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AI-Mediated Intercultural Communication in Higher Education: Saudi EFL Students' Perceptions and Experiences



REEMA ALGHIMLAS^a 
SAFAA M. ABDELHALIM^b  (Corresponding author)

^a*College of Languages and Translation, Imam
Mohammad Ibn Saud Islamic University (IMSIU),
Saudi Arabia
reemaalghimlas@gmail.com*

^b*College of Languages and Translation, Imam
Mohammad Ibn Saud Islamic University (IMSIU)
P.O. Box 5701 Othman Ibn Affan St, Riyadh 11432,
Saudi Arabia,
smmahmoud@imamu.edu.sa*

Abstract

The growing integration of artificial intelligence (AI) into higher education has prompted renewed attention to its pedagogical role in intercultural communication education. Guided by Byram's (2021) model of intercultural communicative competence (ICC), this study explores Saudi EFL university students' perceptions and experiences of AI-mediated learning as a resource for developing intercultural awareness and understanding and intercultural communication styles. Adopting a mixed-methods approach, data were collected from 76 Saudi EFL university students through a questionnaire comprising Likert-scale items and open-ended questions. Quantitative data were analyzed using descriptive and inferential statistics, while qualitative responses were examined through thematic analysis. The findings indicate generally positive evaluations of AI-supported tools for intercultural learning. Although differences between intercultural dimensions were not statistically significant, students tended to perceive AI-supported tools as particularly helpful for interaction-oriented aspects of intercultural competence, including pragmatic awareness, communicative confidence, and adaptability. Qualitative findings further show that learners valued AI for facilitating perspective-taking, judgments of communicative appropriateness, and low-risk intercultural practice, while also recognizing limitations related to emotional depth and spontaneity. By foregrounding learners' perceptions and experiences, this study contributes to intercultural communication education by positioning AI-supported tools as complementary pedagogical mediators that can scaffold intercultural reflection and communicative development when embedded within guided and theory-informed learning practices.

Keywords: AI-mediated interaction, artificial intelligence in education, intercultural communication, intercultural communicative competence, learner perceptions

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Introduction

In an era of intensified globalization and cross-border mobility, the ability to communicate effectively across cultural boundaries has become a central objective of foreign language education. English, increasingly functioning as a global lingua franca, is now widely used to mediate interaction among speakers from diverse linguistic and cultural backgrounds rather than primarily between native and non-native speakers (Baker, 2015, 2016; Xia et al., 2024). This shift has expanded the goals of English language education beyond grammatical accuracy and lexical knowledge to include the development of intercultural communicative competence (ICC), commonly understood as the ability to interact appropriately and effectively with individuals from different cultural backgrounds through cultural knowledge, communicative skills, openness, and critical cultural awareness (Byram, 2021; Deardorff, 2020).

Despite the widely acknowledged importance of ICC, research consistently indicates that many English as Foreign Language (EFL) classrooms continue to prioritize linguistic form over intercultural understanding and communicative practice. As a consequence, learners may remain underprepared for authentic intercultural encounters (Chen & Yang, 2014; Nameni, 2022). This challenge is particularly evident in contexts where opportunities for direct intercultural interaction are limited, restricting learners' ability to develop the interpretive, interactional, and reflective capacities required for meaningful intercultural communication. In many EFL settings, cultural instruction remains largely textbook-based and fact-oriented, offering limited opportunities for learners to critically engage with cultural meanings, perspectives, and communication practices.

To address limitations in conventional intercultural instruction, digitally mediated learning environments have increasingly been explored as spaces for intercultural communication education. Earlier research on telecollaboration, computer-mediated communication, and online intercultural exchange demonstrated that technology-supported interaction can facilitate intercultural awareness, communicative participation, and engagement with diverse cultural perspectives when supported through pedagogically guided interaction (Gutiérrez-Santiuste & Ritacco-Real, 2023; Shadiev & Sintawati, 2020). More recently, developments in artificial intelligence (AI) have further expanded these possibilities by enabling more adaptive and interactive forms of intercultural communication practice. AI-supported language learning environments, including conversational agents, intelligent tutoring systems, and platforms, can provide contextualized explanations, simulated intercultural interaction, adaptive feedback, and opportunities for perspective-taking that extend beyond earlier forms of technology-mediated communication (Klimova & Chen, 2024; Kohnke et al., 2025).

Emerging scholarship increasingly positions AI-supported environments as pedagogical resources for intercultural communication education rather than merely language-support technologies. Research suggests that AI-supported interaction may contribute to intercultural awareness, pragmatic understanding, communication strategies, and intercultural confidence through simulated intercultural practice and reflective engagement (Fares & Boudersa, 2025; Hastomo et al., 2025; Liu, 2025; Sun, 2025). Recent conceptual work further argues that AI-mediated learning environments may support dimensions of ICC identified in frameworks such as Byram's model, particularly skills of interaction, interpreting and relating, intercultural discovery, and communicative adaptability (Fiorucci, 2026; McCallum, 2024). Scholars nevertheless caution that meaningful intercultural learning depends on learners' ability to critically evaluate and contextualize AI-generated cultural information rather than engaging with AI passively or uncritically (Dai & Hua, 2025; Holliday et al., 2021). Concerns regarding cultural bias, authenticity, and oversimplified cultural representation therefore continue to shape current discussions of AI-mediated intercultural learning.

Although existing studies increasingly highlight the potential of AI-supported environments for ICC, important conceptual and contextual gaps remain in the literature. Much current research continues to prioritize linguistic outcomes, motivation, and self-regulated learning (Karataş et al., 2024; Kohnke et al., 2025; Wei, 2023), while intercultural learning is often treated as a secondary or indirect outcome. In addition, relatively limited attention has been given to learners' perceptions and lived experiences of AI-mediated intercultural learning, particularly in higher education EFL contexts outside East Asia (Hastomo et al., 2025). Arab EFL settings, including Saudi Arabia, remain substantially underrepresented despite their distinctive sociocultural and educational contexts. Research explicitly examining AI-mediated intercultural learning through established ICC frameworks such as Byram's model also remains comparatively limited.

To address these gaps, the present study investigates Saudi EFL university students' perceptions and experiences regarding the role of AI-supported language learning tools in developing intercultural communicative competence, particularly intercultural awareness and understanding and intercultural communication styles. Drawing on Byram's (2021) model of ICC, the study examines how learners perceive the intercultural affordances of AI-supported tools and how they use these tools to engage with cultural norms, perspectives, and communication practices. Rather than positioning AI as a technological endpoint, the study conceptualizes AI-supported tools as pedagogically mediated environments that shape learners' intercultural engagement, cultural reflection, and communicative development in educational contexts. By integrating quantitative and qualitative data, the study seeks to provide a nuanced understanding of learners' experiences with AI-mediated intercultural learning in Saudi higher education.

The study therefore addresses the following research questions:

- RQ1. How do Saudi EFL university students perceive the role of AI-supported language learning tools in enhancing intercultural awareness and intercultural communication styles?
- RQ2. What experiences and examples do Saudi EFL university students report regarding the use of AI-supported language learning tools to learn about cultural norms, perspectives, and intercultural communication practices?

Literature Review

Intercultural Communicative Competence in EFL Contexts/Education

ICC has become a central construct in applied linguistics and foreign language education, reflecting the growing need for learners to navigate culturally diverse communicative situations in an increasingly interconnected world. Unlike traditional communicative competence, which primarily emphasizes linguistic accuracy and pragmatic appropriateness, ICC foregrounds learners' ability to interact effectively and appropriately with individuals from different cultural contexts while negotiating meaning, values, identities, and perspectives (Byram, 2021; Deardorff, 2006, 2020). In EFL education, ICC is widely regarded as a core educational objective, particularly in contexts where English functions as a global lingua franca rather than a native-speaker norm (Baker, 2015). ICC also provides an important framework for developing learners' capacity for reflective, ethical, and context-sensitive intercultural interaction.

Among the various theoretical models, Byram's (2021) framework remains one of the most influential in language education research. The model conceptualizes ICC as comprising five interrelated components: attitudes (curiosity and openness), knowledge of social groups and practices, skills of

interpreting and relating, skills of discovery and interaction, and critical cultural awareness. This multidimensional perspective emphasizes that intercultural competence extends beyond cultural knowledge to include reflexivity, interpretation, and critical engagement. Subsequent scholarship has reinforced the interdependence of cognitive, affective, and behavioral dimensions in intercultural communication, emphasizing ICC as a multidimensional and developmental competence rather than a fixed set of skills (Deardorff, 2020; Fantini, 2020).

Building on Byram's framework, more recent scholarship has highlighted the need to consider more explicitly how intercultural competence is enacted through communication. Researchers in intercultural pragmatics argue that effective intercultural interaction depends not only on cultural knowledge and attitudes but also on learners' ability to interpret meanings in context, negotiate perspectives, recognize culturally situated assumptions, and make appropriate communicative judgments across diverse sociocultural settings (McConachy, 2022; McConachy & Liddicoat, 2021). This perspective further emphasizes that intercultural understanding develops through reflection on language use, meaning-making, and social relationships across contexts. From this perspective, intercultural learning involves ongoing reflection on language use, meaning-making, and interpersonal relationships rather than the acquisition of static cultural information. Such work complements Byram's emphasis on skills of discovery and interaction by drawing greater attention to pragmatic awareness, communication adaptability, and the co-construction of meaning during intercultural encounters (Hoff, 2020). These interactional and pragmatic dimensions are increasingly regarded as important components of successful intercultural communication in contemporary language education.

Despite broad consensus regarding its importance, ICC remains insufficiently integrated into EFL instruction. Cultural teaching is often reduced to factual information about target cultures, offering limited opportunities for learners to engage critically with cultural meanings, identities, and power relations (Baker, 2015; Holliday et al., 2021). As a result, learners may develop linguistic proficiency without the intercultural awareness, pragmatic sensitivity, communication adaptability, or communicative confidence required for effective intercultural interaction. Recent scholarship has therefore emphasized the need for pedagogical approaches that move beyond conventional classroom instruction and create meaningful opportunities for intercultural engagement, reflection, and communication practice.

Within this context, technology-mediated and AI-supported learning environments have increasingly been identified as promising spaces for ICC development because they provide learners with expanded access to diverse perspectives, culturally situated interaction, and opportunities to practice communication across cultural contexts.

Technology-Mediated and AI-Supported Intercultural Learning in Language Education

Digital technologies have long been recognized as important mediators of intercultural learning in language education. Research on technology-mediated intercultural learning suggests that digitally supported interaction can facilitate intercultural knowledge development, intercultural awareness, and communication skills, particularly when learners engage in collaborative and pedagogically guided interaction (Shadiev & Sintawati, 2020). In EFL contexts where opportunities for direct intercultural contact may be limited, telecollaboration, computer-mediated communication, and technology-enhanced intercultural projects have therefore been used to support intercultural interaction and reflection (Chen & Yang, 2014; Gutiérrez-Santiuste & Ritacco-Real, 2023). Research in intercultural communication education further emphasizes the role of indirect intercultural contact, including mediated interaction and exposure to cultural content, in supporting learners' intercultural attitudes, knowledge, and interactional skills (Zou, 2025). Earlier technology-mediated research also indicates that intercultural

development depends less on technology itself than on instructional design, reflective engagement, and opportunities for sustained intercultural interaction (Çiftçi, 2016; Shadiev & Sintawati, 2020).

Advances in AI have expanded the scope of technology-mediated intercultural learning by enabling more adaptive and interactive forms of communication practice. AI-supported tools, including conversational agents, generative AI platforms, and virtual simulations, can provide learners with contextualized feedback, culturally situated examples, and personalized communication support (Karataş et al., 2024; Kohnke et al., 2025). Recent review studies further suggests that AI-driven tools may support intercultural communicative competence through immersive interaction, communication rehearsal, and adaptive intercultural learning experiences (Klimova & Chen, 2024). Similarly, McCallum (2024) argues that AI-assisted telecollaboration tasks can support intercultural communicative competence development when integrated with reflective mediation and critical engagement.

Emerging research increasingly highlights AI potential contribution to intercultural communicative competence. Studies report that AI-supported conversational agents can help learners explore pragmatic appropriateness, cultural perspectives, and communication practices while increasing confidence and reducing interaction anxiety (Hastomo et al., 2025). Experimental and mixed-methods research also suggests that AI-enhanced learning environments may support intercultural communication skills and intercultural awareness when linguistic and intercultural objectives are intentionally integrated into instructional design. For example, Liu (2025) found that learners using an AI-enhanced language learning system demonstrated significantly greater gains in intercultural communication competence than those receiving traditional instruction. Similarly, Sun (2025) reported that an AI-enabled Collaborative Online International Learning (COIL) program enhanced learners' intercultural attitudes, communication skills, and intercultural awareness through collaborative intercultural tasks and AI-supported interaction. Research also indicates that AI-supported learning environments may indirectly strengthen intercultural communication competence by promoting learner adaptability and engagement in intercultural interaction (Chen & Wei, 2025).

Recent scholarship has also emphasized the importance of aligning AI-supported intercultural learning with established conceptualizations of intercultural communicative competence. Drawing on frameworks such as Byram's model, researchers argue that AI-supported environments may support interaction-oriented dimensions of intercultural competence through simulated interaction, intercultural mediation activities, and pragmatic communication practice (Fiorucci, 2026; Toscu, 2026). At the same time, scholars caution that AI-supported learning should not be understood as a replacement for authentic human interaction, but rather as a pedagogically mediated resource that can scaffold intercultural communication and reflection.

Despite these affordances, researchers caution against uncritical adoption of AI-mediated intercultural learning. Concerns persist regarding cultural bias, stereotypical representations, oversimplified cultural explanations, and learners' overreliance on automated feedback (Dai & Hua, 2025; Zawacki-Richter et al., 2019). Research on AI dialogue systems further suggests that emotionally nuanced and culturally situated dimensions of communication remain difficult to replicate effectively in AI-mediated interaction (Zhai & Wibowo, 2023). These concerns have led scholars to emphasize the importance of pedagogical mediation, critical AI literacy, and reflective engagement when integrating AI-supported tools into intercultural communication education (Holliday et al., 2021).

Learners' Perceptions of AI-Supported Intercultural Learning and Research Gaps

Building on the preceding discussion of AI-supported intercultural learning environments, this subsection focuses more specifically on learners' perceptions and experiences of AI-mediated intercultural

engagement. Learners' perceptions play an important role in shaping engagement with educational technologies and influencing learning outcomes, as perceptions of usefulness, ease of use, and self-efficacy strongly predict sustained adoption and meaningful engagement (Teo, 2019). In ICC research, learners' interpretations of pedagogical tools influence how intercultural meanings, identities, and communicative practices are negotiated in AI-mediated environments. Research in AI-supported language learning suggests that positive learner perceptions are associated with increased motivation, communicative participation, and engagement with intercultural learning tasks (Karataş et al., 2024; Wei, 2023). Examining learners' perceptions is therefore important for understanding how AI-supported tools may contribute to intercultural communicative competence development.

Scholars have also emphasized that meaningful AI-mediated intercultural learning requires critical awareness rather than passive acceptance of AI-generated cultural information. This emphasis on critical engagement aligns with intercultural communication perspectives that view intercultural learning as a reflective and interpretive process rather than the accumulation of static cultural knowledge (Holliday et al., 2021). Researchers additionally caution that AI-mediated interaction may reproduce essentialized cultural representations or fail to capture culturally nuanced dimensions of communication such as empathy, humour, emotional responsiveness, and relational authenticity (Dai & Hua, 2025; Zhai & Wibowo, 2023). Fiorucci (2026) similarly argues that the educational value of AI-supported intercultural interaction depends substantially on pedagogical mediation and learners' ability to critically interpret AI-generated cultural content within broader intercultural contexts.

Despite growing interest in AI-supported language learning, important gaps remain in research on AI-mediated intercultural communication education. Existing studies continue to prioritize linguistic outcomes, such as writing performance, vocabulary acquisition, and grammatical accuracy, while intercultural learning is often treated as a secondary or indirect outcome (Karataş et al., 2024; Kohnke et al., 2025). In addition, learners' perceptions and lived experiences of AI-mediated intercultural learning remain comparatively underexamined, particularly in higher education EFL contexts outside East Asia (Hastomo et al., 2025). Arab EFL contexts, including Saudi Arabia, remain substantially underrepresented despite their distinctive sociocultural and educational characteristics. Although an emerging body of research has begun to examine AI-supported intercultural learning through established ICC frameworks such as Byram's model (e.g., McCallum, 2024; Fiorucci, 2026), understanding remains limited regarding how learners perceive AI-supported tools as contributing to intercultural awareness, communication practices, and reflective intercultural engagement. Addressing these gaps provides the rationale for the present study.

Methods

Research Design

This study adopted a descriptive mixed-methods research design, integrating quantitative and qualitative data collected through a questionnaire comprising both closed-ended and open-ended questions. A mixed-methods approach is particularly appropriate when a single source of data cannot fully capture the complexity of learners' perceptions and experiences (Creswell & Plano Clark, 2018). In the present study, the quantitative component was used to examine Saudi EFL university students' perceptions of the role of AI-supported language learning tools in developing intercultural competence, while the qualitative component provided insight into students' reported experiences and illustrative examples of intercultural learning.

The descriptive design reflected the exploratory nature of the research questions, which seek to document and describe learners' perceptions rather than establish causal relationships or measure

instructional effectiveness. Descriptive survey research is widely used in applied linguistics to investigate attitudes, beliefs, and perceptions in educational contexts (Dörnyei, 2007). The use of Likert-scale items enabled the identification of general patterns and tendencies in students' responses, whereas the inclusion of open-ended questions allowed participants to elaborate on their views and provide contextualized accounts of how AI-supported tools contributed to their understanding of cultural norms, perspectives, and communication practices.

Combining quantitative and qualitative data allowed numerical trends to be interpreted alongside participants' own accounts and examples (Greene, 2007). This approach is particularly appropriate for research on intercultural competence, which involves complex cognitive and communicative dimensions that benefit from both structured measurement and qualitative elaboration.

Research Sample

Participants were recruited using convenience sampling from undergraduate Saudi EFL students enrolled in English-language-related courses at a public university in Saudi Arabia. To be included in the study, participants had to (a) be enrolled as undergraduate EFL students, (b) report prior experience using AI-supported language learning tools (e.g., AI chatbots, translation applications, or AI-assisted writing tools), and (c) voluntarily agree to participate in the study. Students who reported no prior use of AI-supported language learning tools or who submitted incomplete questionnaire responses were excluded from the final analysis.

The final sample consisted of 76 Saudi EFL university students. Participants' ages ranged from 18 to 28 years ($M = 21.1$, $SD = 2.16$). The sample included students from different academic levels, allowing for perspectives from multiple stages of undergraduate study. Demographic information is presented in Table 1.

Table 1 *Participant Demographic Information*

Variable	Category	n	%
Gender	Female	54	71.1
	Male	22	28.9
Academic Level	First Year	12	15.8
	Second Year	15	19.7
	Third Year	24	31.6
	Fourth Year	25	32.9
Age	Range	18–28	—
	Mean (SD)	21.1 (2.16)	—

Research Instrument and Data Collection

Data were collected using a researcher-developed questionnaire consisting of 11 items measured on a five-point Likert scale of agreement (1 = strongly disagree, 5 = strongly agree). The questionnaire was designed to examine students' self-reported perceptions of the role of AI-supported language learning tools in developing ICC. To complement the quantitative data and address RQ2, two open-ended questions were included at the end of the questionnaire to elicit students' experiences and examples of how AI-supported tools supported their understanding of cultural norms, perspectives, and intercultural communication practices. A copy of the full questionnaire instrument is provided in Appendix A.

The questionnaire was theoretically informed by established conceptualizations of ICC in applied linguistics, drawing primarily on Byram's (2021) model while also incorporating interactional and pragmatic dimensions emphasized in intercultural communication and intercultural pragmatics research (McConachy, 2022; McConachy & Liddicoat, 2021). In addition to intercultural knowledge and awareness, the instrument therefore included items related to communication adaptability, pragmatic appropriateness, communicative confidence, and interaction across cultural contexts, reflecting contemporary perspectives that view intercultural competence as enacted through situated communication, meaning negotiation, and context-sensitive language use.

For analytical purposes, the questionnaire items were grouped into two thematic categories: Intercultural Awareness and Understanding (Items 2, 4, 8, 10, and 11) and Intercultural Communication Styles (Items 1, 3, 5, 6, 7, and 9). These categories were based on the conceptual focus of the items rather than their sequence in the questionnaire and were used as analytical groupings rather than formally validated psychometric subscales.

Before completing the questionnaire, participants were provided with a brief explanation of AI-supported language learning tools, accompanied by illustrative examples such as AI chatbots, translation tools, adaptive learning applications, and virtual tutors to ensure a shared understanding of the key concept across participants. To strengthen content validity, two specialists in applied linguistics and intercultural communication reviewed the questionnaire in terms of clarity, relevance, and alignment of the items with the study objectives and ICC constructs.

Internal consistency reliability was examined using Cronbach's alpha. The overall 11-item questionnaire demonstrated excellent reliability ($\alpha = .92$). The Intercultural Awareness and Understanding category showed good internal consistency ($\alpha = .82$), while the Intercultural Communication Styles category also demonstrated good reliability ($\alpha = .88$). These reliability coefficients indicate satisfactory internal consistency for examining students' perceptions of AI-supported intercultural learning.

The questionnaire was administered online using Google Forms. The survey link was distributed through official university email and students' WhatsApp groups to facilitate participation.

Data Analysis

Quantitative data from the 11 Likert-scale items were analyzed using IBM SPSS Statistics (Version 27). Descriptive statistics, including means, standard deviations, frequencies, and percentages, were calculated to examine students' overall perceptions of the role of AI-supported language learning tools in developing intercultural communicative competence. Composite scores were computed for the two analytical dimensions, Intercultural Awareness and Understanding and Intercultural Communication Styles, by averaging the relevant items for each participant. Internal consistency reliability was assessed using Cronbach's alpha. For interpretive purposes, composite mean scores were classified using the following ranges: low (1.00–2.33), moderate (2.34–3.66), and high (3.67–5.00). Inferential statistical procedures were also conducted to explore differences across dimensions and participant characteristics. A paired-samples t-test was used to compare perceptions across the two intercultural dimensions, while independent-samples t-tests and one-way analyses of variance (ANOVA) were conducted to examine differences based on gender and study level. These inferential analyses were treated as exploratory, with the significance level set at $p < .05$.

Qualitative data from the two open-ended questionnaire questions were analyzed using reflexive thematic analysis following Braun and Clarke's (2006) six-phase approach. The analysis was conducted manually by the researcher without the use of qualitative data analysis software such as NVivo.

The responses were read several times to establish familiarity with the dataset before initial codes were generated to capture recurring ideas related to students' experiences of AI-supported intercultural learning. Example initial codes included access to cultural explanations, learning communication norms, checking appropriateness, perspective-taking, communicative confidence, and interactional support.

The initial codes were then reviewed, compared, and refined through repeated engagement with the data to identify broader patterns of meaning across participants' responses. Related codes were subsequently grouped into candidate themes, which were continuously reviewed and revised to ensure conceptual coherence and clear distinction between themes. Through this iterative process, four overarching themes were developed: contextualized cultural knowledge, pragmatic and communicative awareness, simulated intercultural interaction, and perceived benefits and limitations of AI-mediated learning. The analysis focused on interpreting recurring experiential patterns and meanings rather than quantifying responses, with representative excerpts selected to illustrate each theme.

Ethical Considerations

Ethical approval for this study was obtained from the Research Ethics Committee at Imam Mohammad Ibn Saud Islamic University (Approval No. 639111249714781049). Participation in the study was entirely voluntary, and informed consent was obtained electronically from all participants prior to data collection. Before accessing the questionnaire, participants were provided with information regarding the purpose of the study, the voluntary nature of participation, and their right to decline participation or withdraw from the study at any time without penalty.

To ensure confidentiality and anonymity, no identifying personal information was collected, and all responses were recorded anonymously through the online survey platform. The collected data were treated confidentially and used solely for academic research purposes in accordance with institutional ethical guidelines for research involving human participants.

Results

Students' Perceived Impact of AI-Supported Tools on Intercultural Competence

This subsection presents the quantitative findings related to Research Question 1, which examined Saudi EFL university students' perceptions of the role of AI-supported language learning tools in developing intercultural communicative competence, with particular attention to intercultural awareness and understanding and intercultural communication styles.

Participants generally reported positive perceptions of AI-supported language learning tools. As shown in Table 2, mean scores across the 11 questionnaire items ranged from 3.89 to 4.18 on a five-point Likert scale, with all item means exceeding the scale midpoint. Based on the predefined interpretation ranges described in the Data Analysis section, all mean scores fell within the high range (3.67–5.00), indicating generally favorable perceptions of AI-supported intercultural learning. In addition, a substantial proportion of participants selected "agree" or "strongly agree" across all items, suggesting broad endorsement of the perceived intercultural benefits associated with AI-supported tools.

At the item level, statements associated with intercultural communication styles received particularly strong support. High levels of agreement were observed for items related to confidence in intercultural communication and understanding verbal and non-verbal communication styles. These items yielded the highest mean scores on the scale, which may indicate that learners perceived AI-supported tools as particularly useful for communicative adaptation and intercultural interaction.

Table 2 *Item-Level Descriptive Statistics for Perceived Intercultural Competence Development (N = 76)*

Item	Abbreviated Item Description	<i>M</i>	<i>SD</i>	Agree (4–5) %	Neutral (3) %	Disagree (1–2) %
1	Adapting language use across cultures	3.96	0.79	77.63	17.11	5.26
2	Learning cultural perspectives and ways of life	4.03	0.92	75.00	17.11	7.89
3	Understanding verbal and non-verbal communication styles	4.12	0.83	82.89	13.16	3.95
4	Increased awareness of cultural differences	3.89	0.87	69.74	23.68	6.58
5	Recognizing cultural influence on communication	4.11	0.82	76.32	21.05	2.63
6	Improving appropriate intercultural interaction	4.12	0.90	81.58	11.84	6.58
7	Increased confidence in intercultural communication	4.18	0.77	82.89	14.47	2.63
8	Understanding cultural norms and values	3.99	0.97	71.05	19.74	9.21
9	Developing intercultural communication skills	4.00	0.92	75.00	18.42	6.58
10	Understanding traditions and communication practices	4.07	0.95	81.58	10.53	7.89
11	Accessing authentic cultural content	4.01	0.88	72.37	22.37	5.26

Note. *M* = Mean; *SD* = Standard Deviation. Item descriptions are abbreviated for presentation purposes. Full questionnaire items are provided in Appendix A.

Items related to intercultural awareness and understanding were also positively evaluated, although mean scores were slightly lower overall. Students generally agreed that AI-supported tools contributed to their understanding of cultural differences, norms, and perspectives in other societies. However, items specifically related to heightened cultural awareness showed comparatively higher proportions of neutral responses, suggesting greater variability in students' perceptions regarding the depth of cultural understanding fostered through AI-supported learning.

To provide an aggregated view of these findings, Table 3 presents category-level descriptive statistics for the two analytical dimensions. Students reported slightly stronger perceptions of the impact of AI-supported tools on Intercultural Communication Styles ($M = 4.08$, $SD = 0.63$) than on Intercultural Awareness and Understanding ($M = 3.99$, $SD = 0.67$). Both dimensions fell within the high interpretation range, indicating overall agreement regarding the intercultural benefits of AI-supported tools.

Table 3 *Category-Level Descriptive Statistics for Perceived Intercultural Competence Development (N = 76)*

Dimension	<i>M</i>	<i>SD</i>	Interpretation Level	Agree (≥ 4) %
Intercultural Awareness and Understanding	3.99	0.67	High	67.11
Intercultural Communication Styles	4.08	0.63	High	73.68
Overall (All Items)	4.04	0.61	High	68.42

Note. For each dimension, participants' composite scores were calculated by averaging the relevant items. Means represent the average of participants' composite scores, and standard deviations reflect variability among participants. Agreement percentages indicate the proportion of participants with composite mean scores of 4.00 or higher. Interpretation levels were based on the following classification ranges: low (1.00–2.33), moderate (2.34–3.66), and high (3.67–5.00).

This pattern nevertheless suggests that students perceived the contribution of AI-supported tools somewhat more clearly in relation to communication-focused skills and communicative confidence than to broader dimensions of cultural awareness and understanding. Overall, the quantitative results suggest that Saudi EFL university students generally perceived AI-supported language learning tools as supportive resources for developing intercultural communicative competence, with particularly strong perceived benefits for interaction-oriented and communication-related dimensions of intercultural learning.

Although the mean score for Intercultural Communication Styles was marginally higher than that for Intercultural Awareness and Understanding, the difference was small and not statistically significant, as indicated by a paired-samples *t*-test, $t(75) = 1.64$, $p = .106$, $dz = 0.19$ (see Appendix B). Exploratory analyses further indicated statistically significant differences based on gender and study level for Intercultural Awareness and Understanding, with female students and students at more advanced study levels reporting slightly higher awareness scores ($p < .05$). No statistically significant differences were found for Intercultural Communication Styles across gender or study level.

Students' Reported Experiences with AI-Supported Tools for Intercultural Learning

This subsection presents qualitative findings related to Research Question 2, which explored Saudi EFL university students' experiences and examples of using AI-supported language learning tools to learn about cultural norms, perspectives, and intercultural communication practices. Analysis of participants' open-ended responses revealed four major themes reflecting how students experienced the intercultural affordances of AI-supported tools (see Table 4).

Table 4 *Themes Identified in Students' Experiences of AI-Supported Intercultural Learning*

Theme	Description	Example Codes
Access to Cultural Explanations and Contextualized Knowledge	AI-supported tools provided cultural explanations, contextual meanings, and culturally situated examples that enhanced learners' understanding of other cultures.	Cultural meanings, contextual explanations, traditions, hospitality, cultural values
Learning Communication Styles, Pragmatics, and Appropriateness	Students used AI-supported tools to understand differences in communication styles, politeness, slang, formality, and culturally appropriate language use.	Politeness, indirectness, slang, formality, appropriateness
Perspective-Taking and Simulated Intercultural Interaction	AI-supported tools enabled learners to explore alternative cultural perspectives and engage in simulated intercultural interaction.	Role-play, cultural perspectives, simulated interaction, confidence
Perceived Benefits and Limitations of AI-Mediated Cultural Learning	Students recognized both the affordances and limitations of AI-supported intercultural learning, particularly regarding authenticity and emotional depth.	Convenience, confidence, lack of emotional depth, real interaction

Access to Cultural Explanations and Contextualized Knowledge

One frequently occurring pattern involved students' increased understanding of cultural meanings, norms, and contextualized communication practices. Many participants reported that AI-supported tools provided quick access to cultural explanations and contextual information that would otherwise require extensive independent research. One participant explained that AI helped "minimize the

time used in research about other cultures” (S1), while another noted that AI tools “teach more than just words, they explain cultural meanings and habits” (S8). Students frequently emphasized that AI-supported tools helped them move beyond literal translation toward understanding how language reflects cultural values and everyday practices.

Several responses also highlighted the role of contextualized examples in supporting cultural understanding. One participant described asking AI about cultural traditions after observing an unfamiliar practice, explaining: “I saw an American wear cowboy boots with their suit and I asked ChatGPT about it and it helped me understand the tradition and it helped me when I spoke with the person” (S25). Another student explained that AI-supported tools clarified how culturally embedded expressions may carry meanings that differ from literal translation, particularly in relation to hospitality and politeness practices (S42). These findings suggest that students perceived AI-supported tools as accessible cultural informants that supported contextualized intercultural understanding.

Learning Communication Styles, Pragmatics, and Appropriateness

Participants also emphasized the role of AI-supported tools in understanding communication styles, pragmatics, and culturally appropriate language use. Students frequently reported that AI-supported tools helped them understand differences in politeness, formality, slang, and indirect communication across cultures. For example, one participant stated that “Japanese speech is more polite, while American speech is more casual” (S27), while another explained that AI tools helped them learn “when something is appropriate to say in another language” (S41). Other students highlighted the usefulness of AI-supported tools in understanding dialects, humour, and slang, particularly in situations where meaning depended heavily on cultural context.

Participants also described learning how communication practices vary according to social and cultural expectations. One student noted that AI explained “how greetings or politeness levels change between cultures” (S22), while another reported learning why some cultures prefer indirect communication styles to maintain social harmony (S44). Such responses indicate that students perceived AI-supported tools as particularly useful for developing pragmatic awareness and adapting communication practices across intercultural contexts.

Perspective-Taking and Simulated Intercultural Interaction

Several responses referred to the use of AI-supported tools for exploring alternative cultural perspectives and simulating intercultural interaction. Some responses referred to asking AI systems to generate culturally situated responses, role-play scenarios, or explain how individuals from different backgrounds might respond in specific situations. One participant explained: “I can easily use AI to answer me in another culture’s perspective” (S4), while another described “asking ChatGPT to pretend to be someone from another culture” (S19). These experiences enabled learners to experiment with intercultural interaction in low-risk environments and explore unfamiliar perspectives through simulated dialogue.

Students also associated these experiences with increased confidence and reduced anxiety during intercultural communication. Several participants reported that AI-supported tools helped them avoid misunderstandings, communicate more respectfully, and better interpret culturally unfamiliar situations. These findings suggest that students perceived AI-supported environments not only as sources of information but also as spaces for communicative practice, experimentation, and intercultural reflection.

Perceived Benefits and Limitations of AI-Mediated Cultural Learning

Although students generally expressed positive perceptions of AI-supported intercultural learning, many also acknowledged important limitations. Participants frequently described AI-supported tools as useful supplementary resources rather than substitutes for authentic human interaction. One participant explained that although AI tools improved cultural understanding, “real conversations are still more useful for learning about different cultures” (S3). Another student similarly observed that AI-mediated interaction remained “somewhat theoretical, as emotional and spontaneous human elements are still difficult to fully replicate” (S10).

These reflections reveal a relatively nuanced view of AI-mediated intercultural learning, in which participants acknowledged both the affordances and the limitations of AI-supported interaction. While AI-supported tools were perceived as valuable for accessing cultural information, practicing communication, and exploring perspectives, participants also emphasized that authentic intercultural interaction involves emotional, relational, and spontaneous dimensions that AI cannot fully reproduce. Rather than viewing AI-supported tools as replacements for authentic intercultural communication, participants generally positioned them as supplementary pedagogical resources that could support intercultural learning and communicative practice.

Discussion

This study examined Saudi EFL university students’ perceptions and experiences regarding the role of AI-supported language learning tools in developing intercultural communicative competence (ICC), particularly intercultural awareness and understanding and intercultural communication styles. Overall, the findings indicate that students generally perceived AI-supported tools positively and viewed them as supportive resources for intercultural learning, communicative practice, and engagement with culturally situated language use.

In relation to RQ1, the quantitative findings demonstrated consistently positive perceptions across both intercultural dimensions, with mean scores for all questionnaire items falling within the high interpretation range. These findings are consistent with recent research showing that AI-mediated language learning environments may support learner engagement, communication practice, and intercultural learning through accessibility, personalization, and immediate feedback (Karataş et al., 2024; Kohnke et al., 2025; Liu, 2025). Within intercultural communication education, this pattern may reflect learners’ increasing familiarity with AI-supported environments as accessible spaces for exploring communication practices and cultural perspectives beyond conventional classroom interaction. The findings also support emerging research suggesting that AI-supported learning environments may contribute to ICC development when linguistic and intercultural objectives are intentionally integrated into instructional design (Sun, 2025).

Although students reported slightly higher mean scores for intercultural communication styles than for intercultural awareness and understanding, the difference between the two dimensions was not statistically significant. Consequently, the findings should not be interpreted as demonstrating a clear differential impact of AI-supported tools across ICC dimensions. Instead, the qualitative findings point to communication-related affordances of AI-supported tools as being more immediately observable in learners’ experiences. Students frequently described using AI-supported tools to evaluate communicative appropriateness, interpret communication norms, and adapt language use across intercultural situations. From the perspective of Byram’s (2021) model, these experiences correspond most closely to interaction-oriented dimensions of ICC involving pragmatic awareness, communicative adaptability, and context-sensitive intercultural communication. Similar tendencies have been reported in

AI-mediated language learning research emphasizing the role of conversational agents and adaptive systems in supporting communication rehearsal, interactional confidence, and pragmatic experimentation (Fiorucci, 2026; Hastomo et al., 2025; McCallum, 2024). At the same time, the absence of statistically significant differences between the two dimensions reinforces the multidimensional nature of ICC, in which intercultural knowledge, awareness, and interactional skills develop interdependently rather than separately (Deardorff, 2020; Fantini, 2020).

Responses to RQ2 offered more detailed insight into how learners experienced AI-supported intercultural learning in practice. Participants frequently described using AI-supported tools to access explanations of cultural norms, values, communication practices, and culturally embedded meanings that extended beyond literal translation. Students appeared to value the immediacy and accessibility of AI-generated explanations, particularly when engaging with unfamiliar cultural references or intercultural communication scenarios. The results reinforce recent arguments that AI-supported tools may function as accessible sources of contextualized cultural information and intercultural communication support (Klimova & Chen, 2024). However, students' responses also suggest that such learning remained exploratory and situational rather than necessarily leading to deeper intercultural understanding. This distinction is important because it suggests that exposure to AI-generated cultural information alone may not automatically foster reflective or critically informed intercultural awareness.

Another recurring pattern involved the role of AI-supported tools in developing pragmatic awareness and communicative confidence. Many participants reported that AI-supported interaction helped them recognize differences in politeness, formality, slang, indirectness, and culturally appropriate communication across contexts. Several students additionally described AI-mediated interaction as psychologically supportive because it reduced anxiety associated with intercultural communication and enabled experimentation with culturally sensitive communication in relatively low-risk environments. Similar observations have been reported in studies suggesting that AI conversational agents are often perceived as non-judgmental interlocutors that encourage communicative experimentation and interactional confidence (Hastomo et al., 2025; Saka, 2025). These findings may be particularly significant in EFL contexts where opportunities for direct intercultural interaction remain limited. In such contexts, AI-supported environments may provide accessible forms of indirect intercultural exposure and communicative rehearsal that supplement classroom-based intercultural learning (Zou, 2025).

Despite these perceived benefits, the findings also reveal important tensions regarding the limitations of AI-mediated intercultural learning. Although participants generally valued AI-supported tools, many distinguished between informational support and authentic intercultural engagement. Students frequently emphasized that emotionally nuanced and spontaneous human interaction could not be fully replicated through AI-mediated communication. This finding suggests that learners did not passively accept AI-generated cultural content, but instead recognized the relational, affective, and contextually situated dimensions of intercultural communication that remain dependent on human interaction. These concerns closely align with recent scholarship cautioning that AI-mediated interaction may reproduce simplified cultural representations or fail to capture culturally nuanced dimensions of communication such as empathy, emotional responsiveness, humour, and relational authenticity (Dai & Hua, 2025; Zhai & Wibowo, 2023). The findings therefore reinforce arguments that AI-supported intercultural learning requires critical engagement and pedagogical mediation rather than uncritical reliance on AI-generated cultural information (Fiorucci, 2026; Holliday et al., 2021).

The study contributes to emerging research on AI-mediated intercultural learning in several ways. First, it provides empirical evidence from a Saudi higher education EFL context, which remains comparatively underrepresented in current scholarship on AI and intercultural communication education. Second, by integrating quantitative and qualitative data, the study moves beyond perception-based

measurement alone and provides insight into how learners experience and interpret AI-mediated intercultural learning in practice. Third, the study contributes theoretically by examining AI-supported intercultural learning through the lens of Byram's ICC framework, thereby helping clarify how learners perceive AI-supported tools as contributing to intercultural awareness, communicative adaptability, and interaction-oriented dimensions of intercultural competence.

The findings also carry important pedagogical implications for intercultural communication education in EFL contexts. AI-supported tools appear particularly valuable as supplementary resources that can expand opportunities for intercultural exposure, pragmatic communication practice, and culturally contextualized learning beyond the classroom. However, the findings also suggest that deeper intercultural understanding and critical cultural awareness are unlikely to develop through technological exposure alone. The educational value of AI-supported intercultural learning therefore appears to depend substantially on pedagogical mediation, guided reflection, and opportunities for meaningful intercultural engagement. For instructors and curriculum designers, this implies integrating AI-supported tools within structured and theory-informed instructional practices that balance the accessibility and efficiency of AI-mediated learning with opportunities for dialogic interaction, reflective interpretation, and human-mediated intercultural communication.

Conclusion

This study explored Saudi EFL university students' perceptions and experiences regarding the role of AI-supported language learning tools in intercultural communication education, particularly in relation to intercultural awareness and understanding and intercultural communication styles. Using a mixed-methods approach, the study examined how learners in a Saudi higher education context engage with AI-supported environments for intercultural learning and communication practice.

The findings indicated that students generally viewed AI-supported tools as useful resources for intercultural learning. Participants particularly valued these tools for accessing contextualized cultural explanations, exploring communication norms and appropriateness, engaging in perspective-taking, and building confidence in intercultural interaction. At the same time, learners recognized important limitations of AI-mediated communication, especially regarding emotional depth, spontaneity, and authentic human engagement. These patterns highlight that AI-supported intercultural learning appears most meaningful when combined with reflective, dialogic, and pedagogically guided learning practices rather than technological exposure alone.

The study contributes to intercultural communication education by illustrating how AI-supported tools may support communicative practice, intercultural reflection, and culturally situated learning in EFL contexts where opportunities for direct intercultural interaction are limited. It also extends emerging research on AI-mediated language learning by foregrounding learners' perceptions and experiences within an underrepresented Saudi higher education context and by examining these experiences through the lens of established ICC frameworks.

Several limitations should nevertheless be acknowledged. First, the study relied primarily on students' self-reported perceptions and experiences rather than direct assessment of their actual intercultural communicative competence. As a result, the findings reflect how learners perceived the intercultural affordances of AI-supported tools rather than measurable changes in intercultural performance or behavior. Second, the study did not examine learners' actual interactions with AI systems, including the prompts students used or the nature and quality of AI-generated responses. Consequently, the study cannot determine how specific forms of AI-mediated interaction may shape intercultural learning processes in practice. In addition, the relatively modest sample and focus on students from a single Saudi university limit the broader transferability of the findings to other EFL and higher education contexts.

Future research could address these limitations by combining perception-based data with performance-based measures of intercultural communicative competence and by examining authentic AI-mediated interaction data. Studies analyzing students' prompts, AI-generated responses, and patterns of intercultural interaction may provide deeper insight into how AI-supported learning environments shape intercultural understanding, pragmatic awareness, and communication practices. Comparative research exploring differences between AI-supported intercultural role-play and human intercultural exchange would also contribute to a more nuanced understanding of the pedagogical possibilities and limitations of AI-mediated intercultural learning.

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Data Availability Statement

The data collected for this research will be made available upon request and will be shared in accordance with applicable data protection and privacy regulations.

Conflict of Interest Disclosure

No conflicts of interest were present in this research, which was conducted with integrity and adherence to ethical standards and guidelines.

Ethics Approval Statement

This study was approved by the Ethics Committee of Imam Mohammad Ibn Saud Islamic University (IMSIU) (Approval No. 638940658146031332). All research activities were conducted in accordance with the relevant guidelines and regulations applicable to studies involving human participants.

References

- Baker, W. (2015). *Culture and identity through English as a lingua franca: Rethinking concepts and goals in intercultural communication*. De Gruyter Mouton. <https://doi.org/10.1515/9781501502149>
- Baker, W. (2016). Identity and interculturality through English as a lingua franca. *Journal of Asian Pacific Communication*, 26(2), 340–347. <https://doi.org/10.1075/japc.26.2.09bak>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Byram, M. (1997). *Teaching and assessing intercultural communicative competence*. Multilingual Matters.
- Byram, M. (2021). *Teaching and assessing intercultural communicative competence: Revisited*. Multilingual Matters. <https://doi.org/10.21832/9781800410251>
- Chen, G. M., & Young, P. (2012). Intercultural communication competence. In A. K. Goodboy & K. Shultz (Eds.), *Intercultural communication* (pp. 175–188). Kendall Hunt.

- Chen, J. J., & Yang, S. C. (2014). Fostering foreign language learning through technology-enhanced intercultural projects. *Language Learning & Technology*, 18(1), 57–75. <https://doi.org/10.64152/10125/44354>
- Chen, Y., & Wei, L. (2025). Effects of artificial intelligence learning environments on engineers' intercultural communication competence: Mediating role of learning adaptability. *Interactive Learning Environments*, 33(2), 1404–1421. <https://doi.org/10.1080/10494820.2024.2371937>
- Çiftçi, E. Y. (2016). A review of research on intercultural learning through computer-based digital technologies. *Journal of Educational Technology & Society*, 19(2), 313–327. <http://www.jstor.org/stable/jeductechsoci.19.2.313>
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). Sage.
- Dai, D. W., & Hua, Z. (2025). When AI meets intercultural communication: New frontiers, new agendas. *Applied Linguistics Review*, 16(2), 747–751. <https://doi.org/10.1515/applirev-2024-0185>
- Deardorff, D. K. (2006). Identification and assessment of intercultural competence as a student outcome of internationalization. *Journal of Studies in International Education*, 10(3), 241–266. <https://doi.org/10.1177/1028315306287002>
- Deardorff, D. K. (2020). *Manual for developing intercultural competencies: Story circles*. Routledge & UNESCO Publishing. <https://doi.org/10.4324/9780429244612>
- Dörnyei, Z. (2007). *Research methods in applied linguistics*. Oxford University Press.
- Fantini, A. E. (2020). Reconceptualizing intercultural communicative competence: A multinational perspective. *Research in Comparative and International Education*, 15(1), 52–61. <https://doi.org/10.1177/1745499920901948>
- Fares, S., & Boudersa, N. (2025). Cultivating EFL learners' intercultural communicative competence through AI-powered chatbots. *Afaq for Sciences Journal*, 10(4), 305–315. <https://asjp.cerist.dz/en/article/275533>
- Fiorucci, W. (2026). Intercultural communicative competence in the language curriculum: AI-assisted approaches. In: Fiorucci, W., Sforza Tarabochia, A. (eds) *The impact of AI on language education*. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-032-16520-6_10
- Greene, J. C. (2007). *Mixed methods in social inquiry*. Jossey-Bass.
- Gutiérrez-Santiuste, E., & Ritacco-Real, M. (2023). Intercultural communicative competence in higher education through telecollaboration: Typology and development. *Education and Information Technologies*, 28, 13885–13912. <https://doi.org/10.1007/s10639-023-11751-3>
- Hastomo, T., Widiati, U., Ivone, F. M., Zen, E. L., Hasbi, M., & Khulel, B. (2025). AI-powered conversational agents and intercultural learning: Insights from Indonesian EFL students. *Intercultural Communication Education*, 8(1), Article 103127. <https://doi.org/10.29140/ice.v8n1.103127>
- Hoff, H. E. (2020). The evolution of intercultural communicative competence: Conceptualisations, critiques and consequences for 21st century classroom practice. *Intercultural Communication Education*, 3(2), 55–74. <https://doi.org/10.29140/ice.v3n2.264>
- Holliday, A., Hyde, M., & Kullman, J. (2021). *Intercultural communication: An advanced resource book for students* (3rd ed.). Routledge. <https://doi.org/10.4324/9780367482480>
- Karataş, F., Abedi, F. Y., Ozek Gunyel, F., Karadeniz, D., & Kuzgun, Y. (2024). Incorporating AI in foreign language education: An investigation into ChatGPT's effect on foreign language learners. *Education and Information Technologies*, 29, 19343–19366. <https://doi.org/10.1007/s10639-024-12574-6>
- Klimova, B., & Chen, J. H. (2024). The impact of AI on enhancing students' intercultural communication competence at the university level: A review study. *Language Teaching Research Quarterly*, 43, 102–120. <https://doi.org/10.32038/ltrq.2024.43.06>
- Kohnke, L., Zou, D., & Su, F. (2025). Exploring the potential of GenAI for personalised English teaching: Learners' experiences and perceptions. *Computers and Education: Artificial Intelligence*, 8, Article 100371. <https://doi.org/10.1016/j.caeai.2025.100371>

- Liu, J. (2025). Exploring the impact of artificial intelligence-enhanced language learning on youths' intercultural communication competence. *Humanities and Social Sciences Communications*, 12, Article 1757. <https://doi.org/10.1057/s41599-025-06033-x>
- McCallum, L. (2024). New takes on developing intercultural communicative competence: Using AI tools in telecollaboration task design and task completion. *Journal for Multicultural Education*, 18(1–2), 153–172. <https://doi.org/10.1108/JME-06-2023-0043>
- McConachy, T. (2022). Pragmatic awareness in intercultural language learning. In I. Kecskes (Ed.), *The Cambridge handbook of intercultural pragmatics* (pp. 766–787). Cambridge University Press.
- McConachy, T., & Liddicoat, A. J. (Eds.). (2021). *Teaching and learning second language pragmatics for intercultural understanding*. Routledge. <https://doi.org/10.4324/9781003094128>
- Nameni, A. (2022). An investigation into Iranian employees' intercultural communicative competence: Does learning English as a foreign language help? *Journal of Intercultural Communication Research*, 51(4), 361–382. <https://doi.org/10.1080/17475759.2021.2006752>
- Saka, Z. (2025). *Intercultural communicative competence (ICC) among EFL learners and teachers and the potential for AI as a guide* [Master's thesis, Syracuse University]. <https://surface.syr.edu/thesis/991/>
- Shadiev, R., & Sintawati, W. (2020). A review of research on intercultural learning supported by technology. *Educational Research Review*, 31, Article 100338. <https://doi.org/10.1016/j.edurev.2020.100338>
- Sun, L. (2025). Enhancing intercultural competence of Chinese English majors through AI-enabled Collaborative Online International Learning (COIL) in the digital era. *Education and Information Technologies*, 30, 7995–8027. <https://doi.org/10.1007/s10639-024-13143-7>
- Teo, T. (2019). Students and teachers' intention to use technology: Assessing their measurement equivalence and structural invariance. *Journal of Educational Computing Research*, 57(1), 201–225. <https://doi.org/10.1177/0735633117749430>
- Toscu, S. (2026). AI-supported telecollaboration for promoting intercultural communicative competence. In T. Paker, G. Ekşi, & Ç. Atmaca (Eds.), *Pedagogical innovations in AI-supported intercultural communications* (pp. 323–354). IGI Global Scientific Publishing. <https://doi.org/10.4018/979-8-3373-6325-7.ch010>
- Wei, L. (2023). Artificial intelligence in language instruction: Impact on English learning achievement, L2 motivation, and self-regulated learning. *Frontiers in Psychology*, 14, Article 1261955. <https://doi.org/10.3389/fpsyg.2023.1261955>
- Xia, Y., Shin, S. Y., & Kim, J. C. (2024). Cross-cultural intelligent language learning system (CILS): Leveraging AI to facilitate language learning strategies in cross-cultural communication. *Applied Sciences*, 14(13), 5651. <https://doi.org/10.3390/app14135651>
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education – Where are the educators? *International Journal of Educational Technology in Higher Education*, 16, Article 39. <https://doi.org/10.1186/s41239-019-0171-0>
- Zhai, C., & Wibowo, S. (2023). A systematic review on artificial intelligence dialogue systems for enhancing English as a foreign language students' interactional competence in the university. *Computers and Education: Artificial Intelligence*, 4, Article 100134. <https://doi.org/10.1016/j.caeai.2023.100134>
- Zou, M. (2025). Exploring the dynamics of intercultural contact and intercultural communicative competence among Chinese college students. *Intercultural Communication Education*, 8(2), Article 103321. <https://doi.org/10.29140/ice.v8n2.103321>

Appendices

Appendix A. Study Questionnaire

The following questionnaire was administered to Saudi EFL university students to examine their perceptions of the role of AI-supported language learning tools in developing intercultural communicative competence.

Demographic Information

1. Gender:

☐ Male ☐ Female

2. Age: _____ years

Level of Study:

☐ First year ☐ Second year ☐ Third year ☐ Fourth year

AI-supported tools and Intercultural competence

1. Using AI-supported tools helps me adapt my language use to communicate effectively with people from different cultural backgrounds.
2. AI-supported language learning tools help me learn about different cultural perspectives and ways of life.
3. AI-supported tools help me understand differences in verbal and non-verbal communication styles across cultures.
4. Using AI-supported language learning tools has increased my awareness of cultural differences between societies.
5. These tools help me recognize how cultural backgrounds influence the way people communicate.
6. AI-supported language learning tools have improved my ability to interact appropriately with people from other cultures.
7. Using AI-supported tools makes me more confident when communicating with people from different cultural backgrounds.
8. These tools help me understand cultural norms, values, and social behaviors in other cultures.
9. AI-supported language learning tools help me develop skills needed for effective intercultural communication.
10. AI-supported tools enhance my understanding of cultural differences, such as traditions, values, and communication practices.
11. AI-supported language learning tools provide authentic cultural content that improves my understanding of other cultures.

Note. The questionnaire was developed by the researchers for the purposes of the present study and was informed by established conceptualizations of intercultural communicative competence (ICC) in applied linguistics. The instrument drew primarily on Byram's (1997, 2021) ICC framework while also incorporating communication-oriented and pragmatic dimensions emphasized in intercultural communication and AI-mediated language learning research. The items were designed to examine learners' perceptions of how AI-supported language learning tools contribute to intercultural awareness, cultural understanding, communication adaptability, pragmatic appropriateness, and interaction-oriented intercultural communication skills.

Open Questions

1. **In your opinion, how have AI-supported language learning tools influenced your understanding of and ability to interact with people from different cultural backgrounds?**
(You may consider how these tools have helped you understand cultural norms, communication styles, or cultural perspectives.)
2. **Can you describe one or more specific examples of how AI-supported language learning tools have helped you learn about cultural differences or communication styles?**
(For example, through cultural explanations, feedback, examples, or simulated scenarios.)

Appendix B. Comparison of Intercultural Competence Dimensions

Table B1 *Paired-Samples t Test Comparing Intercultural Competence Dimensions ($N = 76$)*

Comparison	Mean Difference	t	df	p	Cohen's dz
Intercultural Communication Styles vs. Intercultural Awareness & Understanding	0.08	1.64	75	.106	0.19

Note. Mean difference represents Intercultural Communication Styles minus Intercultural Awareness and Understanding. Effect size is reported as Cohen's dz .