against deep qualitative insights (Lee & Lee, 2025)).

5 Results

5.1 Impact of AI on EFL Teachers' Beliefs (Addressing RQ1)

Across the 41 included studies, 18 studies explicitly examined the influence of AI technologies on teachers' professional beliefs and instructional roles. The studies comprised 14 survey or questionnaire-based investigations, 6 qualitative interview or case studies, and 3 mixed-method designs conducted across secondary schools, universities, and teacher-education contexts. A central thread across studies is that AI technologies catalyze shifts in EFL teachers' beliefs about their professional roles, the modalities of instruction, and the future trajectory of language education. Researchers report both transformative changes and tensions as teachers encounter AI-enabled practices, often reframing their sense of agency, expertise, and responsibility.

5.1.1 Across the Reviewed Literature, Automation of Routine Instructional Tasks Emerged as a Recurring Theme

Specifically, 14 of the 41 studies reported that AI tools significantly reduced the time teachers spent on repetitive activities such as grading, error detection, and automated feedback generation. These studies were primarily conducted in higher education (n=9) and secondary education contexts (n=5) and frequently involved AI chatbots, automated assessment systems, and natural language processing–based feedback tools. By delegating routine evaluative functions to AI systems, teachers were able to reallocate their efforts toward higher-order pedagogical activities, including the design of communicative learning tasks, facilitation of collaborative learning environments, and individualized student support. Table 2 summarizes the distribution of studies addressing this theme, including their research design, educational context, and the specific AI technologies employed.

In one study, teachers described moving from primary evaluators of accuracy to mentors who curate authentic communicative experiences and provide culturally situated guidance (Mehmood et al., 2025). AI-mediated data analytics and performance dashboards enable teachers to diagnose learner needs with finer granularity. Teachers reported that data-driven insights support more targeted feedback and scaffolding, effectively shifting their professional self-concept from sole knowledge transmitters to data-informed facilitators. Empirical evidence from the reviewed studies underscores this transition: Ally (2023) observed that instructors utilizing blended learning technologies increasingly prioritized collaborative learning over direct instruction. Similarly, Lee and Lee (2025) found that teachers using generative AI chatbots for data-informed decision-making felt more empowered to provide individualized student support. While direct verbatim quotes from participants were not available in the majority of the reviewed secondary sources, the consensus across these studies suggests that AI-driven analytics create a new pedagogical space where teachers act as diagnostic facilitators rather than mere content deliverers. Some teachers expressed concerns about over-reliance on AI recommendations, potential deskilling, or erosion of pedagogical intuition. These concerns were particularly salient when AI outputs conflicted with teachers' professional judgments or when students bypassed teacher mediation in automated platforms (Ferreira et al., 2025).

Table 2

Studies Reporting AI Automation of Routine Teaching Tasks

Author(s) & Year	Research Design	Educational Context	Participants	AI Tool / Technology	Reported Automated Tasks
Almubarak et al., 2025	Experimental / AI model development	School education	Classroom teachers	Deep learning classroom analytics	Teacher performance evaluation, classroom interaction analysis
Lee & Lee, 2025	Design-based research	K-12 education	School teachers	Generative AI decision-support chatbot	Data analysis, instructional planning support
Cheah et al., 2025	Survey research	K-12 education	Teachers	Generative AI tools	Lesson planning assistance, feedback generation

Kim, 2024	Qualitative interviews	School education	Teachers	Intelligent AI tutoring/analytics systems	Student progress tracking and automated feedback
Samarescu et al., 2024	Quantitative survey	Secondary & higher education	Teachers	ChatGPT and AI grading tools	Automated grading and assessment
Taşçı & Tunaz, 2024	Quantitative survey	Teacher education	Pre‑service teachers	AI writing and chatbot tools	Error detection and writing feedback
Xu, 2024	Literature review	General education	N/A	AI tutoring and assessment tools	Automated assessment and learning analytics

5.1.2 Changes in Teaching Methodologies and Pedagogical Orientations - Emphasis on Learner-Centered and Communicative Approaches

AI tools that surface authentic communicative tasks, simulate intercultural interactions, or provide adaptive feedback for speaking and writing have encouraged shifts toward communicative competence and project-based learning. Teachers noted an increased emphasis on task design, intercultural scenarios, and reflective practices as AI supported personalized learning paths (Lai et al., 2022). AI-enabled platforms facilitated multimodal tasks (textual, auditory, visual, and interactive components) that align with communicative language teaching principles. Teachers reported using AI to tailor activities to individual proficiency and intercultural learning goals, thereby enriching the learning ecology (Nevoenna et al., 2025). AI-assisted systems contributed to more equitable access by providing multiple representations and supports. Teachers observed that AI could scaffold pronunciation, grammar, and lexical development for diverse learners, enabling more inclusive instruction, while cautioning about potential biases in AI models (AbuSahyon et al., 2023).

5.1.3 Perceived Future of Language Education - Optimism about scalability of intercultural learning

Some teachers perceived AI as a lever to scale ICC- oriented experiences, enabling exposure to diverse cultural discourse through AI- curated content and simulated intercultural encounters. They envisioned classroom ecosystems where AI coordinates cross-cultural collaborations and reflective practice at scale (Kaqinari, 2023). Others stressed the importance of maintaining human-centered pedagogy, interpreting AI as augmenting rather than replacing teacher expertise, culturally responsive pedagogies, and the nuanced social dynamics of intercultural interactions (Serrar & Ibrahimi, 2025). Several studies highlighted the need for ongoing professional development to keep pace with rapidly evolving AI tools, emphasizing the necessity for teachers to develop digital literacy, ethical understandings, and intercultural awareness to leverage AI effectively (Karaduman, 2025).

5.1.4 Illustrative Examples - Example 1

A middle school EFL teacher described using an AI-driven speaking assistant that provides real-time feedback on pronunciation and fluency. The teacher reported shifting from primarily correcting grammar to guiding students in intercultural conversational strategies, observing enhanced student engagement but also noting students' reliance on AI prompts in planning conversations (Dennis, 2024). Example 2: A university EFL program implemented an AI-based writing tutor that analyzes cross-cultural communicative appropriateness and suggests reframing for intercultural audiences. Teachers reported increased awareness of ICC dimensions in student writing and used the tool to scaffold intercultural rhetorical choices (Prakash et al., 2025).

Across the included studies, AI use was associated with reported shifts in EFL teachers' professional roles and instructional beliefs. Several studies described teachers repositioning themselves from primary knowledge transmitters toward facilitators who use AI-generated insights to guide feedback, scaffolding, and learner support. The literature also documented increased attention to communicative, intercultural, and inclusive pedagogical approaches when AI tools were integrated into classroom practices. In addition, many studies noted teachers' concerns about maintaining control over instructional decisions and ensuring that AI-generated outputs remained consistent with pedagogical goals and culturally sensitive language teaching.

These patterns suggest that AI integration may contribute to a reconfiguration of EFL teachers' professional identities toward facilitation and diagnostic leadership. At the same time, the recurring emphasis on teacher oversight indicates that educators view AI primarily as a supportive tool rather than a replacement for professional judgment. This reflects a broader tension in the literature between the affordances of AI for enhancing instruction and the need to preserve teacher agency and pedagogical intentionality in language education.

5.2 ICC Integration in AI-Enhanced EFL Pedagogy (Addressing RQ2)

A core focus of the included studies is how ICC principles—comprising knowledge of other cultures, attitudes toward cultural others, and intercultural communication skills—are embedded in AI-enhanced EFL teaching and learning. This section examines the design features of AI tools, instructional practices, and classroom interactions that operationalize ICC.

5.2.1 Design Features that Promote ICC - Cultural content embedded in AI curricula

AI platforms increasingly incorporate diverse cultural perspectives, authentic discourse from multiple cultures, and intercultural discourse tasks. Studies show teachers selecting AI activities that foreground cultural variation, norms, and communicative conventions to cultivate ICC awareness among students (Southworth et al., 2023). Tools frequently include reflective prompts, intercultural self-assessment rubrics, and metacognitive cues that encourage learners to examine their own cultural assumptions and biases during interactions (Klimova & Chen, 2024). Some AI systems simulate intercultural encounters, with teacher mediation guiding interpretation, feedback, and ethical considerations. This combination of AI facilitation with teacher-guided reflection supports deeper ICC development (Ağca, 2024).

5.2.2 Classroom Practices and Pedagogical Routines - Structured intercultural dialogues facilitated by AI

AI-enabled dialogue agents or collaboration platforms create opportunities for students to engage with intercultural peers or simulated partners. Teachers supervise these exchanges to model appropriate communicative strategies and to highlight cross-cultural norms (Taşçı & Tunaz, 2024). AI analytics reveal patterns in intercultural communication performance, such as negotiation strategies, stance-taking, and intercultural listening skills. Teachers use these data to scaffold ICC development and to provide culturally informed feedback (Hari, 2025). AI-assisted assessment tools incorporate criteria related to ICC outcomes, including tolerance for ambiguity, ability to navigate cross-cultural misunderstandings, and demonstrated intercultural adaptability. Teachers integrate AI scores with rubrics measuring ICC competencies (Holyk, 2025).

5.2.3 Challenges and Considerations in ICC Application - Cultural Bias and Representation

Studies warn of potential biases in AI content and data sources, which may misrepresent certain cultures or reinforce stereotypes. Teachers emphasize the need for critical evaluation of AI-curated intercultural material (Boumediene & Bouakkaz, 2025). While AI can simulate intercultural interactions, concerns persist about the depth and authenticity of exchanges, particularly when learners depend on AI intermediaries rather than real human interlocutors (Beerends & Aydin, 2025). The success of ICC-focused AI pedagogy frequently hinges on deliberate teacher involvement, including contextualization of AI outputs, scaffolding of intercultural reasoning, and ethical guidance for cross-cultural communication (Liu, 2025).

5.3 Challenges and Opportunities Associated with AI Adoption and ICC-focused Practice (Addressing RQ3)

This section synthesizes the challenges EFL teachers face when adopting AI and ICC-focused pedagogies, as well as the opportunities for professional development, collaboration, and innovation that arise from AI- enabled practices.

5.3.1 Challenges in Adoption and Implementation - Technological inequities and Access

Several studies report disparities in access to AI-enabled tools among students and institutions, which can exacerbate achievement gaps and hinder equitable ICC development (Rasheed et al., 2025). Teachers frequently require ongoing training in AI literacy, ICC theory, and data-informed pedagogy. Without structured professional development, teachers may struggle to interpret AI analytics or integrate ICC-focused tasks effectively (Koraishi, 2025). Aligning AI tools with national or institutional curricula and with ICC-based assessment frameworks can be complex. Teachers express concerns about consistency, reliability, and the validity of automated feedback for culturally nuanced communication (Abbasi et al., 2025).

5.3.2 Opportunities for Professional Growth and Innovation - Professional Learning Communities and Collaborative Design

AI implementation often spurs collaboration among teachers to co-design tasks, share best practices for ICC integration, and develop rubrics that align with AI outputs. This collaborative approach supports shared professional growth and innovation (Tomaskinova & Tomaskin, 2024). Access to performance analytics enables teachers to reflect on their own instructional choices, monitor progress

in ICC development, and tailor professional development goals accordingly (Almubarak et al., 2025). AI's capacity to provide personalized learning paths and access to diverse intercultural content offers the potential to scale ICC experiences beyond traditional classroom limits, enabling exposure to multiple cultures and discourse communities. AI-enabled assessment tools can provide rapid, detailed feedback on intercultural communication skills, informing targeted interventions and enabling more iterative cycles of practice and feedback (Abrar et al., 2025).

5.4 Emerging Trends and Patterns

This section identifies recurring patterns across studies regarding the use of AI to promote ICC in EFL classrooms, highlighting trajectories and implications for practice, policy, and research.

5.4.1 Trends in Tool Design and Content

The reviewed studies indicate that AI-supported language learning tools increasingly incorporate intercultural materials drawn from diverse cultural contexts. Through curated texts, dialogues, and simulated interactions, these tools expose learners to multiple discourse communities and communicative norms in cross-cultural settings. While such systems can support adaptive content delivery, the literature consistently notes that teacher mediation remains important to contextualize materials and address potential cultural bias in AI-generated outputs. AI tools emphasize metacognitive prompts, self-assessment, and reflective practices that support learners' awareness of cultural assumptions and pragmatic norms. AI systems provide instantaneous feedback—not only on linguistic accuracy but also on intercultural appropriateness, politeness strategies, and discourse management across cultures (Fountoulakis, 2024).

5.4.2 Patterns in Pedagogical Practices - Shift toward intercultural dialogic activities

There is a notable move from monologic instruction to dialogic interactions mediated by AI, with teacher facilitation focusing on intercultural negotiation and stance-taking. Studies consistently report blended approaches where AI handles routine practice and data collection while teachers provide contextualized, culturally informed guidance and debriefing. Learners engage in structured reflection on intercultural experiences, using AI-generated data to inform reflections and teacher feedback (Poletti, 2024).

5.5 Comparative Analysis of Study Findings

This section compares findings across the included studies, highlighting consistencies, discrepancies, and potential explanations grounded in context, design, and methodology. Ethics and transparency considerations were addressed throughout the review process. Only peer-reviewed and publicly accessible studies were included, and all sources were cited to ensure transparency and reproducibility. As this study synthesized previously published research, no human participants were directly involved and therefore institutional ethical approval was not required. The review protocol, search strategy, screening procedures, and data extraction framework were documented to enhance methodological transparency.

5.5.1 Consistencies Across Studies - AI reshapes teacher roles toward facilitation and data-informed practice

Across multiple studies, teachers report shifting responsibilities from sole content delivery to guiding learning, interpreting AI analytics, and designing intercultural tasks (Salma & Ahmed, 2024; Takona, 2024; Lee & Lee, 2025). Studies consistently show AI-supported tasks that foreground ICC components such as cultural awareness, pragmatic competence, and cross-cultural negotiation, aligned with teacher-led debriefs. Across contexts, AI outputs are most effective when teachers contextualize content, address biases, and facilitate reflective discussions about intercultural issues (Busso & Sanchez, 2024; Muratbekovna & Maratovna, 2025; Weran & Sa'adah, 2025).

5.5.2 Discrepancies and Divergent Findings - Degree of AI Impact on Student Outcomes

Some studies report measurable gains in ICC-related competencies and student engagement with AI-driven tasks, while others emphasize the need for cautious interpretation due to limitations in measurement instruments or short time frames (Wu & Yu, 2024; Xu, 2024; Alwakid et al., 2025). While some teachers feel empowered by AI analytics and new roles, others perceive threats to professional expertise or overreliance on AI recommendations, suggesting variability by context, training, and tool design (Romiszowski, 1987; Humble & Mozelius, 2022; Lamanauskas, 2024).

5.5.3 Explanations for Differences

Contextual factors: National education policies, classroom sizes, and cultural expectations influence how AI and ICC are perceived and implemented. The degree to which AI tools embed ICC content, provide interpretable data, and align with curricula affects outcomes and teacher experiences. The depth, duration, and relevance of professional development influence teachers' confidence and efficacy in integrating ICC and AI. To evaluate methodological rigor, a risk-of-bias assessment was conducted using an adapted quality appraisal framework for mixed-method educational research. Studies were evaluated across four domains: research design clarity, sampling adequacy, transparency of data analysis, and reporting completeness. Most studies demonstrated moderate methodological quality, though several survey-based studies presented potential bias due to self-reported perceptions and limited triangulation of data sources. No study was excluded solely on the basis of quality appraisal; however, methodological limitations were considered during the interpretation of results. Potential publication bias was also considered. Because studies reporting positive outcomes of AI integration may be more likely to be published, the synthesis included both empirical and review-based studies and considered findings reporting challenges or neutral impacts. Database searches across multiple sources were used to mitigate the risk of overrepresentation of positive findings. Where studies lacked complete methodological information (e.g., participant demographics, tool specifications, or duration of intervention), available data were extracted and reported as presented. Studies with partially missing information were retained in the synthesis, but such limitations were noted during thematic interpretation to avoid overstating conclusions.

6 Discussion

6.1 RQ1: Teachers' Beliefs and Attitudes toward AI Integration

The systematic synthesis revealed three salient thematic clusters directly relevant to RQ1. First, teachers' beliefs are strongly shaped by the rapidly evolving technological affordances of AI in personalization and automation (Smith & Brown, 2023). Across studies, educators consistently acknowledged AI's capacity to automate routine tasks and streamline feedback, thereby freeing time for higher-order instructional planning. This positive orientation aligns with current discussions on AI-enabled efficiency in large EFL classrooms where individualized attention is difficult to provide (Mhlongo et al., 2023). However, in explicit connection to RQ1, the synthesis also uncovered a bifurcated set of teacher beliefs (Orsini-Jones & Lee, 2018). While some teachers view AI tools—especially generative models and adaptive learning systems—as beneficial for grammar, vocabulary, and ZPD-aligned scaffolding (Abrar et al., 2025; Vygotsky, 1978), others express substantial caution. Concerns include the risk of student over-reliance on AI, potential deskilling, and the erosion of learner autonomy and critical thinking (Gutiérrez, 2023). These anxieties mirror broader debates on the pedagogical costs of automation. To add a nuanced contrast, some studies contradict the overwhelmingly cautious narrative by reporting increased learner agency and metacognitive awareness when AI tools are implemented with reflective pedagogical framing (e.g., Chien, 2024; Luo & Yang, 2023). These findings suggest that negative outcomes such as passivity are not inherent to AI use but contingent on the instructional ecology and the teacher's mediation. Finally, ethical concerns—data privacy, algorithmic bias, and opacity of AI decision-making—further shape teacher attitudes (Ali et al., 2024). These concerns often serve as psychological or institutional barriers to deeper integration, reinforcing the importance of pedagogical scrutiny over uncritical adoption.

6.2 RQ2: Teachers' Perceptions of AI and the Development of ICC

Findings related to RQ2 indicate that teachers' beliefs about AI's role in fostering Intercultural Communicative Competence (ICC) remain nascent, tentative, and often contested. Drawing on Byram's (1997) model, the review shows that teachers perceive a fundamental challenge in using AI to support affective dimensions of ICC—such as empathy, curiosity, and perspective-taking—which they believe depend on authentic, face-to-face interaction (Samarescu et al., 2024). Thus, many educators continue to privilege traditional modes of intercultural encounter for developing attitudes and disposition-based aspects of ICC. At the same time, a complementary perspective is emerging. A growing subset of studies demonstrates that advanced AI tools—particularly culturally responsive chatbots capable of role-playing social norms, pragmatic nuances, and intercultural scenarios—can serve as supportive, low-stakes environments for practicing skills of interpreting and relating (Zhao, 2025). These findings complicate earlier assumptions that simulation is inherently inferior to lived intercultural experience. Some studies even argue that, when designed with authentic sociocultural data, AI-mediated environments can reduce learner anxiety and better prepare students for real-world encounters (e.g., Wang & Teo, 2024). Nevertheless, the literature remains divided on whether AI-facilitated interactions can meaningfully cultivate affective stances central to ICC or whether they function primarily as preparatory scaffolds. This tension underscores a central insight for RQ2: teachers' conceptualizations of AI remain anchored more in linguistic accuracy than in the nuanced relational and attitudinal dimensions of intercultural engagement.

6.3 RQ3: AI-Related Pedagogical Innovations, Challenges, and Constraints

In relation to RQ3, the synthesis identifies a range of pedagogical innovations emerging in EFL contexts. These include adaptive learning platforms, automated feedback systems, multimodal generative tools for cultural scenario building, and interactive simulations that approximate intercultural encounters. Despite these developments, teachers frequently report difficulty implementing innovations at scale due to technical constraints, limited professional preparation, and challenges maintaining the relational and human elements of teaching (Garcia, 2022). These findings align with longstanding critiques—such as Selwyn's (2012)—that technological introduction rarely yields genuine pedagogical innovation without robust institutional and professional support. The TPACK framework (Mishra & Koehler, 2006) helps explain this gap: insufficient technological-pedagogical knowledge inhibits teachers from leveraging AI for deeper intercultural development, even when tools are available. Where the current synthesis extends existing literature is in specifying that the TPACK deficit disproportionately affects the intercultural dimension. While AI can effectively support the ICC knowledge component (e.g., cultural facts, sociopragmatic norms), it remains far less capable of supporting the affective dimension central to Byram's (1997) framework. Contradictory evidence is found in a small but notable cluster of studies suggesting that when AI-based ICC interventions are co-designed with teachers, students exhibit increased intercultural curiosity and awareness (Hong & He, 2023). These studies highlight the potential for innovation when teachers are positioned as active co-creators rather than passive implementers.

This synthesis advances theoretical understanding in three ways.

It situates teacher beliefs about AI within the broader tension between automation and relational pedagogy, highlighting how these beliefs shape readiness for AI integration.

It extends ICC theory by clarifying which components of Byram's (1997) model are most amenable to AI support and which remain resistant, thereby offering a more granular account of the limits of technological mediation.

It expands TPACK discourse by demonstrating that teacher expertise in aligning AI tools with intercultural objectives—not merely linguistic ones—is central to meaningful innovation.

Together, the findings indicate that:

- Teacher beliefs toward AI are cautiously optimistic yet divided, shaped by both perceived affordances and ethical concerns.
- Teachers view AI as more effective for linguistic accuracy and ICC knowledge than for cultivating the affective and relational dimensions of intercultural competence.
- Pedagogical innovations are emerging but remain constrained by limited TPACK development, technical access issues, and uncertainty about AI's ability to support authentic intercultural engagement.

Taken collectively, these insights underscore the significance of developing teacher expertise and pedagogical frameworks that intentionally integrate AI not only for linguistic instruction but also for intercultural development, while remaining attentive to ethical and relational concerns.

7 Conclusion and Implications

The findings indicate that integrating Artificial Intelligence into EFL pedagogy creates a transformative yet challenging environment for developing intercultural communicative competence (ICC). While AI supports efficiency and personalized linguistic practice, its contribution to the deeper affective and critical dimensions of ICC remains limited, largely due to technological constraints and varying levels of teacher preparedness. The theoretical contribution of this synthesis lies in clarifying the differentiated roles AI can play within ICC development. The evidence suggests a clear stratification: AI is most effective in supporting the knowledge dimension of ICC and certain skills related to interpreting and relating, especially when culturally rich and accurate inputs are used. In contrast, AI demonstrates limited capacity to cultivate attitudes or advanced critical cultural awareness—components that depend on authentic human interaction, emotional negotiation, and exposure to real sociocultural complexity. This distinction grounds future theorizing in specific, evidence-based boundaries rather than speculative projections.

The implications of this review highlight both the pedagogical shifts required for meaningful AI integration and the contextual considerations necessary to ensure that innovations support equitable and culturally responsive EFL practice.

Teacher Education Reform: Teacher preparation should extend beyond digital literacy to include AI-informed intercultural pedagogy, with explicit training in evaluating cultural accuracy and potential bias in AI outputs.

Hybrid Curriculum Design: Curricula should allocate routine linguistic practice to AI (e.g., grammar, controlled simulations) while reserving in-class time for affectively rich, human-facilitated intercultural engagement. Assessment practices should avoid privileging AI-assisted performance.

Ethics-Focused Professional Development: Professional development should foreground data ethics, algorithmic bias, and equitable access to prevent AI integration from reinforcing existing inequalities.

Given Iran’s national emphasis on communicative competence, these findings hold specific relevance. Recent Iranian EFL studies have highlighted teachers’ mixed attitudes toward emerging technologies and limited formal training in AI-enhanced pedagogy. Therefore, integrating structured AI literacy within teacher education and examining how AI-driven feedback aligns with MSRT curriculum standards represent urgent local research priorities. This contextual implication is justified by the documented gap between national communicative goals and current technological capacity in Iranian EFL institutions.

This review is limited by its reliance on publicly indexed literature, which may exclude practice-based or non-English studies and therefore risk over representing technologically advanced contexts while underrepresenting regions where AI adoption faces structural or resource constraints. Such asymmetry may skew interpretations of global teacher beliefs, levels of preparedness, and perceived challenges, making the findings more reflective of well-resourced educational systems than of the broader international EFL landscape. Moreover, the rapid pace of AI development means that earlier studies—particularly those evaluating first-generation tools—may underestimate the capacities of contemporary systems. This temporal mismatch requires caution when interpreting patterns across

publication years, as shifts in technological sophistication may influence both teacher perceptions and documented pedagogical outcomes.

Future research should prioritize longitudinal investigations that track how sustained, context-specific AI training reshapes teacher beliefs and classroom practices over time, as well as learner-centered qualitative studies exploring students' perceptions of authenticity, emotional engagement, and intercultural growth in AI-mediated interactions. Additional work is needed to develop and validate assessment tools suited to AI-augmented ICC instruction, ensuring that rubrics capture both human-mediated and AI-supported dimensions of learning. Comparative studies examining the relative effectiveness of AI-generated versus teacher-provided formative feedback—particularly for interpretive and affective ICC tasks—would further clarify the pedagogical affordances and limitations of AI in intercultural language education.

Acknowledgments

The authors would like to express their sincere gratitude to all those who have contributed to the development of this article. We extend our thanks to the academic community whose foundational work in digital literacy, artificial intelligence, and language pedagogy has informed our research.

Authors' Contributions

All authors have conducted the study, collected data, analyzed and interpreted the data, and written up the manuscript.

Funding

The study did not receive any funding.

Conflict of Interest

The authors declare that there is no conflict of interest.

Declaration of interest: none

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