

Innovations in Language Education in the Digital Era: Integrating AI, Pedagogy, and Cross-Cultural Learning in the 21st Century

Della Rahmayani¹
Azzahra Sindhi Latifa²
Muhammad Nabil Fahmi³
Miftahul Rohmah⁴

^{1,2,3,4}Department of Islamic Education, Faculty of Tarbiyah, UIN Raden Mas Said, Indonesia.

imdellarahmaaa@gmail.com

Abstract

The digital era has transformed language education, demanding not only linguistic proficiency but also the integration of digital literacy and intercultural communicative competence (ICC). This study addresses the fragmented nature of previous research by conducting a Systematic Literature Review (SLR) to analyze innovations in technology-enhanced language learning. The research aims to synthesize existing insights to propose a holistic pedagogical model. The study is grounded in three key frameworks: Communicative Language Teaching (CLT), digital literacy, and Byram's model of ICC, with an emphasis on the catalytic role of Artificial Intelligence (AI). The methodology involved a thematic analysis of international journals, conference proceedings, academic books, and official reports. The data collection and selection process adhered to a rigorous SLR protocol to ensure consistency and reproducibility. The findings reveal three main themes: (1) Pedagogical innovations often lack cohesive integration of digital practices and ICC; (2) Digital tools are widely used in higher education, yet ICC development remains underdeveloped; and (3) AI significantly enhances digital literacy and intercultural collaboration, but teacher intervention is crucial to overcome its dialogical limitations. Based on these findings, the study proposes a digital collaborative storytelling model that integrates CLT, digital literacy, ICC, and AI. This model offers an innovative approach to foster interactive, reflective, and culturally meaningful language learning. The research contributes to developing a more holistic, adaptive, and sustainable 21st-century language pedagogy.

Keywords: Systematic Literature Review, Intercultural Communicative Competence (ICC), Digital literacy, Artificial Intelligence (AI), Collaborative storytelling.

INTRODUCTION

The digital era has brought about a major transformation in education. Learning is now increasingly reliant on digital platforms that promote cross-cultural engagement, collaboration, and knowledge acquisition (Destari, 2023). According to the OECD Digital

Education Outlook (2023), many countries have developed integrated education information systems and provided a range of digital learning resources. These developments mark a significant shift from partial digitization toward a data-driven transformation of education. Today, language learning occurs within a digital ecosystem characterized by increased interaction, the use of multimodal media, and more inclusive global access. However, a bibliometric study found that the use of digital platforms in education is often generic and not well-aligned with pedagogical needs, which limits the effectiveness of teaching and learning (Sharma, 2020).

One effort to address this challenge is the development of an Intelligent Tutoring System (ITS) for predictive parsing through an active learning approach. This system provides students with the opportunity to experiment and initiate their own tasks, rather than simply following predetermined instructions (Castro-Schez et al., 2020). However, the use of technology in language learning often faces structural barriers. For example, in Nigeria, ESL teachers have knowledge of digital tools, but access gaps still hinder their effective use (Adeniyi-Egbeola et al., 2021). Another challenge is seen in the formulation of digital competence in the Norwegian curriculum, positioned as the fourth basic skill, after reading, writing, and arithmetic. This competence includes critical thinking skills, reflection on technology, and an understanding of its social context, underscoring the cross-disciplinary nature of digital competence (Pangrazio et al., 2020).

Additionally, reading literacy is strongly influenced by internal factors such as linguistic ability, metacognition, motivation, and self-perception. A study by Liu et al. (2022) affirmed that reading interest and metacognition are the most important factors at the individual level, with the influence of school factors being relatively small. External factors also play a large role. Parental involvement, such as reading together at home, has been shown to improve students' skills, motivation, and positive attitudes (Çalışkan & Ulaş, 2022). Consistent parental support strengthens a child's reading self-concept, which in turn increases intrinsic motivation (Xia et al., 2019). Similarly, a literacy-rich home environment, including narrative interaction, socioeconomic status, and parental self-efficacy, influences a child's early literacy, including narrative development and alphabet knowledge (Orellana et al., 2025).

Unfortunately, studies that comprehensively integrate linguistic aspects, digital literacy, and intercultural competence are still limited. Departing from this gap, this study aims to analyze innovations in language learning in the digital era by combining technology, creative pedagogical strategies, and cross-cultural collaboration. The novelty of this research lies in integrating these three aspects into an authentic project-based learning model. In this model, digital technology functions not only as a tool but also as a trigger for creativity and a facilitator of intercultural interaction. Students, for example, can collaborate online with peers from other countries to complete a project related to a global issue, so that language competence, digital literacy, and intercultural competence develop simultaneously. Thus, this model has the potential to support the development of a holistic, relevant, and sustainable curriculum.

LITERARY REVIEWS

The literature on technology-based language learning innovation continues to grow, but most of it remains partial. Some research focuses on curriculum and institutional strategies, some emphasize improving linguistic skills through applications, and others examine digital literacy or intercultural competence (IC) separately. This fragmentation shows a gap between the need for a holistic learning approach and the existing state of research. This section discusses six relevant studies that serve as a foundation and a point of distinction for the current study.

Research on digital curricula by Lubis et al. (2022) affirmed that institutional strategies can encourage the implementation of technology in language education. This finding is in line with the current study, which also highlights the importance of institutional support and adaptive curriculum design. The difference is that the previous study focused on policy and structure, while this study examines digital project-based pedagogical practices with cross-cultural collaboration. The benefits of technology are also seen in a study by Biletska et al. (2021), which showed that technology not only accelerates the completion of academic tasks but also improves the professional skills of prospective teachers. The similarity with this study is the recognition that technology acts

as a catalyst for innovation. However, the focus of the current research is different: students are positioned as the main subjects in creative cross-cultural collaboration.

At the elementary school level, Sujarwo et al. (2023) proved that creative applications such as Canva, Sparkol, and Wordwall increase students' vocabulary while also shaping character through a fun learning experience. This finding aligns with the current study, which also highlights digital media as a key driver of motivation and interaction. The difference is that the previous study focused on character building for children, while this study focuses on integrating digital literacy, linguistic skills, and intercultural competence in higher education. A systematic review of Technology-Enhanced Language Learning (TELL) trends by Hasumi & Chiu (2024) revealed the dominance of research on writing skills, flipped learning, mobile-assisted learning, and game-based learning. This research is similar because it also sees technology as a new space for language education. However, that study only mapped trends, while this study offers a concrete model in the form of collaborative storytelling and authentic project-based virtual exchange.

The cultural perspective is shown by Song & Sahid (2025), who researched the intercultural competence of cross-border e-commerce students. They identified six key factors: cross-cultural engagement, business English, a global mindset, cultural knowledge, adaptability, and entrepreneurial motivation. The similarity with this study is the view that intercultural competence is essential in the global era. The difference is that the previous study placed IC in a business context, while this study links it to creative academic collaboration. Finally, a scoping review by Ramstrand et al. (2024) found that research on student IC is still dominated by North America, with a trend of online interventions post-pandemic. However, there is no consensus yet regarding IC evaluation instruments. This result strengthens the relevance of the current study because it also emphasizes the importance of technology-based interventions. The difference is that the previous study stopped at mapping, while this study presents a practical model that integrates IC, linguistic skills, and digital literacy through authentic projects.

Overall, the literature review reveals that while considerable research discusses digital curricula, digital literacy, technology-based learning, and IC, most of it remains stand-alone. This study is here to fill that gap by offering an integrative perspective on the challenges of language learning in the digital era.

UNDERLYING THEORIES

This research is based on three main, mutually supportive frameworks. First, Communicative Language Teaching (CLT) by Richards (2006) emphasizes language teaching oriented toward authentic communication. CLT emerged as a response to traditional approaches that focused on grammar. The goal is to develop communicative competence, which is the ability to use language meaningfully in social interaction. With its contextual, collaborative, and meaningful characteristics, CLT is relevant to supporting the integration of technology into language learning.

Second, the concept of Gilster, (1997) Defines digital literacy as an important framework in technology-based language learning. Digital literacy emphasizes the ability to understand, evaluate, and use information from various digital formats. This ability encourages collaboration, problem-solving, and cross-cultural interaction. In higher education, digital literacy enables students to engage in authentic projects, utilize online platforms, and access global learning resources. This supports the development of 21st-century skills, such as critical, creative, and collaborative thinking.

Third, Intercultural Communicative Competence (ICC) by Byram, (2021), emphasizes the ability to communicate effectively with individuals from different cultural backgrounds through understanding, appreciation, and meaningful engagement. ICC includes dimensions of knowledge, attitudes, and skills that enable learners not only to exchange information but also to build mutually respectful relationships. In the context of language learning in the digital era, ICC is becoming increasingly relevant due to the intensive global interactions facilitated by online media. The integration of CLT, digital literacy, and ICC builds a conceptual foundation for holistic language learning innovation. In this model, technology functions as a catalyst, fostering collaborative,

creative, and cross-cultural interactions aligned with the demands of 21st-century education.

RESEARCH METHOD

This research uses a qualitative approach with a systematic literature review (SLR) design. This method is systematic, explicit, and replicable for identifying, evaluating, and synthesizing previous research related to digital technology-based language learning innovation (Creswell, 2009). SLR was chosen because it can provide a comprehensive overview of the practices, challenges, and success factors of learning innovation in the digital era (Firlana, 2025).

The data sources include international journal articles indexed by Scopus and Web of Science, conference proceedings, academic books, and official reports. The literature search used the keywords "language education innovation," "digital era," "technology-based language learning," and "intercultural competence,". The data collection process went through four stages: (1) searching relevant databases, (2) screening with inclusion criteria (studies on technology-based language learning in higher education) and exclusion criteria (non-academic publications or those without a pedagogical context), (3) assessing methodological quality, and (4) thematic analysis to identify forms of innovation, challenges, success factors, and best practices (Zawacki-Richter et al., 2020).

The main research instrument was an SLR protocol that included guidelines for searching, selecting, and extracting data, similar to the model developed by Sepúlveda et al. (2019). This protocol has been shown to maintain consistency and reproducibility in systematic educational reviews. The data were analyzed using thematic analysis (Braun & Clarke, 2006), an approach widely used in education research because it is effective at revealing conceptual patterns and forming main themes. The results of this analysis will be the basis for practical recommendations relevant to educators, curriculum developers, and policymakers.

RESULTS AND DISCUSSION

This section presents the results of the systematic literature review. Thematic analysis has identified three main findings regarding innovations in technology-based language learning, as summarized in Table 1 below:

Table 1: Summary of Technology-Enhanced Language Learning Innovations and Research Gaps

Innovation/Focus	Theoretical Framework Connection	Main Contribution	Research Gap
Learning Models	CLT, Digital Literacy, ICC, AI	Integrates collaboration, creativity, and intercultural competence	Lack of holistic integration among all components
AI Utilization	CLT, Digital Literacy	Personalization of learning, adaptive feedback	Requires a balance between AI's role and a teacher's intervention to overcome dialogical limitations
Digital Telecollaboration	ICC, Digital Literacy	Enhances intercultural competence and language confidence	Still cannot accommodate digital opinion-writing and reflection.



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1. Technological Innovation in Language Education

a. Pedagogical Innovation in Language Learning

The research findings show that pedagogical innovation is a crucial foundation for improving the quality of language learning, Anwar & Syaputra (2022) Found that Indonesian language learning in schools is still dominated by rote memorization and theoretical methods, which leads to low student motivation and applied skills. This model does not align with the principles of Communicative Language Teaching (CLT), which emphasizes authentic and collaborative interaction (Richards, 2006). The implementation of CLT positions the teacher as a facilitator who optimizes listening, speaking, reading, and writing skills in an integrated way.

In another context, Makrifah (2020) examined Arabic language learning in Islamic Elementary Schools and emphasized the need to adapt methods to the demands of globalization and technological advancements. This is in line with the concept of digital literacy (Gilster, 1997), which is the ability to access, evaluate, and produce information creatively through digital media, as well as with the concept of intercultural communicative competence (ICC), which emphasizes cross-cultural interaction skills (Byram, 2021). However, this research has not deeply highlighted the integration of digital technology as a vehicle for practical collaboration between students. Therefore, an innovative learning model is needed, for example, digital collaborative storytelling, which connects CLT, digital literacy, ICC, and contemporary pedagogical strategies within an integrated framework.

Artificial Intelligence (AI) can increase student motivation, engagement, and independence through interactive simulations and personalized learning paths, while also supporting CLT and digital literacy (Mananay, 2024). However, previous research is still limited Anwar & Syaputra (2022) did not involve technology, Makrifah (2020) did not integrate digital literacy with cross-cultural collaboration, and Mananay (2024) Did not

connect AI with ICC or CLT in an integrated manner. Therefore, a language learning model is needed that holistically combines CLT, digital literacy, ICC, and AI to be more communicative and relevant in the digital era.

b. Technology Integration in Higher Education

In higher education, digital technology is a catalyst for innovation in language learning, Setiana et al. (2021) Showed that miniwebinars create an interactive learning environment and train students' independence in accessing and managing information. This approach aligns with digital literacy (Gilster, 1997). As students learn to use technology independently, critically, and creatively. However, this research was limited to interactivity and independence, without explicitly emphasizing cross-cultural collaboration.

In addition, Shen & Guo (2022) Introduced a virtual character-based English speaking practice model with dual-modality emotion recognition. This technology adapts interactions to students' emotional states, supporting the gradual development of speaking skills. Nevertheless, the research focus remains confined to emotional and linguistic adaptation, without the comprehensive integration of intercultural communicative competence (ICC).

Bahari et al. (2025) showed that the integration of Computer-Assisted Language Learning (CALL) and Artificial Intelligence-Assisted Language Learning (AIALL) increases motivation, engagement, and personalization through adaptive instruction and intelligent feedback. This integration reinforces CLT and digital literacy and fosters collaboration as well as cross-cultural competence. However, there is still no integrated model that fully combines interactivity, AI, digital literacy, and ICC to provide a holistic and contextually relevant language learning experience in higher education.

c. Artificial Intelligence as a Driver of Innovation

Artificial Intelligence (AI) is a key focus in language education because it enables the development of interactive, personalized, and gamified learning experiences. Most language learning applications still do not make optimal use of AI, even though it can

adapt exercises to students' progress, for example, in grammar or vocabulary (Pikhart, 2020). This approach is in line with the principles of Communicative Language Teaching (CLT), which emphasizes language practice in authentic contexts and meaningful interaction (Richards, 2006). Thus, AI allows for more adaptive, personalized learning and supports contextual and collaborative interaction.

A study by Jianzheng & Xuwei, (2023) Highlighted that AI can enhance personalized learning, automate assessment, and create innovative learning environments, but its effectiveness depends on the teacher's digital literacy. AI allows students to access global information, collaborate on digital projects, and hone 21st-century skills such as critical and creative thinking (Gilster, 1997). Furthermore, AI has the potential to support intercultural communicative competence (ICC) through digital cross-cultural interaction (Byram, 2021). The integration of AI with Extended Reality (XR) also allows for authentic communication practice in immersive virtual environments, supporting CLT, digital literacy, and the participatory development of ICC (Yan et al., 2025).

The development of AI in the last decade shows great potential in improving writing skills, assessment accuracy, and student engagement (Alhusaiyan, 2025). AI acts as a mediating tool within the Activity Theory framework, facilitating learning personalization, adaptive feedback, and collaborative spaces that align with CLT. Nevertheless, the limitations of AI in dialogic competence and the need for teacher intervention confirm the importance of a balance between technology and the role of the educator. The research gap that emerges is the lack of an integrated model that holistically combines AI, digital literacy, CLT, and ICC to create language learning that is adaptive, collaborative, authentic, and globally oriented.

Discussion and Synthesis

The research findings confirm that pedagogical innovation is the main foundation of language learning. Conventional practices based on rote memorization and theory make students less motivated and have difficulty mastering language skills comprehensively. The implementation of Communicative Language Teaching (CLT),

which emphasizes authentic interaction, collaboration, and the integrated development of listening, speaking, reading, and writing, is crucial. On the other hand, globalization and technology demand the strengthening of digital literacy so that students are able to access, manage, and create information creatively, while also developing intercultural communicative competence (ICC) to interact cross-culturally. However, most research still discusses CLT or digital literacy separately, without integrating intercultural competence, so the digital collaborative storytelling model offers an innovative solution by combining CLT, digital literacy, and ICC in an integrated framework.

At the higher education level, digital technologies such as miniwebinars, virtual characters, and AI-assisted learning improve the quality of language learning with interactive, adaptive environments that support student independence. Nevertheless, research tends to emphasize the technical aspects of learning personalization, emotion recognition, or interactive simulations without highlighting intercultural competence. Therefore, ideal language learning innovation should not only optimize technology but also be directed toward authentic and meaningful cross-cultural collaboration.

AI is increasingly strengthening the role of technology in pedagogical innovation by providing personalized learning, automated feedback, XR-based simulations, and supporting 21st-century skills. Its integration aligns with CLT, digital literacy, and ICC through contextual communication practices in virtual spaces. However, the limitations of AI in dialogic competence and the need for teacher intervention confirm that AI should be a mediating tool that complements the role of the educator. Thus, CLT, digital literacy, and ICC remain the main foundations that need to be integrated. This research gap is answered by the digital collaborative storytelling model, which combines these three foundations with AI to create language learning that is interactive, authentic, collaborative, and relevant to the challenges of the digital era.

2. Intercultural Communicative Competence (ICC) in Foreign Language Learning

a. Conceptualization of ICC in Higher Education

The concept of Intercultural Communicative Competence (ICC) in higher education continues to evolve with the increasing need for learners who can interact effectively in cross-cultural contexts. One of the early influential frameworks proposed four main dimensions, knowledge, attitude, skills, and awareness, used to measure students' intercultural skills through their cross-cultural experiences (Fantini & Tirmizi, 2006). However, the implementation of this framework is still not optimal because its integration into the curriculum is not widespread, and most educators do not have adequate intercultural capacity.

Several studies emphasize the importance of institutional support as a determining factor for the success of ICC development. This includes faculty training, supportive institutional policies, and providing space for direct intercultural experiences, all of which are considered to contribute to the sustainability of this competence in the higher education environment (Arasaratnam-Smith, 2020). In the context of foreign language learning, many teachers still rely on conventional linguistic approaches without explicitly integrating cultural elements, as reflected in the findings of a local academic forum (Batunan et al., 2023).

Meanwhile, a systematic review of hundreds of international studies shows that the diversity of definitions and the lack of an agreed-upon conceptual standard make the development of ICC learning strategies inconsistent and difficult to compare with each other (Guillén-Yparrea & Ramírez-Montoya, 2023). Therefore, there is a significant gap in the implementation of ICC in higher education, both in terms of concepts, policies, and learning practices. This study offers a novelty in the form of a holistic and contextual pedagogical model of ICC, a model that not only unites cognitive, affective, and skill dimensions but is also adapted to local realities and current global demands.

b. Development of an ICC Instrument for Prospective Educators

The development of intercultural competence for prospective educators requires more than just language proficiency; instruments that capture the dimensions of attitude, awareness, and intercultural skills are needed. One comprehensive instrument is the ICC Scale, developed by Kazykhankyzy & Alagözlü, (2019) based on Byram's (1997)

framework. This study showed that even with good language proficiency, the dimensions of attitude and awareness were still lacking, making more in-depth cross-cultural training important.

In the context of multilingual education, institutional support for ICC has not been balanced with a deep understanding of prospective teachers who still interpret this competence as static and limited to traditional culture (Gong et al., 2022). However, involvement in international schools provides an opportunity to expand intercultural horizons through daily practice.

Real-life experiences in cross-cultural environments also play an important role in shaping prospective teachers' ICC. For example, a study abroad experience encourages authentic reflection on cultural identity and cultural mediation skills (Arfiandhani & Suraya, 2021). A similar finding was reported for students participating in the SEA Teacher program, which improved their professional identity and confidence in managing multicultural classrooms (Syahri et al., 2025).

Although the ICC Scale is quite comprehensive (Kazykhankyzy & Alagözlü, 2019), there is still minimal research that connects ICC measurement with real learning practices longitudinally. Therefore, an interventional approach is needed that combines ICC evaluation with continuous reflection during and after cross-cultural experiences to optimize the connection between theory and practice. This approach is expected to increase the effectiveness of authentic intercultural learning and strengthen the professional identity of prospective teachers.

c. Simplification of the ICC Instrument for University Students

A 2024 study developed a simplified version of the ICC instrument containing 18 items divided into four main factors: knowledge, awareness, attitude, and skills. This instrument is intended for students in the Academic English program and shows high reliability (Ertay & Gilanlioglu, 2024). Its main advantages are simplicity and practicality in evaluating learning without sacrificing validity. This scale also expands the scope of the dimensions by adding elements of knowledge about religion, values, and cultural

taboos, as well as attitudes in real interaction with cross-cultural friends. This approach marks a shift from theory to authentic experience, preparing students to face a complex and diverse global world.

Historically, the development of ICC began with the comprehensive conceptualization by Fantini & Tirmizi, (2006), followed by an instrument for prospective educators by Kazykhankyzy & Alagözlü, (2019), and then a brief and applicable version in 2024. However, all these approaches still rely on self-report, which is considered not to fully represent competence in real practice. The novelty of this finding lies in the transformation of the instrument to be more practical and inclusive of complex cultural aspects. Nevertheless, evaluation based on direct practice, such as observation or portfolios, is still lacking. Therefore, future research is suggested to develop a digital project-based learning model that combines quantitative instruments and performative assessment in cross-cultural interaction to provide a more holistic picture of students' ICC.

Discussion & Synthesis

Overall, the development of the concept and instruments of Intercultural Communicative Competence (ICC) in the context of foreign language learning in higher education shows significant progress, especially in accommodating comprehensive cognitive, affective, and social skill dimensions. However, ICC implementation still faces various obstacles, such as a lack of cross-disciplinary curriculum integration, limited faculty competence, and a lack of systemic institutional support. In addition, existing instruments, while increasingly practical and inclusive of complex cultural aspects, still rely heavily on self-report and do not accommodate evaluation based on real practice. The main gap lies in the need for a more holistic and sustainable approach that combines ICC measurement with authentic reflection and experience in a cross-cultural context so that theory can be more effectively applied in learning practice. The novelty of the latest research is the emphasis on a learning model that integrates quantitative evaluation and performative assessment in digital cross-cultural interaction, which is expected to produce a more comprehensive and contextual picture of student ICC.

3. Integration of Digital Literacy & 21st Century Skills in Language Learning

a. Digital Literacy as a Foundation for 21st Century Competence Development

Digital literacy has now developed into a multidimensional competence that includes cognitive and social abilities, such as reading visual displays, evaluating the validity of information, creating original works, and navigating and interacting effectively in the digital space (citation). In language learning, this competence is crucial because communication among learners takes place across geographical and cultural boundaries. Critical digital literacy (CDL), which includes the use of technology, data and information literacy, and digital citizenship (citation), encourages students not only to understand text but also to analyze how text shapes opinions and identities, as explained by (Brown & Alford, 2023).

Furthermore, CDL plays an important role in developing intercultural communicative competence (ICC). Telecollaboration is an effective method through discussion, reflection, and negotiation of meaning to strengthen students' intercultural sensitivity (Godwin-Jones, 2019). Creative approaches such as digital storytelling (DST) also strengthen the integration of digital literacy and cultural expression: DST helps expand intercultural horizons (Kahanurak et al., 2023), while in Indonesia, DST projects based on local culture also increase metasemiotic awareness and professional competence of prospective EFL teachers (Drajati et al., 2023).

However, most research still does not explicitly integrate critical and reflective opinion writing as part of digital literacy, even though these skills are very important in the 21st-century context. Therefore, a new learning model is needed that simultaneously combines CDL, intercultural competence (ICC), and reflective linguistic expression to form learners who are creative, critical, and sensitive to cultural diversity in a complex digital context. This approach is expected to make an innovative contribution to a more holistic and relevant 21st-century language pedagogy.

b. Digital and Multimodal Collaboration in Formal Education

The development of digital technology has revolutionized how we teach and learn by opening up opportunities to integrate multimodality, such as video, audio, animation, and text, into formal education, especially in language learning. This approach creates a more dynamic, interactive, and relevant learning process to the demands of 21st-century skills. Unlike traditional methods that focus on a single text, multimodal learning encourages learners to play an active role in shaping meaning holistically and contextually.

A number of studies show the effectiveness of this approach. For example, a study by (Mandarani et al., 2024) Found that the production of advertising videos by EFL high school students not only significantly improved their language skills but also honed critical and collaborative thinking skills that are essential in the context of 21st-century learning. Similar findings were revealed by Zeng, (2024) In a study of bilingual Chinese-English elementary school students, which shown that multimodal integration in second language learning was able to reduce language anxiety while strengthening students' self-expression and cultural awareness as a whole.

Nevertheless, the effectiveness of this multimodal approach has not been fully optimal when faced with the need for comprehensive integration between digital literacy, intercultural competence, and reflective linguistic expression, especially in the context of critical digital opinion writing. For example, a study by Kusumaningrum et al. (2024) revealed that although the use of multimodal texts in Indonesian EFL classes was proven to increase student engagement and learning experience, limitations in teacher management and resource limitations are still major challenges in the implementation of more transformative multimodal learning.

Furthermore, the approach in multimodal literacy as developed in the Multimodal Literacy in the EFL Classroom (MLEFL) model emphasizes that multimodal texts are not passive representations but rather the result of strategic semiotic choices that require critical thinking to be interpreted in depth. This approach encourages students to develop metalanguage to analyze visual-verbal meaning, while also training them to evaluate the

structure and message built through multimodal elements (Karatza, 2022). Unfortunately, this important aspect has not been widely raised in the context of students' reflective writing, especially in the form of digital opinions.

Although many learning models teach the production of multimodal media, there is still a significant lack of stimulating students' critical and reflective thinking skills, especially in the context of digital opinion writing that focuses on social and cultural issues. This gap indicates that students often only act as media users or creators without being encouraged to become critical thinkers and communicators who are context-aware. Therefore, a new pedagogical model is needed that not only teaches the technical aspects but also explicitly develops critical and reflective thinking skills through digital opinion writing based on social-cultural issues. This model is expected to shift students' position to become creative, critical, and socially sensitive communicators in expressing meaning through multimodal media, thus providing a new contribution to 21st-century pedagogy.

c. Digital Telecollaboration as a Strategy to Improve ICC and Linguistic Skills

Cross-country telecollaboration through digital platforms has now become an effective method to integrate digital literacy, 21st-century skills, and intercultural communicative competence (ICC) in language learning. Through remote interaction, both synchronous and asynchronous, participants can practice authentic communication while deepening cross-cultural understanding. This activity allows students to apply language in a real context and expand their cultural horizons through dialogue and cross-country collaboration. Research by Al Khateeb & Hassan (2023) shows that telecollaboration improves the effectiveness of intercultural communication, including behavioral flexibility, interaction fluency, respect for conversation partners, and the ability to convey messages appropriately while maintaining cultural identity, especially through platforms like Tandem.

In addition, telecollaboration involving EFL students from China and Turkey for five weeks with text messages, voice calls, and video calls proved effective in increasing learning motivation and digital linguistic expression. This online communication experience also reduced language anxiety and increased participants' self-confidence, as

found in a study by (Taskiran, 2020). Furthermore, Mardones et al. (2024) Highlighted the importance of collaborative activities based on multimodal reading in multicultural classrooms. With a validated method, students' involvement in reading and discussing cultural representations from various multimodal texts was proven to increase intercultural sensitivity and reflective thinking skills. This method is ready to be implemented in schools with diverse cultural backgrounds.

Nevertheless, most of the literature still lacks emphasis on critical opinion writing and digital reflection as an important part of cross-cultural learning. In fact, the ability to formulate arguments, articulate personal perspectives, and reflect on cultural values in writing is a key dimension in 21st-century digital literacy. To address this need, this study proposes a telecollaborative intercultural digital opinion writing project that not only facilitates online intercultural interaction but also directs students to express critical thoughts and cultural attitudes in multimodal writing. Thus, this project is expected to integrate linguistic, cognitive, and affective dimensions in technology-based language learning more comprehensively and relevantly to the current global context.

Discussion & Synthesis

Based on the review of six studies, it can be concluded that the integration of digital literacy with 21st-century skills is very important in modern language learning. Critical digital literacy is the main foundation for developing the ability to think critically, cross-cultural communication, and ethical digital content production. Multimodality in formal education encourages creativity and collaboration, although it still needs strengthening in the aspects of cultural reflection and critical linguistic expression. Telecollaboration has been proven effective in increasing intercultural competence and authentic language skills, but it lacks accommodation for digital opinion writing and reflection.

Thus, there is a lack of learning models that combine critical digital literacy, multimodality, intercultural competence, and reflective linguistic expression in an integrated framework. This study aims to fill that gap by developing a digital intercultural opinion writing model that simultaneously trains writing skills, critical thinking, and

cultural competence through digital technology and structured and authentic cross-cultural collaboration. This model is expected to make an important contribution to the development of a holistic, contextual, and sustainable 21st-century language pedagogy.

CONCLUSIONS

This study highlights that language learning in the digital era requires an integrative approach that combines CLT, digital literacy, ICC, and AI. The SLR findings reveal that most existing practices are fragmented, separating pedagogy, technology, and intercultural competence. The proposed digital collaborative storytelling model offers an innovative alternative to encourage learning that is interactive, reflective, and culturally meaningful.

There are three practical implications. For teachers, this model can be implemented through concrete practices such as cross-institutional Zoom projects, shared digital storytelling, or collaborative writing assignments between students from different countries. These activities not only strengthen authentic communicative competence but also expose learners to intercultural perspectives directly. For students, this model increases creativity, motivation, and intercultural sensitivity by encouraging them to co-create narratives, exchange cultural values, and critically reflect on global issues. For policymakers, this model emphasizes the need to support adaptive curricula, provide adequate digital infrastructure, and offer professional training programs that enable educators to effectively integrate AI and collaborative digital tools.

The limitation of this study lies in its reliance on literature-based analysis, which indicates that future research should empirically test this model in various classroom contexts. Overall, this research contributes, both theoretically and practically, to the development of a more holistic, adaptive, and sustainable 21st-century language pedagogy.

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