

Digital Intercultural Learning for Competence Development: A Comprehensive Structured Review

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ABSTRACT

Digital transformation in education has intensified intercultural interaction, creating expanded opportunities and emerging challenges for competence development in virtual learning environments. Despite growing interest, research into how digital learning shapes intercultural competence remains scattered, signalling a need for systematic integration. This review systematically synthesises evidence on digital and technology-enhanced approaches to intercultural competence growth across educational settings. Using the PRISMA protocol, studies were sourced from SCOPUS and ERIC using the keywords Digital Learning AND Intercultural Communication. After identification, screening, and eligibility procedures, 34 empirical studies were included for final analysis. The findings have revealed three (3) major thematic patterns: (1) Online and Informal Digital Learning Environments, which involve MOOCs, COIL exchanges, and informal digital English learning that promote awareness, sensitivity, and communicative adaptability; (2) Innovative Digital Tools and Modalities, highlighting the use of VR, AI, serious games, SNS-supported tasks, and audiovisual translation to enable immersive cultural exchange and experiential learning; and (3) Intercultural Competence, Identity, and Communication in Educational Contexts, where cultural identity positioning, linguistic interaction, and instructional presence shape competence outcomes. Across themes, digital learning has demonstrated strong potential to enhance intercultural competence through guided interaction, reflective engagement, and culturally integrated design. However, issues such as unequal digital access, inconsistent conceptual framing, and varying pedagogical readiness have remained as notable challenges. Overall, the review confirms that digital learning is a promising pathway for developing intercultural competence and calls for clearer conceptual grounding, inclusive digital frameworks, and longitudinal research on identity formation and communication behaviour in multicultural online ecosystems.

Keywords: *Digital learning, technology-enhanced learning, intercultural communication, competence development, educational settings.*

INTRODUCTION

In today's interconnected and globalised society, the development of intercultural competence has become a central concern for educators, employers, and policymakers alike. The rapid proliferation of digital technologies has transformed the landscape of intercultural learning, enabling individuals to engage across cultural boundaries in ways that were previously unimaginable. Digital intercultural learning refers to the use of digital tools,

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platforms, and pedagogies to foster the knowledge, attitudes, and skills necessary for effective and respectful interaction in multicultural and multilingual contexts. This paradigm shift is not merely technological but fundamentally pedagogical and sociocultural, as it challenges traditional notions of competence development and calls for new frameworks that integrate digital literacies, critical reflection, and global citizenship. The urgency of this transformation is underscored by the increasing reliance on virtual exchanges, online collaboration, and remote work, which demand both cultural sensitivity and digital fluency for meaningful participation in diverse communities (Basantes-Andrade et al., 2025a; Machado et al., 2016; Strugielska & Piątkowska, 2018; Wang & Hu, 2025).

LITERATURE REVIEW

The theoretical foundations of digital intercultural learning are grounded in established models of intercultural competence, notably Deardorff's Process Model of Intercultural Competence (Deardorff, 2006) and Byram's Intercultural Communicative Competence (ICC) Model (Byram, 1997). Deardorff's model views intercultural competence as a continuous process encompassing attitudes, knowledge, skills, and internal and external outcomes, whereas Byram's model highlights attitudes, knowledge, skills of interpreting and relating, skills of discovery and interaction, and critical cultural awareness. Collectively, these frameworks offer a comprehensive theoretical basis for understanding how individuals acquire the knowledge, attitudes, and communicative abilities necessary to engage effectively and appropriately across cultural boundaries in digitally mediated contexts. However, the digital turn has prompted scholars to expand these models, incorporating elements such as digital literacy, multimodal communication, and multilingual identity to address the realities of online interaction. Hybrid frameworks, like the Common Framework of Reference for Intercultural Digital Literacies (CFRIDiL), exemplify this evolution by integrating language, digital competence, and intercultural encounter theories. Critical reflection and perspective-taking have also gained prominence, as they enable learners to interrogate their own cultural assumptions and engage empathetically with others in digital spaces. Theoretical advances further highlight the role of immersive technologies such as tridimensional virtual worlds and AI-driven platforms in fostering experiential, relational, and reflective learning, thereby enhancing both cognitive and affective dimensions of intercultural competence (Avila-López & Vaquero-Ibarra, 2025; Cerezo & Bertolín, 2020; Machado et al., 2016; Sindoni et al., 2021; Xu et al., 2025a). This infers that technology is the main educational necessity in the digital age (Sharipudin et al., 2024).

Empirical research demonstrates that digital tools and platforms are instrumental in operationalising these theoretical insights. Immersive environments like Second Life, videoconferencing applications, and social media platforms provide authentic contexts for intercultural dialogue, collaborative content creation, and real-time communication. These technologies facilitate both synchronous and asynchronous interactions, allowing learners to simulate real-life cross-cultural encounters and develop practical skills in a low-risk setting. Studies consistently show that such digital environments can reduce language anxiety, increase self-efficacy, and promote both linguistic and intercultural skills. For example, avatar-based interactions in virtual worlds foster a sense of presence and community, while digital storytelling and virtual exchanges offer robust mechanisms for reflection and assessment. In other situations, entertainment and escapism motivations inherent in digital streaming platforms facilitate intercultural exchange (Sukmono et al., 2025). The integration of advanced digital assessment tools, including validated scales that measure digital and intercultural

dimensions, ensures that competence development is both rigorous and contextually relevant (Basantes-Andrade et al., 2025b; Corder & U-Mackey, 2015; Jauregi & Bañados, 2008; Jin et al., 2025; Lin et al., 2025; Machado et al., 2016)

Pedagogical innovation is a hallmark of digital intercultural learning, with educators increasingly adopting hybrid approaches that blend cognitive, communicative, and experiential strategies. Digital storytelling, for instance, has emerged as a powerful method for enhancing cultural awareness and communicative confidence, enabling learners to construct and share narratives that reflect their own and others' cultural experiences. Collaborative Online International Learning (COIL), digital language exchanges, and immersive virtual classrooms provide opportunities for authentic engagement, critical reflection, and sustained intercultural interaction. These approaches are supported by a growing body of evidence indicating that learner-centred, dialogic, and reflective practices are effective in fostering both language proficiency and intercultural understanding. Moreover, the use of gamification, comparative analysis, and continuous integration of culture and language in digital language teaching further enriches the learning experience, promoting motivation, engagement, and creative thinking (McAllister-Wylie & Vodopija-Krstanovic, 2023; Wang & Hu, 2025; Xu et al., 2025b)

Despite these advances, significant challenges and research gaps persist in the field of digital intercultural learning. One of the most pressing issues is the need for equitable access to digital technologies and learning opportunities, as disparities in infrastructure, socio-economic status, and digital self-efficacy can hinder participation and outcomes. Methodological limitations, such as the over-reliance on self-reporting and the lack of robust, multi-method assessment strategies, also constrain the validity and reliability of competence evaluation. Furthermore, existing frameworks often reflect Eurocentric biases and may not fully capture the diversity of intercultural experiences in global digital contexts. Addressing these challenges requires a concerted effort to develop inclusive policies, innovative pedagogies, and validated assessment instruments that are sensitive to cultural and technological diversity. Future research should prioritize longitudinal and mixed-method studies, explore the potential of intelligent technologies like AI and virtual reality, and focus on bridging global and local discourses to ensure that digital intercultural learning fulfils its promise as a transformative force for competence development in the 21st century (Jin et al., 2025; López-Rocha, 2021; Ma & Yang, 2025).

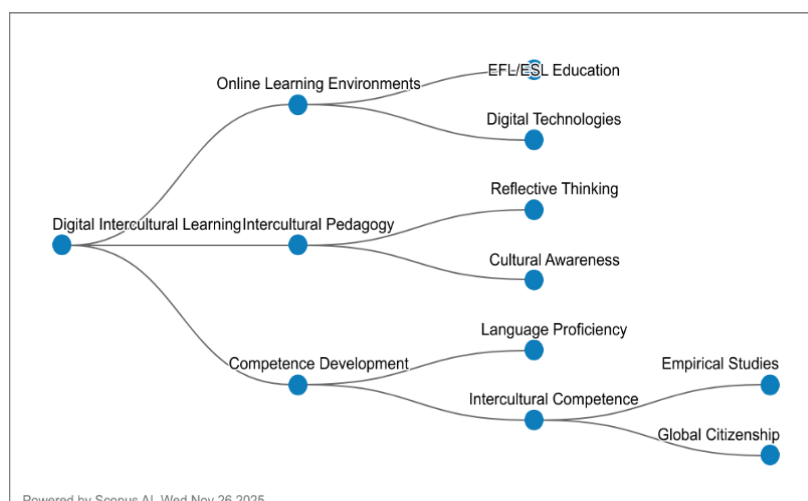


Figure 1: Conceptual map of digital intercultural learning and competence development

Figure 1 illustrates the conceptual structure that underpins the development of intercultural competence through digital intercultural learning. The map highlights three (3) interconnected domains: online learning environments, intercultural pedagogy, and competence development. Online learning environments which include EFL/ESL education and the integration of digital technologies serve as the primary platforms where intercultural interactions occur. These environments widen exposure to diverse linguistic and cultural inputs, enabling learners to communicate across borders and negotiate meaning in technology-mediated spaces. Meanwhile, intercultural pedagogy functions as the instructional core of this model. It emphasizes reflective thinking and cultural awareness as essential processes through which learners interpret experiences, challenge assumptions, and construct new cultural understandings. Pedagogical activities such as collaborative tasks, guided reflection, and cultural content engagement further enrich the learning process.

The third branch, competence development, represents the outcomes produced through sustained engagement in digital intercultural learning. Language proficiency, intercultural competence, and global citizenship emerge as key developmental indicators, demonstrating learners' growth in both communication skills and worldview expansion. The link to empirical studies indicates increasing scholarly recognition of this relationship, suggesting a growing evidence base supporting digital pathways to intercultural competence. In conclusion, the concept map positions digital intercultural learning as a multidimensional process shaped by technological environments, pedagogical design, and competence outcomes. The figure reinforces that digital tools alone do not develop intercultural competence; rather, growth occurs when reflective and culturally informed pedagogy is intentionally embedded within online learning spaces. These interrelated components provide a clear foundation for the literature review, highlighting emerging research directions and confirming the relevance of digital modes in advancing intercultural learning agendas globally.

METHODOLOGY

Identification

This study conducted a systematic review as it assists in a comprehensive identification of gaps in the current literature (Zhao et al., 2025). This research used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) process in the identification phase. This systematic review utilised PRISMA as it offers an organised framework that facilitates the compilation, summarization, and evaluation of studies (Ghazali et al., 2025). A systematic search was conducted in this study using two (2) major academic databases Scopus and ERIC to obtain initial literature on digital learning technology-enhanced learning OR online learning AND Intercultural as stated in the Table 1. Scopus returned with 256 records, which reflects its extensive indexing range across education technology, social sciences, communication, and cross-cultural studies. As one of the most comprehensive and reputable databases, Scopus often captures high-impact publications, empirical studies, and interdisciplinary work connecting digital pedagogies with intercultural competence development. Meanwhile, ERIC contributed 59 records, demonstrating its relevance as a specialised database for education-focused research. ERIC's output indicates the presence of scholarly work exploring digital learning environments, virtual cultural engagement, and pedagogical strategies that foster intercultural communication skills. Collectively, 130 initial records were identified, serving as a preliminary dataset for further PRISMA screening and eligibility assessment.

The distribution of sources provides a meaningful justification for database selection and confirms that the chosen keywords effectively captured literature relevant to digital intercultural learning. The dominance of Scopus in the search results is expected, given its broader coverage of communication, technology, and globalised education scholarship. ERIC, although producing a smaller dataset, offers depth in pedagogical frameworks, classroom implementation, and educational innovations that contribute to the development of intercultural competence. The total yield demonstrates that the field contains a substantial yet manageable body of evidence suitable for systematic analysis. This volume is appropriate for identifying trends, synthesising digital learning approaches, and mapping intercultural communication outcomes. Therefore, the identification results validate the relevance of the research direction and provide a solid foundation for progressing to subsequent PRISMA stages, including screening, eligibility, and synthesis.

Table 1: The search strategy by database

Database	Search String
Scopus	TITLE-ABS-KEY (("digital learning" OR "technology-enhanced learning") OR "online learning" AND Intercultural) AND (LIMIT-TO (PUBYEAR , 2015) OR LIMIT-TO (PUBYEAR , 2016) OR LIMIT-TO (PUBYEAR , 2017) OR LIMIT-TO (PUBYEAR , 2018) OR LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2022) OR LIMIT-TO (PUBYEAR , 2023) OR LIMIT-TO (PUBYEAR , 2024) OR LIMIT-TO (PUBYEAR , 2025)) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (LANGUAGE , "English")) Date of Access: December 2025
ERIC	TITLE-ABS-KEY ("Digital learning" AND "Intercultural Communication") Date of Access: December 2025

Screening

During the screening stage of the PRISMA process, all records retrieved from Scopus and ERIC were rigorously evaluated against predefined inclusion and exclusion criteria to refine the dataset for relevance, methodological rigour, and academic suitability. The exclusion criteria were applied to remove non-English publications, studies published before 2010, and non-primary research outputs such as conference papers, book chapters, reviews, in-press manuscripts, and materials outside the Social Sciences or Arts and Humanities disciplines as presented in Table 2. This step was essential to ensure that the remaining articles represented peer-reviewed, contemporary, and discipline-aligned evidence directly contributing to the understanding of digital learning in relation to intercultural communication. As a result of this process, 185 records were excluded, allowing the focus to shift toward studies with empirical depth, conceptual clarity, and direct relevance to intercultural competence development within digital learning contexts. Following screening, 115 articles remained from Scopus and 15 from ERIC, yielding a total of 130 potentially eligible publications for further evaluation. Subsequently, a duplicate-removal check was conducted, which identified and eliminated one repeated record, thereby streamlining the dataset and preventing bias through double counting.

The justification for applying such selective screening is grounded in both methodological integrity and conceptual relevance. Removing non-English and pre-2010 publications ensures linguistic consistency and aligns the review with current digital learning advancements, as intercultural communication practices have evolved alongside

technological innovation. Excluding conference proceedings, books, and reviews is equally warranted, as these materials often lack full methodological disclosure or are secondary analyses rather than original empirical contributions. The disciplinary filter that prioritized Social Sciences and Arts and Humanities further strengthens the review by focusing on intercultural behaviour, learning theories, and digital communication processes rather than technical or unrelated computational outputs. The reduction from the initial records to those meeting the eligibility threshold reflects a necessary narrowing toward quality, relevance, and theoretical contribution. In sum, the screening stage not only reduced noise within the dataset but also reinforced the credibility and academic value of the evidence base, which ensured that only studies capable of informing an authoritative synthesis were carried forward to the subsequent eligibility and analysis phases.

Table 2: The inclusion and exclusion criteria

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline	2010 – 2025	< 2010
Literature type	Journal (Article)	Conference, Book, Review
Publication Stage	Final	In Press
Subject	Social Sciences & Arts and Humanities	Besides Social Sciences & Arts and Humanities

Eligibility

In the Eligibility stage of the PRISMA review, the 129 articles that passed the initial screening phase were further examined in detail to assess their direct relevance to the research scope. At this stage, full titles, abstracts, and available full texts were carefully reviewed to ensure alignment with the central research focus digital learning and intercultural communication competence. Articles were excluded on several grounds: those deemed out of field (e.g., technology studies unrelated to learning or cultural development), those with titles lacking significance or clarity in connection to intercultural learning, and those with abstracts that did not meet the conceptual or methodological objectives of the review. Additionally, several papers were excluded due to the absence of full-text availability, which limited the ability to critically evaluate methodological rigour and research outcomes. As a result, 95 articles were removed during the eligibility assessment, indicating that a significant proportion of studies lacked sufficient relevance or depth to meaningfully contribute to the final synthesis.

Following these refinement procedures, 34 studies remained as eligible and were included in the qualitative analysis, forming the core evidence base for the review. This final dataset represents scholarship that demonstrates direct conceptual relevance, empirical strength, and contextual appropriateness to digital intercultural learning and competence development. The reduction from 129 to 34 eligible studies underscores the importance of rigorous eligibility filtering, ensuring that only high-quality, thematically aligned research informs the subsequent analysis. These final articles sufficiently support thematic synthesis, comparative analysis, and interpretation of digital learning strategies, intercultural communication outcomes, and pedagogical implications. Ultimately, the eligibility stage strengthens the integrity and academic value of the review by confirming that all included

studies contribute meaningfully to understanding how digital environments foster intercultural competence.

Data Abstraction and Analysis

An integrative analysis was employed as a core evaluation strategy to examine and synthesise multiple qualitative research designs. The purpose of this analytical phase was to identify central themes and sub-themes relevant to the study's objectives. Theme formation began during the data collection stage, where 34 selected articles were carefully reviewed for statements and evidence aligned with digital learning and intercultural communication, as illustrated in Figure 2. Each publication was assessed in terms of methodological approach and research outcomes to establish a comprehensive understanding of current scholarly contributions in the field.

Following individual review, the lead researcher worked collaboratively with co-authors to construct thematic categories based on recurring patterns observed across the dataset. A reflective log was maintained throughout the analysis to capture insights, emerging thoughts, uncertainties, and interpretive reflections. To ensure coherence and analytical reliability, the authors compared interpretations and resolved any inconsistencies in theme development through discussion and consensus. The resulting themes were then refined and adjusted to strengthen their clarity and internal consistency. Based on this rigorous process, three (3) research questions were formulated to guide further analysis and discussion.

1. How do online and informal digital learning environments contribute to the development of intercultural competence among learners across diverse educational settings?
2. What types of digital tools and emerging modalities (e.g., VR, AI, games, multimedia translation, COIL) most effectively enhance intercultural learning outcomes, and through which pedagogical mechanisms do they operate?
3. In what ways do intercultural identity negotiation, communication practices, and teacher–learner interaction influence intercultural competence development within digital and multicultural education contexts?

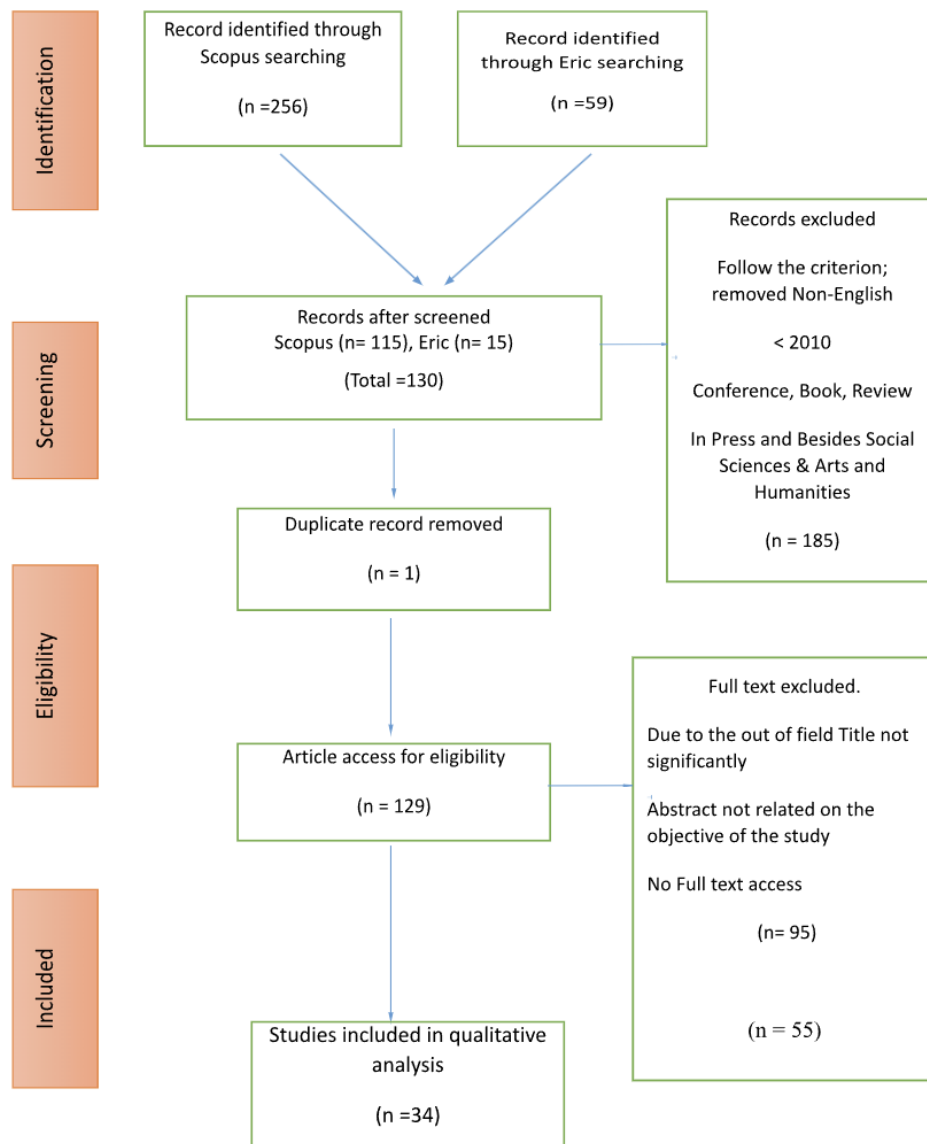


Figure 2: Flow diagram of the proposed searching study (Page et al., 2021)

RESULTS AND DISCUSSION

Theme 1: Online and Informal Digital Learning Environments for Intercultural Competence

Research on online and informal digital learning environments shows a consistent link between digitally mediated language learning and the growth of intercultural competence. In EFL and EMI contexts, digital spaces function as sites where learners negotiate identity, culture, and communication practices while developing higher-order literacy skills. In a post-COVID EFL online community, power relations, cultural positioning, and access to resources shaped learners' multiliteracies and intercultural experiences, revealing both opportunities for exchange and concerns about equity and identity negotiation (Mekheimer, 2025). In English-medium instruction, intercultural sensitivity was found to support deep learning processes and, in turn, better learning outcomes, with stronger mediation effects in online courses than in face-to-face delivery (Long et al., 2025). Informal digital learning of English further contributed to intercultural competence by supporting knowledge of self and others, openness, awareness, and communication skills through everyday engagement with English and cultural content in digital environments (Liu et al., 2025). In short, these works indicate

that structured and informal online language learning can foster intercultural growth when learners are exposed to diverse perspectives and encouraged to reflect on cultural differences.

Several studies emphasise that online intercultural programmes and digitally supported course designs can systematically promote intercultural competence at the higher education level. A systematic review of online intercultural programmes between 2020 and 2024 identified virtual mobility, collaborative tasks, and technology-supported assessment tools as central mechanisms for building intercultural competence in virtual settings (Zuo, 2025). A parallel review focusing on MOOCs highlighted authentic task-driven learning, technology-supported interaction, and experiential engagement as key pathways through which large-scale online courses can enhance intercultural communication competence and reduce geographical and cultural barriers (Mao et al., 2025). Empirical work with teaching assistants in MOOCs showed that participation in global online teaching communities supported gains in efficacy, critical reflection, and adaptation of language for intercultural communication with participants from many countries (Li et al., 2024). These findings suggest that online intercultural learning environments, whether course-based or platform-based, can offer structured opportunities for sustained intercultural contact, reflection, and competence development when activities are carefully designed.

Digital environments are also used to create more immersive and effective forms of intercultural learning. Immersive 360-degree video and AI-supported virtual reality environments were shown to enhance linguistic performance, cultural awareness, and communicative abilities by simulating authentic cultural encounters and enabling sustained cross-cultural exchanges (Shadiev et al., 2025). A metaverse-based language learning intervention led to significant perceived gains in cultural knowledge, awareness, attitudes, and skills, indicating that virtual reality can strengthen learners' intercultural communicative competence beyond traditional classroom instruction (Valizadeh & Morady Moghaddam, 2025). AI-supported collaborative learning environments further demonstrated that cultural empathy mediates the relationship between emotional and social competencies and academic self-efficacy, pointing to the importance of social-emotional dimensions in inclusive digital intercultural learning (Finkelstein & Soffer-Vital, 2025). Across these studies, advanced digital tools appear to open new possibilities for experiential and emotionally engaging intercultural learning that goes beyond text-based interaction.

Collaborative and exchange-focused online projects feature prominently as vehicles for intercultural dialogue and perspective-taking. A COIL project linking Norwegian and Canadian teacher education students showed that online collaboration around Indigenous Sámi and Métis perspectives fostered intercultural dialogue, reflection, and readiness to integrate Indigenous viewpoints into future professional practice (Spieler et al., 2025). Art-based online exchanges between South African and Greek students, framed around themes such as liberty and war, enabled participants to move beyond narrow national narratives and engage with humanist, cross-context readings of historical trauma and contemporary conflict (Steyn, 2025). Transdisciplinary online exchanges between students in Hong Kong and Australia illustrated how digital spaces can bring together diverse disciplinary and cultural backgrounds, prompting critical reflection on social and cultural comparisons and supporting intercultural learning within real-world problem-solving tasks (Tsao et al., 2025). These projects demonstrate that online environments can host rich intercultural encounters when activities are anchored in meaningful themes and supported by structured reflection.

A further group of studies highlights structured pedagogical strategies within digital environments that explicitly aim to strengthen intercultural skills. Design thinking activities in blended learning supported tourism students in developing empathy, collaboration, and problem-solving, which were then linked to improved intercultural competence relevant to global service industries (Muñoz et al., 2025). In another context, digital learning technologies during the pandemic were combined with cultural immersion, language exchange, and virtual events, leading to improved readiness for intercultural communication and higher digital competence among students from several countries (Ayazbayeva et al., 2025). Post-humanist pedagogies in e-learning for English language teaching emphasised relationality, autonomy, and diversity, and were reported to promote inclusive, learner-centred digital environments that support intercultural understanding and ecological awareness (Slamet & Kweldju, 2025). Taken together, these interventions reveal that digital intercultural learning is strengthened when pedagogy consciously integrates empathy, sustainability, collaboration, and critical reflection.

Online and informal learning environments also present specific communication and engagement challenges that influence intercultural outcomes. A review of communication barriers in culturally diverse online classes showed that the move to fully online learning during the pandemic shifted the nature of obstacles, with camera policies, comfort levels, and personality factors sometimes exerting a stronger influence than cultural differences on participation and interaction (Roesel & Dobrijević, 2025). In a post-COVID EFL community, digital inequities, power relations, and identity negotiations shaped how learners experienced flexibility and intercultural exchange, illustrating that access and agency are uneven within online spaces (Mekheimer, 2025). Global-engaged MOOC teaching assistants also reported difficulties such as lack of emotional connection, uneven participant response, language barriers, and uncertainty about expertise, even while recognising opportunities for reflection and intercultural competence development (Li et al., 2024). These findings suggest that digital intercultural learning environments require careful attention to socio-emotional support, equity of participation, and the design of communication norms.

Across the literature, a recurring pattern is the importance of reflection, awareness, and reciprocity in translating digital contact into meaningful intercultural competence. Informal digital learning activities were associated with increased openness, curiosity, and awareness of cultural differences, especially when learners reflected on both English-language and home-culture knowledge as resources in intercultural encounters (Liu et al., 2025). Systematic reviews of online intercultural programmes and MOOCs concluded that authentic tasks, technology-supported interaction, and assessment tools that capture intercultural growth are essential components of effective digital intercultural learning design (Zuo, 2025; Mao et al., 2025). Immersive and AI-supported environments were shown to deepen cultural understanding and communication skills when learners engaged in guided reflection and dialogue around their experiences (Shadiev et al., 2025; Valizadeh & Morady Moghaddam, 2025). These converging results indicate that digital technologies alone are not sufficient; rather, structured opportunities for critical reflection and mutual engagement appear central to sustained competence development.

Overall, the body of work under this theme points to online and informal digital learning environments as significant sites for intercultural competence development, while also highlighting persistent gaps. Empirical studies and reviews show that diverse formats, EMI courses, MOOCs, COIL projects, immersive VR, design thinking tasks, informal digital learning, and transdisciplinary exchanges can foster knowledge, attitudes, awareness, empathy, and

communication skills related to intercultural competence (Liu et al., 2025; Zuo, 2025; Tsao et al., 2025). At the same time, issues of power, digital divide, emotional connection, communication barriers, and uneven participation remain strong concerns that shape who benefits from these environments and how (Mekheimer, 2025; Roesel & Dobrijević, 2025; Li et al., 2024). The literature suggests a need for more longitudinal designs, broader samples, and deeper analysis of how socio-technical conditions influence intercultural learning pathways, particularly in relation to AI-mediated and immersive tools (Finkelstein & Soffer-Vital, 2025; Shadiev et al., 2025; Slamet & Kweldju, 2025). Such directions could clarify how digital intercultural learning can be designed more inclusively and sustainably in future practice.

Theme 2: Innovative Digital Tools and Modalities for Intercultural Learning

Studies in this theme show that online learning spaces shape intercultural-related skills in complex ways. In an online EFL context, undergraduate learners displayed a medium overall level of communication skills, with intercultural skills rated higher than production and reception skills, and more frequent use of such skills in synchronous compared to asynchronous modes (Guo & Asmawi, 2024). A broader survey of international students in Chinese universities indicated that different perceived types of online educational environments and interaction patterns predicted variations in ability development, suggesting that not only technological access but also the “place-like” quality of online space matters for learning (Tian & Lu, 2024). During pandemic-related disruption, virtual team projects were also found to enhance intercultural sensitivity, computer self-efficacy and perceived ease of use of online learning systems, with global teams and technology-focused projects showing particularly strong gains in interaction confidence and respect for cultural differences (Carle et al., 2024). These findings indicate that digital environments can foster intercultural communication and sensitivity, especially when interaction is synchronous, structured, and global in scope.

Teacher-focused digital programmes appear essential for sustaining intercultural aims in bilingual and international education. A distance training programme for Greek language teachers working in bilingual and intercultural settings demonstrated that structured online modules can support active engagement, strengthen decision-making in day-to-day teaching and enable the adoption of innovative language activities tailored to intercultural classrooms (Bouras et al., 2024). In another teacher education context, a collaborative international online learning project involving pre-service language teachers in Spain and the United States led participants to report enhanced intercultural and global awareness, with particular benefit for those without previous international mobility (Huertas-Abril & Palacios-Hidalgo, 2024). Virtual team projects in higher education further illustrated that appropriately designed online collaboration can build both intercultural sensitivity and technology-related confidence, which are important competencies for future professionals in globalised workplaces (Carle et al., 2024). These studies suggest that digital tools are not only channels for student learning but also key elements in professional preparation for teaching and working in intercultural environments.

Curriculum design that integrates language, culture and technology also emerges as a central concern. An online curriculum grounded in computer-assisted language learning was designed to link English learning with both home and target cultures, and findings indicated that digital multimodal resources helped learners, especially ethnic minority students, to

affirm cultural identities, value local perspectives and better appreciate other cultures (Trinh & Dinh, 2024). At the same time, this curriculum faced tensions between language and culture goals, resistance from some instructors regarding the importance of intercultural communicative competence and difficulty in making virtual cultural content feel connected to learners' lived realities (Trinh & Dinh, 2024). In a different context, Greek language teacher training showed that digital learning processes supported the implementation of innovative classroom activities and encouraged a more contemporary mindset in language teaching for bilingual and intercultural settings (Bouras et al., 2024). Work on communication skills in online EFL courses also highlighted that intercultural-related skills often stand out among different communication dimensions, suggesting that curriculum designers should explicitly recognise and support this dimension in digital environments (Guo & Asmawi, 2024). These results indicate that digital curricula can effectively embed intercultural aims when language and culture are treated as interdependent, though institutional and attitudinal barriers may limit full realisation.

Interactional processes in online intercultural projects have been studied in detail through telecollaboration and international collaboration initiatives. In telecollaborative exchanges between teacher candidates in Türkiye and the United States, discourse analysis showed that language choices, especially pronoun patterns, functioned as tools for constructing group boundaries and cultural generalisations, sometimes obscuring diversity within communities and marginalising less visible groups (Uzum et al., 2024). The same project illustrated that interlocutors sometimes used negotiation strategies to challenge or refine broad cultural claims, moving towards more nuanced representations (Uzum et al., 2024). A separate COIL project with pre-service language teachers suggested that online collaboration with overseas peers increased awareness of other cultures and global issues, particularly for participants without travel experience, and positioned COIL as an important instrument for global learning (Huertas-Abril & Palacios-Hidalgo, 2024). The large-scale survey of international students in China also underscored that patterns of online interpersonal interaction influence perceived development of abilities, including those related to intercultural functioning (Tian & Lu, 2024). These findings point to the need for explicit attention to discourse practices and interaction design in digital intercultural initiatives.

Overall, research across these studies indicates that innovative online and distance modalities hold substantial promise for intercultural learning, while also revealing important limitations. Communication skills and intercultural sensitivity can develop in online EFL courses, international online programmes and virtual team projects, particularly when interaction is frequent, collaborative and supported by clear structures (Guo & Asmawi, 2024; Carle et al., 2024; Huertas-Abril and Palacios-Hidalgo, 2024). At the level of learning spaces, the perceived quality of online environments and interpersonal interactions contributes to ability development and to the sense that online settings function as meaningful places for intercultural engagement rather than neutral spaces (Tian & Lu, 2024; Bouras et al., 2024; Trinh & Dinh, 2024). At the same time, discourse choices in telecollaboration can reinforce simplified images of culture, and systemic constraints in curriculum and teacher beliefs can limit the integration of intercultural aims (Uzum et al., 2024; Trinh & Dinh, 2024; Bouras et al., 2024). The evidence therefore supports the view that digital modalities can advance intercultural competence if combined with intentional pedagogical design, critical language awareness and institutional commitment to intercultural goals.

Theme 3: Intercultural Competence, Identity, and Communication in Educational Contexts

Across the literature, intercultural competence emerges as a central condition for meaningful communication in increasingly globalised educational spaces. In foreign language learning, analysis of successful intercultural exchanges highlights mutual respect, active listening, flexibility, tolerance, language proficiency, intercultural literacy, shared goals, and self-awareness as key elements that support effective interaction and sustain motivation to learn additional languages (Akylbek Uulu et al., 2024). A scoping review of technology-mediated foreign language learning similarly confirms that online environments often report positive outcomes for intercultural competence, yet conceptualisations of the construct remain fragmented, with many studies focusing on isolated dimensions rather than its dynamic, developmental nature (Muszyńska et al., 2023). Work on didactic audiovisual translation in online L2 instruction adds further nuance by showing that integrated linguistic and cultural components can simultaneously develop general language skills and intercultural competence, particularly when cultural content is made explicit in task design (Rodríguez-Arancón, 2023). These contributions underline the importance of clearer theoretical framing and multidimensional assessment of intercultural competence in educational research.

Digital and online environments play a prominent role in shaping intercultural communication, identity, and competence. Comparative evaluation of English–Japanese online intercultural exchanges before and during the COVID-19 period reveals higher self-reported gains in engagement and learning outcomes during the pandemic, supporting the argument that online exchanges can function as effective mechanisms for “internationalisation at home” and “at a distance” when physical mobility is restricted (Hamada & Iwasaki, 2024). In music education, the introduction of a dedicated MOOC for guzheng instruction leads to significantly higher performance scores compared with traditional lessons and very high satisfaction rates, with students explicitly linking the digital course to enhanced intercultural professionalism and more modern teaching approaches (Yin, 2023). A scoping review of online learning environments for language learners also notes that, despite definitional inconsistencies, many empirical studies report positive contributions of online platforms to intercultural development, while cautioning that high levels of favourable findings may mask methodological limitations or type II errors (Muszyńska et al., 2023). These results suggest considerable promise for digital environments, accompanied by a need for more rigorous conceptual and methodological grounding.

A related strand of work focuses on technology-supported pedagogical interventions that embed intercultural aims within specific activities and resources. An exploratory study on digitally mediated warm-up activities in Vietnamese primary EFL classrooms shows that carefully designed lead-in tasks using digital materials can activate young learners’ prior cultural knowledge and encourage teachers to adjust methodology towards greater attention to intercultural literacy (Pham, 2023). Online didactic audiovisual translation tasks in the TRADILEX project foster motivation and integrated L2 skills while supporting intercultural competence through intrinsic and explicit cultural components across lesson plans (Rodríguez-Arancón, 2023). A design science project proposes a mid-range design theory for serious games and demonstrates, through empirical evaluation, that a game grounded in explicit pedagogical principles can effectively support intercultural competency development (Schumacher et al., 2024). Across these studies, digital tools appear most effective when linked to clearly articulated learning goals, structured tasks, and explicit cultural framing.

Intercultural competence is also closely tied to identity work, community participation, and informal or semi-formal learning spaces. A study of Indonesian pre-service EFL teachers shows that extracurricular informal digital learning of English across one semester enables participants to become more aware of personal cultural backgrounds and biases, to reconsider language choices when interacting with overseas peers, and to view intercultural communication competence as both a linguistic resource and a stimulus for future classroom design (Drajati et al., 2024). Ethnographic work on a multilingual community of practice in Indonesia identifies social media use, innovative engagement activities, learning support, personal freedom, intercultural sharing, online platform use, free access, and social networking as key affordances that open space for multiple foreign language learning and intercultural exchange (Noprival et al., 2024). A theoretical and empirical analysis of successful intercultural communication in foreign language education similarly emphasises practice, tolerance for mistakes, and self-awareness as foundations for motivation and sustained engagement with other cultures (Akylbek Uulu et al., 2024). These findings indicate that competence development is not limited to formal curriculum, but also depends on participation in wider communities where identities and language practices are negotiated.

The perspectives and practices of educators constitute another important dimension in this body of work. An interview-based study on teaching presence in online higher education highlights the significance of teaching and social presence for learning experience quality and identifies concrete strategies that faculty adopt to project presence in culturally diverse online classes, thereby contributing to an educator-focused view often missing in previous research (Yousef et al., 2023). In guzhen education, students attribute improved perceptions of teacher professionalism and intercultural sensitivity to participation in MOOC-based instruction, indicating that institutional support for technological integration can shift professional identities alongside student outcomes (Yin, 2023). At programme level, the recognition that globalisation and migration heighten demand for intercultural competence leads to calls for foreign language curricula that systematically incorporate intercultural components and harness digital and online tools for this purpose (Akylbek Uulu et al., 2024; Muszyńska et al., 2023). The combined evidence points to the need for coordinated change in teacher education, course design, and institutional strategy to anchor intercultural competence, identity work, and communication practices within contemporary educational contexts.

CONCLUSION

The primary intention of this systematic review is to consolidate and evaluate scholarly contributions addressing how digital learning environments cultivate intercultural competence within educational ecosystems. The review adhered to the PRISMA protocol and analysed final eligible studies retrieved from Scopus and ERIC databases, filtered through inclusion criteria that ensured conceptual relevance, methodological completeness, and publication credibility. A total of 34 studies were synthesised through thematic abstraction, resulting in three core strands of knowledge: online and informal learning environments that support intercultural growth; innovative digital modalities that promote cultural interaction and communicative competence; and finally, the role of identity, communication behaviour, and cultural negotiation in shaping competence development. The synthesis also addressed research questions concerning the capacity of digital learning to nurture intercultural values, the mechanisms through which technological tools enhance cultural learning, and how identities and discourse practices influence communication dynamics in multicultural digital

contexts. Through the consolidation of evidence, the review clarified the state of knowledge at the intersection of digital learning and intercultural development and responded to the need for structured academic integration in a previously fragmented research domain.

The collected findings demonstrate that digital intercultural learning represents a multidimensional process shaped by interactive environments, pedagogical intentionality, and cultural reflexivity. Patterns across the final studies suggest that synchronous engagement, experiential digital immersion, reflective learning sequences, and collaboration-driven communication consistently have led to notable gains in intercultural competence. Advanced modalities such as VR, AI-mediated experiences, serious games, audiovisual translation tasks, and MOOC-based participation provide mechanisms for skill development beyond conventional classroom structures. Meanwhile, digitally mediated informal learning environments encourage natural exposure to multilingual content, cross-border dialogue, and identity exploration, allowing cultural awareness to evolve alongside communicative fluency. Across the thematic divisions, intercultural competence is interpreted as a dynamic construct involving cognitive, affective, and behavioural change, influenced both by learner-initiated interaction and teacher-designed intervention. The review contributes conceptual clarity by showing how digital environments operate not as passive spaces but as co-constructed sites where culture, pedagogy, and identity intersect to shape learning outcomes. By categorising research into three thematic dimensions, this review offers a new organisational frame through which future work can reference progression in digital intercultural scholarship.

Implications of the review extend toward educational policy, curriculum development, system architecture, and teacher readiness. Evidence suggests that carefully scaffolded online exchanges, curriculum models integrating cultural-language knowledge, and immersive technological experiences can support competence development for students who lack physical mobility or international exposure. In institutional practice, digital intercultural design may guide programme construction for foreign language education, teacher preparation, virtual mobility schemes, and global classroom collaboration. Pedagogical models that align cultural inquiry with technology-enhanced tasks appear favourable in supporting learner motivation, confidence, and identity negotiation in cross-cultural communication. Policy-driven implementation, however, requires attention to structural limitations such as digital access divides, uneven tool availability, and educator resistance stemming from traditional teaching norms. Strengthening intercultural competence in digital form demands ongoing teacher development, equitable technology integration, robust support for collaborative cross-border learning, and evaluative frameworks that capture intercultural transformation beyond linguistic accomplishment.

Despite its contribution, this review recognises notable limitations. The synthesis relied on two databases, specific keyword boundaries, English-only publications, and a publication timeframe that may have excluded relevant works outside the selection criteria. The dominance of qualitative evidence and limited presence of longitudinal designs restrict interpretations concerning long-term competence development, behavioural transferability, and stability of intercultural growth. The high number of digitally mediated positive outcomes reported in the studies also raises the possibility of bias in publication trends and sampling contexts. Future research may benefit from including multilingual databases, broader extraction techniques, and participatory studies that capture lived cultural experience over extended engagement periods. Methodological expansion into mixed-method, multimodal analytics, and identity-sensitive assessment tools may also clarify how competence evolves

through sustained digital participation. Consideration of AI-guided feedback, intelligent simulation systems, and intercultural data analytics may deepen understanding of emergent learning pathways.

As a final reflection, this review demonstrates the essential role of systematic evidence synthesis in consolidating fragmented knowledge within the evolving field of digital intercultural learning. Structured integration generates academic alignment where perspectives diverge and supports the development of theoretical clarity, policy significance, and practical innovation. The review affirms that digital learning stands as a compelling pathway toward intercultural competence development, while also illustrating that such growth depends on design, equity, identity sensitivity, and sustained cross-cultural exchange. Continued systematic inquiry will remain vital for shaping intercultural education that is responsive to a digitally connected, culturally diverse global future.

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