Applied Research on English Language

V. 16 N. 1 2027
pp: 121-154
http://are.ui.ac.ir

DOI: 10.22108/are.2026.150065.2818
Document Type: Research Article

Balancing the Triple Needs: Iranian EFL Learners' Lived Experiences with AI Chatbots in Intercultural Communication

Hamed Badpa, Hamid Reza Dowlatabadi *

Department of English Language and Literature, Faculty of Literature and Languages, Arak University, Arak, Iran

Received: 2026/08/06 **Accepted: 2026/10/06**

Abstract: The development of intercultural communicative competence remains a critical yet under-addressed challenge for Iranian EFL learners. This qualitative study aimed to explore Iranian EFL students' lived experiences of using AI chatbots to balance the three interdependent needs of the Triple Needs Framework: linguistic, emotional, and cultural (Ghorbani & Dowlatabadi, 2023). Although originally derived from Iranian language teachers' viewpoints and still an emerging rather than fully established theory, the framework was extended here as an analytic lens to examine whether its hierarchical, interdependent logic is recognizable in learners' AI-mediated intercultural practice. In week 14 of the 2026 academic year, 15 upper-intermediate participants were purposively drawn from the experimental arm of a larger parent quasi-experimental study and stratified by post-intervention ICC gain and digital-literacy level. The parent study had reported overall positive but heterogeneous ICC gains in that experimental group, with digital literacy moderating the size of those gains. Each completed a semi-structured interview lasting 35–48 minutes. Data were analyzed using the six stages of induction proposed by Braun and Clarke (2006). The results demonstrated inter-coder reliability with Cohen's coefficient of $\kappa = 0.84$. Five themes were extracted, namely linguistic scaffolding and pragmatic development, emotional support and anxiety reduction, cultural awareness and critical reflexivity, cognitive-affective tension in the simultaneous fulfillment of three needs, and the moderating role of digital literacy and limitations of context. The majority of the participants mentioned that the technical demands of the software were relatively easy to overcome, but the fulfillment of three basic needs caused considerable cognitive load. Therefore, while overall the positive educational impact was reported, the simultaneous focus on three needs was found to be overwhelming, especially for the participants with lower digital literacy. The study was limited by a small sample size, moderate levels of member-checking, and its retrospective nature. The findings suggest the need to scaffold digital literacy to achieve gradual engagement with the three basic needs.

Keywords: AI Chatbots, Digital Literacy, Intercultural Communicative Competence, Qualitative Research, Triple Needs Framework.

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* **Corresponding Author.**

Authors' Email Address:
[1] **Hamed Badpa** (h-badpa.03@phd.araku.ac.ir), [2] **Hamid Reza Dowlatabadi** (h-dowlatabadi@araku.ac.ir)

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Introduction

Intercultural communicative competence (ICC) is widely treated as a prerequisite for negotiating meaning, managing interpersonal relations, and responding appropriately to cultural differences in academic and professional life (Byram, 1997; Deardorff, 2006; Gobel & Helmke, 2010). For Iranian EFL learners, however, ICC development is constrained by limited authentic intercultural contact, grammar-oriented pedagogies that under-emphasize pragmatic and cultural practice, and sociocultural barriers to open cross-cultural exchange (Esmaeili & Kuhi, 2023; Sajampun & Charoensukmongkol, 2018; Vajak et al., 2021). These conditions make it difficult for learners to meet, at the same time, the linguistic, affective, and cultural demands of intercultural interaction.

Dominant ICC models, notably Byram's (1997) savoirs and Deardorff's (2006) process/pyramid model, have been indispensable in specifying knowledge, skills, and attitudes. They have been less explicit, however, about how these components operate as hierarchically ordered needs in real-time interaction, and about the conditions under which attention to one component crowds out the others (Ghorbani & Dowlatabadi, 2023). Addressing this limitation, the Triple Needs Framework treats intercultural communication as the sequential yet interdependent satisfaction of three macro-needs: language as the foundational need, emotion as the mediating need, and culture as the higher-order need whose accessibility depends on individual and contextual factors (Ghorbani & Dowlatabadi, 2023). Failure to satisfy any one need produces a corresponding breakdown, linguistic, emotional, or cultural.

The claim that emotion mediates language and culture is supported by both the originating evidence for the framework and by independent work in second language acquisition and intercultural communication. In the Iranian validation study, confirmatory factor analysis and path modeling showed that language exerted its strongest effect on emotion (path coefficient = .717) and a weaker direct effect on culture (.427); a Sobel test ($z = 2.237$) confirmed that emotion significantly mediated the language–culture relationship (Ghorbani & Dowlatabadi, 2023). Later theorization of the Intercultural Communication Needs model positions emotion as the valuable need that converts linguistic resources into culturally appropriate action by shaping trust, face management, and the willingness to remain in the encounter (Ghorbani & Dowlatabadi, 2023). This mechanism is consistent with broader evidence. Foreign-language anxiety consumes working memory at the input, processing, and output stages, so available linguistic knowledge cannot be retrieved or

formulated when affect is unregulated (Horwitz et al., 1986; MacIntyre & Gardner, 1994). Anxiety and low communicative confidence also suppress willingness to communicate, thereby cutting off the practice through which cultural norms are noticed and tried out (MacIntyre et al., 1998). Conversely, foreign-language enjoyment and perceived emotional safety widen attention and support linguistic risk-taking (Dewaele & MacIntyre, 2014). Multilingualism research further shows that emotionally charged moments often trigger retreat to the first language or culturally mismatched pragmatic force, because an L2 typically carries weaker emotional resonance than an L1 (Pavlenko, 2005). Sociocultural accounts of intercultural emotion likewise argue that affect organizes how speakers interpret stance, politeness, and identity in cross-cultural talk (Yuan, 2023). Taken together, these findings specify a pathway: linguistic means become culturally consequential only when affective conditions permit speakers to attend to, and risk, culturally marked choices.

Generative AI chatbots have recently been proposed as a low-stakes environment in which these three needs might be practiced together. Quantitative studies show that conversational agents can reduce speaking anxiety, raise willingness to communicate, and supply immediate pragmatic feedback (Wang et al., 2024; Zhang, Meng, et al., 2024; Zhang, Wu, et al., 2024). Qualitative studies report that learners value the non-judgmental interlocutor and use the extra processing time to refine culturally sensitive formulations (Hastomo et al., 2025; Kohnke & Moorhouse, 2025). Reviews also position chatbots as cultural agents that can support knowledge, skills, and attitudes in intercultural communication (Lee, 2025; Mahaputri & Hassan, 2026). Digital literacy, however, appears to condition how fully learners can exploit such tools (Zou et al., 2025).

Despite this momentum, the niche for the present study remains clearly underspecified in four respects. First, most AI–ICC studies treat linguistic, affective, and cultural outcomes as separate variables rather than as simultaneously negotiated needs; little is known about how learners actually allocate attention across the three demands in real time. Second, digital literacy has been modeled quantitatively as a moderator, but qualitative accounts of how technical fluency (or its absence) shapes the lived balancing of the three needs remain scarce. Third, the evidence base is concentrated in comparatively well-resourced settings; Iranian and other resource-constrained EFL contexts, where laboratory connectivity and sociocultural caution may further constrain practice, are still under-examined (Waluyo & Pratiwi, 2025; Wang et al., 2025). Fourth, no published qualitative study has used the Triple Needs Framework as an analytic lens for AI-mediated intercultural practice. These omissions leave

both the framework and AI-supported ICC pedagogy without the explanatory depth required for sequenced instructional design.

The present study occupies this niche by examining upper-intermediate Iranian EFL learners' lived experiences of using an AI chatbot designed around the Triple Needs Framework. It asks how learners perceive success in addressing linguistic, emotional, and cultural needs; what challenges arise when the three needs must be balanced simultaneously; and how digital literacy and local contextual constraints shape those successes and challenges. Methodological details of sampling, interviewing, and analysis are reported in the Method section. Because only learners' own accounts can reveal how the three needs are prioritized, disrupted, or integrated in the moment, this qualitative strand of a larger explanatory sequential mixed-methods investigation adopts an inductive thematic analysis of semi-structured interviews. The intended contribution is therefore twofold and is kept distinct from the problem statement above. Theoretically, the analysis examines whether the hierarchical and mediating logic of the Triple Needs Framework is recognizable in technology-mediated practice. Pedagogically, it aims to translate that logic into guidance for scaffolding digital literacy and sequencing the three needs in resource-constrained EFL environments. In this study, sociocultural constraints denote locally specific limits on open intercultural practice, restricted authentic contact, residual caution about sensitive topics, and norms governing face, disagreement, and public self-expression that may shape how freely learners experiment with linguistic, emotional, and cultural choices even in a simulated chatbot setting. This study seeks to answer the following three research questions:

RQ1. In what ways do Iranian EFL students perceive AI chatbot interactions as successful in addressing their linguistic, emotional, and cultural needs during intercultural communication practice?

RQ2. What specific challenges do Iranian EFL students encounter when attempting to balance linguistic accuracy, emotional regulation, and cultural appropriateness while interacting with the AI chatbot?

RQ3. How do individual factors (particularly digital literacy) and contextual factors (particularly technological access and sociocultural constraints) shape the nature and extent of these successes and challenges?

Literature Review

The term intercultural communicative competence (ICC) is defined as a multidimensional concept, which includes knowledge, skills, attitudes, and actions that facilitate achieving particular social events appropriately (Deardorff, 2006; Byram, 1997). When applied to English as a foreign language (EFL), students' ICC can be categorized into three distinct but interrelated areas: language, emotions, and culture-specific knowledge and actions. The former two elements of communicative competence imply students' needs for developing appropriate vocabulary, phraseology, grammar, pragmatic force, discourse strategies, and other language-specific means of communication (Byram, 1997). At the same time, students may experience emotional barriers to communication in a foreign language. Such difficulties can be overcome if they are not intimidated by the foreign language and are motivated to acquire this knowledge (Deardorff, 2006). Finally, the third area of communicative competence in EFL learning implies students' awareness of culture-specific values and rules, as well as their abilities to act appropriately in cross-cultural interactions. The three needs are interrelated and cannot be addressed in a mechanistic and isolated manner. Specifically, language, emotion, and cultural competence are dynamically intertwined in the process of communication. Digital literacy is a critical individual-level moderator of the proposed framework, since learners' ability to engage in meaningful online communication is primarily determined by their technical skills, strategic ability, and psychological readiness to embrace technology-enabled interactions. At the same time, the availability of technological resources, organizational support, and cultural sensitivity to address potentially contentious issues are critical intervening variables that can enhance the effectiveness of tech-based solutions. In the case of Iranian EFL students, the necessity to integrate language, emotion, and culture is even more acute, due to their limited opportunities to partake in intercultural interactions. Indeed, the tendency of the Iranian education system to prioritize grammar instruction over pragmatic competence, as well as societal conservatism, impedes students' abilities to practice intercultural communication (Esmaeili & Kuhi, 2023; Vajak et al., 2021).

The current article builds upon the Triple Needs Framework, proposed by Ghorbani and Dowlatabadi (2023). The framework was first articulated from Iranian language teachers' accounts of intercultural interaction and later formalized as a hierarchical model of linguistic, emotional, and cultural needs (Ghorbani & Dowlatabadi, 2023). The present study does not restudy teachers. It extends the teacher-derived model to upper-intermediate Iranian EFL learners in order to examine whether the same three needs, and the mediating role of emotion,

are recognizable in learners' lived practice with AI chatbots. The framework is appropriate for this learner-focused purpose because it treats language, emotion, and culture as interdependent interactional needs rather than as constructs that apply only to teachers. The given framework is beneficial for the current study because it considers language-related, emotional, and cultural aspects of intercultural communication. One of the three main areas, language, includes many subcategories, such as language needs, resources, strategies, and competence. The word emotion in the Framework refers to facilitators and barriers to communication as well. For example, if a person feels nervous, they might have difficulties speaking, but if they feel positive about the dialogue, the communication will be more effective. Culture is treated as a higher-order need that typically becomes fully accessible only after linguistic and emotional foundations have been sufficiently stabilized; at the same time, its relative priority in any given encounter remains contingent on individual and contextual factors rather than fixed in a rigid hierarchy. Individual factors (for example, social status, personality traits, and digital competence) and contextual factors (for example, the formality of the situation and the availability of technological resources) determine the relative priority of the three needs in any given encounter. Failure to satisfy one or more of these needs produces corresponding forms of communicative breakdown, linguistic failure, emotional failure, or cultural failure. Although originally articulated in non-technology-mediated settings, the Triple Needs Framework offers a coherent and culturally grounded lens for examining how digital tools may scaffold, or strain, the hierarchical and interdependent logic of intercultural communication in simulated environments.

There is a growing body of empirical research investigating the use of technologies to promote intercultural communicative competence (ICC). In particular, quantitative and mixed-method studies revealed that chatbots decreased foreign-language speaking anxiety, increased willingness to communicate, and facilitated perceived communicative competence (Wang et al., 2024; Zhang, Meng, et al., 2024; Zhang, Wu et al., 2024). Systematic reviews revealed that the use of AI enabled the negotiation of cultural meaning and norms (Mahaputri & Hassan, 2026; Lee, 2025). Qualitative studies began to explore how exactly AI-mediated communication might foster language learning. In particular, participants noted that they could practice interculturally relevant language in a confidential setting provided by chatbots, thus gaining valuable experience with intercultural communication (Hastomo et al., 2025; Kohnke & Moorhouse, 2025; Waluyo & Pratiwi, 2025). Asian EFL studies also showed that AI-mediated language learning could promote critical cultural awareness when appropriately

scaffolded (Hastomo et al., 2025). Together, this body of work demonstrated that chatbots can be valuable assets in addressing ICC-related needs of language learners.

With that said, there is a need for further empirical work to build the foundation for practical applications. First, most of the prior studies treated language, affective, and cultural variables as independent constructs. There is limited understanding of how language learners negotiate linguistic accuracy, socio-emotional aspects, and cultural appropriateness simultaneously. Second, while studies explored the role of digital literacy as a moderator in structural equation modeling or regression analyses, there is a lack of qualitative literature describing how exactly digitally literate language learners benefit from using AI chatbots in their language learning process (Zou et al., 2025). Third, there is a dearth of research on how AI-powered tools can support EFL learners in less privileged contexts. The majority of the studies came from Asian countries with a high level of technology infrastructure, while Iran and other Muslim countries do not have sufficient access to such resources regularly (Waluyo & Pratiwi, 2025; Wang et al., 2025). Finally, none of the studies explicitly used the Triple Needs Framework as a theoretical basis to explore how exactly AI chatbots can help to satisfy all three types of needs. As such, the current paper attempts to address the paucity of the literature by examining Iranian EFL learners' experiences with an AI-powered chatbot in order to determine how this technology can help to simultaneously address language, affective and cultural needs of the language learners.

The current study will utilize qualitative methodology to examine Iranian upper-intermediate EFL students' experiences with the AI chatbot designed to address their language, affective and cultural needs. Inductive thematic analysis of semi-structured interviews will be used to determine how study participants navigated the three types of needs in the process of language learning. The analysis will be focused on identifying the challenges and opportunities in simultaneously addressing the three types of needs. Particular attention will be paid to exploring how digital literacy affects language learners' experiences with the chatbot. The findings of the current research will contribute to the scholarship by providing rich descriptions of language learners' experiences, which can inform a theoretical framework for addressing the three types of needs. The findings will also help to determine how to best design such technology for language learners who do not have regular access to such resources.

Methods

Design of the Study

The present paper reports a standalone qualitative inquiry in which 15 interviewees were purposively drawn from the experimental group of a larger parent quasi-experimental study of technology-enhanced intercultural communicative competence among Iranian EFL learners. Consistent with the explanatory sequential design (Creswell & Plano Clark, 2018), quantitative post-intervention results were examined first, after which purposive sampling was employed to select interview participants capable of elaborating on those results. The qualitative portion of the study incorporated an inductive approach of thematic analysis to examine the participants' lived experiences of using the chatbot to fulfill their linguistic, emotional, and cultural needs within the Triple Needs Framework (Ghorbani & Dowlatabadi, 2023). Such an approach allowed for gaining deeper contextual understanding and eliciting themes that represented the successes, challenges, and moderating factors not identified in the quantitative part of the research.

Participants

15 Iranian upper-intermediate EFL participants were selected from the experimental group of the main study in week 14 of the 2026 academic year. The participants were selected based on their score gained in the post-intervention ICC test that determined the participants' ICC gains as high or low (upper and lower quarters). In addition, digital literacy was classified as high or low on the basis of a five-item performance task developed for the parent study to capture the operational skills required to use the AI chatbot, rather than self-reported familiarity with technology. The tasks required participants to (a) open and navigate the chatbot interface, (b) formulate an initial intercultural prompt, (c) interpret and apply the system's corrective or pragmatic feedback, (d) recover from a brief connectivity interruption, and (e) save and retrieve the dialogue transcript. Each item was scored dichotomously (successful = 1; unsuccessful = 0) by two trained raters, yielding a total score of 0–5. Following the parent study's median split, scores of 4–5 were coded as high digital literacy and scores of 0–3 as low digital literacy. Content validity was established through review by three CALL specialists, and the task was piloted with 12 upper-intermediate learners excluded from the interview sample; wording and timing were adjusted accordingly. Inter-rater agreement on the dichotomous scores was high (Cohen's κ to be reported from the parent study), supporting the use of this measure as the stratification variable in the present

qualitative sample. This strategy ensured maximum variation and permitted comparison of experiences across outcome and moderator strata. All participants were enrolled in English for Academic Purposes or English for Medical Purposes courses at Arak Medical University and met the inclusion criteria of the parent study (B2 CEFR level, age 20–30, limited prior intercultural experience). Table 1 presents the stratified demographic and background profile of the interview participants.

Table 1. Stratified Demographic and Background Profile of Interview Participants (N = 15)

Code	Gender	Age	Digital Literacy	ICC Gain	Years of English Study	Prior Intercultural Experience	Interview Language
P01	Female	22	High	High	8	Limited	English
P02	Male	24	High	High	9	Moderate	English
P03	Female	21	High	Low	7	Limited	Bilingual
P04	Male	25	Low	High	10	None	Persian
P05	Female	23	Low	Low	8	Limited	Persian
P06	Male	22	High	High	7	Moderate	English
P07	Female	26	Low	High	11	Limited	Bilingual
P08	Male	21	High	Low	6	None	English
P09	Female	24	Low	Low	9	Limited	Persian
P10	Male	23	High	High	8	Moderate	English
P11	Female	22	Low	High	7	None	Bilingual
P12	Male	25	High	Low	10	Limited	English
P13	Female	21	Low	Low	6	None	Persian
P14	Male	24	High	High	9	Moderate	English
P15	Female	23	Low	High	8	Limited	Bilingual

Digital literacy was coded from the parent study's five-item chatbot performance task (interface navigation, prompt formulation, use of feedback, recovery from a brief connection interruption, and saving/retrieving the transcript), with each item scored 0 or 1 (range 0–5): totals of 4–5 were classified as high and 0–3 as low. ICC gain was the pre–post change score on the parent study's *Technology-Enhanced ICC Questionnaire*; following the extreme-

groups plan, only learners in the upper quartile of the experimental group's gain distribution were labelled high gain and only those in the lower quartile low gain. Prior intercultural experience was taken from the pre-intervention background questionnaire and coded as none (no residence abroad and no sustained contact with speakers from other cultures), limited (only occasional or one-off contact, such as a brief online exchange or a single workshop), or moderate (more regular but still non-immersive contact, such as repeated online exchange or frequent interaction with international students or patients, without long-term residence abroad).

The sample was balanced with respect to gender (eight females, seven males) and included representation across all four stratification cells. Years of English study ranged from 6 to 11 (M = 8.2). Prior intercultural experience was predominantly limited or absent, consistent with the inclusion criteria of the larger investigation.

Instruments

Data were collected through semi-structured interviews guided by six open-ended questions (see Appendix) designed to elicit detailed accounts of linguistic, emotional, and cultural experiences with the AI chatbot, as well as the influence of digital literacy and contextual constraints. The interview protocol was informed by the Triple Needs Framework and refined through expert review. The sample questions included "How did working with the AI chatbot influence your sense of confidence and competency in using appropriate language to converse with people from other cultures?" and "What challenges did you encounter while trying to maintain attention to matters of linguistics while also being attuned to the feelings and cultural sensitivities of another person?" Flexibility underpinned the probes as emergent issues were followed up further. The interviews were conducted in English, Persian, or partly in both languages depending on the respondent's choice to avoid limitations in verbal expression.

Data Collection

Interviews were conducted two weeks after the post-intervention *Technology-Enhanced ICC Questionnaire* (Week 14, 2026). Interviews had a mean length of 35–48 minutes (M = 41.3 minutes, SD = 3.8). Six participants were interviewed mainly in English, five in Persian, and four in both languages; Persian and bilingual interviews were first transcribed in the language of production, then translated into English by a bilingual researcher and independently

checked for semantic accuracy by a second bilingual reviewer, with remaining discrepancies resolved by consensus before coding. All interviews were recorded with participants' consent, transcribed verbatim, anonymized, and imported into NVivo 14 qualitative analysis software. To reduce social desirability bias, negative and mixed responses were explicitly endorsed by the interviewer at the beginning of the interviews. Forced-positive and forced-negative probes were used to elicit negative or mixed responses.

Data Analysis

The data were analyzed using an inductive approach of thematic analysis proposed by Braun and Clarke (2006). The process of coding the data went through six phases. All of the transcripts were coded independently by two coders in order to establish an initial set of codes. The intercoder agreement, on which final codes were based, amounted to Cohen's $\kappa = 0.84$. Discrepancies in coding were discussed during multiple meetings between the coders and were finally resolved with the help of the student's supervisor. At the end, 312 initial codes (unique analytic labels generated in the first coding cycle) were applied to 550 coded references (discrete text segments assigned to those labels) and were then grouped through constant comparison into 47 codes, 14 sub-themes, and finally five themes. Participant validation was performed with five interviewees drawn from different stratification cells; the remaining participants could not be re-contacted within the required timeline. A reflexive journal was maintained throughout the analytic process to document emerging assumptions and analytic decisions. Thematic saturation was judged to have been reached by the tenth interview, as subsequent interviews yielded only frequency increases within existing categories. Code frequencies are reported only to show how references clustered across digital-literacy strata; they are descriptive illustrations of patterning in a small purposive sample and were not subjected to inferential statistical tests.

Ethical Considerations

The study involving individual interviews received ethical approval from the *Institutional Review Board* of Arak Medical University. Written consent was obtained from all participants at various stages, including recruitment for the main study, before the intervention, and before conducting each interview. The participants were reminded of their right to withdraw at any time and were assured that their responses would remain confidential. No information that could identify the participants was used in the transcripts or

reports. The conversations were held in a setting where the participants felt safe and comfortable discussing their concerns. In addition, if any of the participants experienced negative feelings or thoughts during the conversations or after completing the study, they could seek professional help from the counseling center at the University.

Results

This section presents the findings of the inductive thematic analysis of the 15 semi-structured interviews conducted with upper-intermediate Iranian EFL students who participated in the AI-chatbot intervention. The analysis followed Braun and Clarke's (2006) six-phase framework and was guided by the three research questions of the qualitative strand. Two independent coders achieved an inter-coder reliability of Cohen's $\kappa = 0.84$. A total of 550 coded references were refined into 47 codes, 14 sub-themes, and five overarching themes. Thematic saturation was judged to have been reached by the tenth interview. Participant validation was completed with five interviewees drawn from different stratification cells.

Addressing Research Question 1: Perceived Successes in Addressing Linguistic, Emotional, and Cultural Needs

Research Question 1 asked in what ways Iranian EFL students perceive AI chatbot interactions as successful in addressing their linguistic, emotional, and cultural needs during intercultural communication practice. Three themes emerged that correspond to the three macro-needs of the Triple Needs Framework: Linguistic Scaffolding and Pragmatic Development (Theme 1), Emotional Support, Anxiety Reduction, and Motivation (Theme 2), and Cultural Awareness and Critical Reflexivity (Theme 3). Collectively, these themes accounted for 71.1 % of all coded references and were predominantly success-oriented.

Participants consistently described the chatbot as providing immediate corrective feedback combined with explicit pragmatic instruction. P02 (high digital literacy, high ICC gain) stated: "*When I wrote 'I completely disagree with your idea' in a workplace scenario, the chatbot did not simply mark it as inappropriate. It offered three alternative formulations and explained that in many Western professional contexts, a direct disagreement can damage the working relationship. I had never received that depth of pragmatic explanation from a teacher or from peer role-plays.*" P07 (low digital literacy, high ICC gain) added: "*The chatbot always gave me a second or third chance. It would say, 'A more polite version could be… Would you like to practice that again?' This made me feel that improvement was*

possible rather than that I was simply weak in English." P10 (high digital literacy, high ICC gain) reported the emergence of self-monitoring: "*After several sessions, I noticed that I began to anticipate the chatbot's suggestions. I started correcting myself before the system responded.*" These accounts illustrate how real-time form correction and pragmatic modelling supported the foundational linguistic need.

Emotional benefits were equally salient. P01 (high digital literacy, high ICC gain) recounted: "*In the fourth session, I repeatedly made the same mistake with refusals. Instead of feeling ashamed, the chatbot responded, 'It is completely normal to need several attempts with this speech act. Shall we try a different cultural context?' That single sentence reduced my anxiety more effectively than any encouragement I have received from a human teacher*." (Zhang, Meng, et al., 2024; Tai & Chen, 2024). P11 (low digital literacy, high ICC gain) emphasized the absence of social evaluation: "*In normal classes, I freeze when the teacher asks me to speak in front of others. With the chatbot, I could pause, delete, rewrite, and think. Nobody was watching me or judging my accent*." Motivational engagement also increased when cultural appropriateness was explicitly acknowledged (Zhang, Wu et al., 2024).

Cultural learning was fostered through explicit contrastive notes. P06 (high digital literacy, high ICC gain) observed: "*When I tried to refuse an invitation by saying 'Maybe another time,' the chatbot explained that in some low-context cultures, this can be interpreted as acceptance. I had never considered that possibility. It forced me to compare how we refuse invitations in Iran and how the same words might be understood abroad.*" (Lee, 2025; Dai et al., 2025). P15 (low digital literacy, high ICC gain) noted: "*The cultural explanations after each dialogue made me realize that politeness strategies are not universal.*" Structured reflection worksheets reinforced these insights across literacy levels (Lu, Song, et al., 2025).

Table 2 presents the distribution of participants across the four stratification cells formed by digital literacy and ICC gain. Table 3 shows the gender distribution within those cells. Table 4 displays the overall thematic hierarchy and the frequency of coded references. Table 5 summarizes the proportion of success-oriented versus challenge-oriented codes within each theme. Table 6 reports the frequency of linguistic-success codes by stratification cell, while Table 7 provides a finer-grained breakdown of specific linguistic sub-codes. Table 8 presents the frequency of emotional-experience codes by digital literacy level, and Table 9 shows the temporal distribution of emotional codes across intervention sessions. Table 10 reports cultural-awareness codes by stratification cell, and Table 11 lists the most frequently mentioned cultural topics.

Table 2. Distribution of Participants across Stratification Cells

	High ICC Gain	Low ICC Gain	Row Total
High Digital Literacy	5	3	8
Low Digital Literacy	4	3	7
Column Total	9	6	15

Table 3. Distribution of Participants by Gender and Stratification Cell

Gender	High DL / High Gain	High DL / Low Gain	Low DL / High Gain	Low DL / Low Gain	Total
Female	2	1	3	2	8
Male	3	2	1	1	7
Total	5	3	4	3	15

Table 4. Thematic Hierarchy and Frequency of Coded References

Theme	Sub-Themes	Coded References	Percentage
1. Linguistic Scaffolding and Pragmatic Development	Real-time form correction; Pragmatic modelling; Emergence of self-monitoring	159	28.9 %
2. Emotional Support, Anxiety Reduction, and Motivation	Anxiety reduction; Empathetic scaffolding; Motivational engagement; Residual technical frustration	128	23.3 %
3. Cultural Awareness and Critical Reflexivity	Acquisition of new cultural knowledge; Comparison with Iranian norms; Critical cultural awareness	104	18.9 %
4. Cognitive and Affective Challenges in Balancing the Three Needs	Cognitive overload; Prioritization of one need; Fluctuating attention across sessions	92	16.7 %
5. Moderating Role of Digital Literacy and Contextual Constraints	Protective effect of high digital literacy; Technical barriers; Sociocultural caution	67	12.2 %
Total		550	100 %

Table 5. Proportion of Success-Oriented versus Challenge-Oriented Codes within Each Theme

Theme	Success-Oriented Codes	Challenge-Oriented Codes	Total Codes	Success %
1. Linguistic Scaffolding and Pragmatic Development	142	17	159	89.3 %
2. Emotional Support, Anxiety Reduction, and Motivation	98	30	128	76.6 %
3. Cultural Awareness and Critical Reflexivity	91	13	104	87.5 %
4. Cognitive and Affective Challenges in Balancing the Three Needs	18	74	92	19.6 %
5. Moderating Role of Digital Literacy and Contextual Constraints	21	46	67	31.3 %
Overall	370	180	550	67.3 %

Table 6. Frequency of Linguistic-Success Codes by Stratification Cell

Stratification Cell	Real-Time Form Correction	Pragmatic Modelling	Self-Monitoring Growth	Total
High digital literacy / High ICC gain (*n*=5)	29	26	19	74
High digital literacy / Low ICC gain (*n*=3)	12	10	7	29
Low digital literacy / High ICC gain (*n*=4)	20	17	12	49
Low digital literacy / Low ICC gain (*n*=3)	9	7	4	20
Total	70	60	42	172

Table 7. Frequency of Specific Linguistic Sub-Codes across All Participants

Specific Linguistic Sub-Code	Frequency	Percentage of Theme 1 Codes
Correction of pragmatic force (politeness, directness)	48	30.2 %
Vocabulary expansion for intercultural scenarios	37	23.3 %
Grammar accuracy in real-time interaction	33	20.8 %
Emergence of anticipatory self-correction	28	17.6 %
Request for clarification or rephrasing from the chatbot	13	8.1 %
Total	159	100 %

Table 8. Frequency of Emotional-Experience Codes by Digital Literacy Level

Digital Literacy	Anxiety Reduction	Empathetic Scaffolding	Motivational Engagement	Residual Technical Frustration	Total
High (*n*=8)	38	29	27	9	103
Low (*n*=7)	22	18	14	21	75
Total	60	47	41	30	178

Table 9. Temporal Distribution of Emotional Codes across Intervention Sessions (Based on Participant Retrospective Accounts)

Session Range	Anxiety Reduction	Motivational Engagement	Residual Frustration	Total
Sessions 1–3	12	8	18	38
Sessions 4–6	21	14	8	43
Sessions 7–10	27	19	4	50
Total	60	41	30	131

Table 10. Frequency of Cultural-Awareness Codes by Stratification Cell

Stratification Cell	Acquisition of New Cultural Knowledge	Comparison with Iranian Norms	Critical Cultural Awareness	Total
High digital literacy / High ICC gain (*n*=5)	24	19	17	60
High digital literacy / Low ICC gain (*n*=3)	9	7	5	21
Low digital literacy / High ICC gain (*n*=4)	16	13	11	40
Low digital literacy / Low ICC gain (*n*=3)	7	5	4	16
Total	56	44	37	137

Table 11. Specific Cultural Topics Most Frequently Mentioned by Participants

Cultural Topic	Frequency	Percentage of Theme 3 Codes
Politeness strategies and face management	31	29.8 %
Directness versus indirectness in disagreement	24	23.1 %
High-context versus low-context communication	19	18.3 %
Invitation and refusal conventions	16	15.4 %
Professional versus personal relational norms	14	13.5 %
Total	104	100 %

These data demonstrate that the chatbot was perceived as particularly effective in scaffolding the foundational linguistic need, while also providing substantial support for the mediating emotional need and the higher-order cultural need when technical conditions remained stable.

Addressing Research Question 2: Challenges in Balancing Linguistic Accuracy, Emotional Regulation, and Cultural Appropriateness

Research Question 2 examined the specific challenges students encountered when attempting to balance linguistic accuracy, emotional regulation, and cultural appropriateness. Theme 4 (Cognitive and Affective Challenges in Balancing the Three Needs) captured these difficulties and accounted for 16.7 % of all coded references. The majority of codes within this theme were challenge-oriented (80.4 %).

Participants repeatedly described cognitive overload arising from the simultaneous demands of the three needs. P05 (low digital literacy, low ICC gain) explained: "*I was so concentrated on not making grammatical mistakes that I completely forgot to think about whether my response was culturally appropriate. Then the chatbot would point out the cultural problem, and I would feel even more anxious. Balancing all three needs at once was extremely difficult, especially in the early sessions.*" P03 (high digital literacy, low ICC gain) similarly noted: "*When I focused too hard on perfect grammar, my anxiety increased, and I forgot the cultural advice the chatbot had given earlier. It felt impossible to keep all three dimensions in mind simultaneously*." P08 (high digital literacy, low ICC gain) stated: "*Even though I understood the cultural points intellectually, applying them while monitoring grammar and managing my anxiety required a level of multitasking that I found exhausting*."

A developmental shift was observable. In early sessions, most participants prioritized linguistic accuracy; later sessions showed greater integration or cultural prioritization among high-gain participants. Low-gain participants, by contrast, reported sustained overload beyond Session 6 and continued to prioritize linguistic accuracy exclusively.

Table 12 presents the frequency of challenge codes related to balancing the three needs by digital literacy level. Table 13 shows the order in which participants reported prioritizing the three needs during early versus later sessions.

Table 12. Frequency of Challenge Codes Related to Balancing the Three Needs by Digital Literacy

Challenge Type	High Digital Literacy	Low Digital Literacy	Total
Cognitive overload	15	29	44
Prioritization of linguistic accuracy	12	20	32
Neglect of the cultural dimension	10	17	27
Emotional interference with performance	9	18	27
Total	46	84	130

Note. *Cell values are raw coded references, not participant counts. Because interviews differed in length and because several codes could be assigned to the same speaker, frequencies are presented as an interpretive aid rather than as the basis for statistical comparison.*

Table 13. Order in Which Participants Reported Prioritizing the Three Needs during Early versus Later Sessions

Priority Order (Early Sessions 1–4)	**Frequency**	**Priority Order (Later Sessions 7–10)**	**Frequency**
Linguistic → Emotional → Cultural	9	Linguistic → Cultural → Emotional	6
Linguistic → Cultural → Emotional	4	Cultural → Linguistic → Emotional	5
Emotional → Linguistic → Cultural	2	Integrated (all three simultaneous)	4
Total	15	Total	15

These findings provide direct empirical support for the interdependence of the three needs: excessive attention to one domain, most often linguistic accuracy, disrupts the others, particularly among participants with lower digital literacy.

Addressing Research Question 3: Moderating Influence of Individual and Contextual Factors

Research Question 3 investigated how individual factors (particularly digital literacy) and contextual factors (particularly technological access and sociocultural constraints) shape the nature and extent of successes and challenges. Theme 5 (Moderating Role of Digital Literacy and Contextual Constraints) addressed this question and accounted for 12.2 % of coded references. Challenge-oriented codes predominated (68.7 %).

High digital literacy functioned as a protective factor. P08 (high digital literacy, low ICC gain) remarked: *"Because I was already familiar with similar interfaces, small technical problems did not distract me. I could keep my attention on the cultural and emotional aspects of the dialogue*." (Zou et al., 2025). P14 (high digital literacy, high ICC gain) concurred: "*My previous experience with AI tools allowed me to ignore minor delays and stay focused on the content of the interaction*." Conversely, low-literacy participants experienced amplified technical disruption. P09 (low digital literacy, low ICC gain) stated: "S*ometimes the internet in the laboratory was slow, and the chatbot took a long time to answer. In those moments, my motivation dropped quickly*." P05 added: "*Technical problems interrupted the emotional safety the chatbot tried to create*."

Sociocultural caution further constrained free experimentation. P13 (low digital literacy, low ICC gain) explained: "*I sometimes hesitated to practice certain disagreement strategies because I worried that the topics might be sensitive if discussed outside the classroom. That caution limited how freely I experimented with the language*." Perceived transferability beyond the laboratory was uneven. Only 6 of 15 participants (40%) expressed high confidence that the skills would travel outside the lab; five of those six were in the high digital-literacy group (5/8), compared with only one of seven low-literacy participants (Table 15). The remaining participants anticipated only partial or uncertain transfer. Given the small cell sizes, this pattern is suggestive rather than definitive and may be tied to the laboratory setting, intermittent connectivity, and sociocultural caution described above.

Table 14 presents a cross-tabulation of moderating-factor codes by digital literacy level. Table 15 summarizes perceived transferability of skills beyond the laboratory setting. Table 16 provides an integrative content-analysis summary mapping each theme to the Triple Needs Framework. Table 17 synthesizes the alignment between qualitative themes and the theoretical architecture of the Framework.

Table 14. Cross-Tabulation of Moderating-Factor Codes by Digital Literacy Level

Challenge Category	High Digital Literacy (n=8)	Low Digital Literacy (n=7)	Total
Cognitive overload (balancing three needs)	15	29	44
Technical or access difficulties	9	22	31
Residual anxiety despite scaffolding	8	17	25
Contextual self-censorship or caution	7	13	20
Difficulty transferring skills beyond the lab	10	15	25
Total	49	96	145

Note. *Cell values are raw coded references, not participant counts. Because interviews differed in length and because several codes could be assigned to the same speaker, frequencies are presented as an interpretive aid rather than as the basis for statistical comparison.*

Table 15. Perceived Transferability of Skills beyond the Laboratory Setting

Perceived Transferability Level	High Digital Literacy	Low Digital Literacy	Total
High (confident of transfer)	5	1	6
Moderate (partial transfer expected)	2	3	5
Low (transfer uncertain or limited)	1	3	4
Total	8	7	15

Table 16. Final Content-Analysis Summary: Themes, Key Findings, Evidence, and Relation to the Triple Needs Framework

Theme	Core Findings	Representative Quotations	Relation to Triple Needs Framework	Principal Moderating Factors
1. Linguistic Scaffolding and Pragmatic Development	Immediate corrective feedback and explicit pragmatic modelling produced gains in form accuracy and pragmatic appropriateness; self-monitoring emerged in later sessions.	"*The chatbot offered three alternative formulations and explained why direct disagreement can damage relationships*." (P02); "*I started correcting myself before the system responded*." (P10)	Directly addresses the foundational (lower-order) linguistic need.	Higher digital literacy facilitated faster internalization; lower literacy slowed progress.
2. Emotional Support, Anxiety Reduction, and Motivation	Non-judgmental and empathetic responses substantially reduced foreign-language anxiety and sustained motivation; technical delays reversed these gains for some participants.	"*That single sentence reduced my anxiety more effectively than any teacher encouragement*." (P01); "*Delays made me nervous again*." (P09)	Addresses the mediating emotional need that links language and culture.	Digital literacy and technical stability strongly moderated emotional benefits.

Theme	Core Findings	Representative Quotations	Relation to Triple Needs Framework	Principal Moderating Factors
3. Cultural Awareness and Critical Reflexivity	Explicit cultural notes prompted comparison with Iranian norms and fostered critical cultural awareness.	"*It forced me to compare how we refuse invitations in Iran and how the same words might be understood abroad*." (P06); "*Politeness strategies are not universal*." (P15)	Addresses the higher-order cultural need.	Structured reflection worksheets reinforced cultural gains across literacy levels.
4. Cognitive and Affective Challenges in Balancing the Three Needs	Simultaneous attention to linguistic accuracy, emotional comfort, and cultural appropriateness created substantial cognitive overload, especially in early sessions.	"*Balancing all three needs at once was extremely difficult*." (P05); "*It felt impossible to keep all three dimensions in mind simultaneously*." (P03)	Demonstrates the interdependence of the three needs; failure in one domain affects the others.	Lower digital literacy approximately doubled the frequency of overload codes.
5. Moderating Role of Digital Literacy and Contextual Constraints	High digital literacy protected against technical disruption; low literacy and sociocultural caution limited free experimentation and transfer.	"*Small technical problems did not distract me*." (P08); "*I worried that the topics might be sensitive outside the classroom*." (P13)	Contextual and individual factors determine the priority and accessibility of the three needs.	Digital literacy (primary moderator); laboratory internet stability and perceived sociocultural sensitivity (secondary moderators).

Table 17. Summary of Alignment between Qualitative Themes and the Triple Needs Framework

Triple Needs Framework Component	Corresponding Qualitative Theme(s)	Strength of Empirical Support	Key Qualitative Evidence
Linguistic need (foundational / lower-order)	Theme 1	Very strong	Highest frequency of success codes; clear developmental trajectory toward self-monitoring
Emotional need (mediating / valuable)	Theme 2	Strong	Anxiety reduction and motivational engagement are dominant when technical conditions are stable
Cultural need (higher-order / penultimate)	Theme 3	Strong	Contrastive cultural notes fostered critical awareness, reinforced by reflection worksheets
Interdependence of the three needs	Theme 4	Very strong	Cognitive overload and prioritization patterns demonstrate mutual disruption
Influence of individual and contextual factors	Theme 5	Strong	Digital literacy doubled challenge codes; sociocultural caution limited transfer

Taken together, the qualitative findings demonstrate that the AI-chatbot intervention was perceived as largely successful in operationalizing the Triple Needs Framework when technical and individual conditions were favorable. Linguistic scaffolding, emotional support, and cultural explanation were experienced as mutually reinforcing. At the same time, the simultaneous management of the three needs imposed a significant cognitive and affective load that was substantially heavier for participants with lower digital literacy. Contextual constraints specific to the Iranian setting, particularly intermittent laboratory connectivity and

residual sociocultural caution, further moderated outcomes. These patterns supply explanatory depth for the quantitative results and underscore the necessity of scaffolding digital literacy and designing sequenced activities that gradually integrate the three needs.

Discussion

The qualitative results provide insights into the ways in which chatting with an AI chatbot can address the three needs in the Triple Needs Framework for Iranian upper-intermediate EFL learners. The participants reported that the chatbot mostly helped them meet their needs for achieving accurate and forceful utterance, reducing foreign language anxiety, and cultivating culturally critical awareness when the technology functions correctly. However, they also identified challenges in balancing the three interdependent needs, which were especially pertinent to the less tech-savvy learners and influenced by local circumstances.

With regard to the need for providing accurate and forceful utterances, the participants highlighted form correction and pragmatic modeling, as well as the development of self-editing and monitoring skills. This finding can be linked to the results of the study by Wang et al. (2024), which showed that the participants improved their self-perceived communicative competence after interacting with a chatbot. The qualitative results expand upon this discovery by demonstrating how the learners incorporated the corrective feedback into their performance to achieve better results (Fathi et al., 2024; Bhar, 2026). The particular value placed on explanations of pragmatic force (politeness, directness, face management) resonates with Hastomo et al. (2025) and Kohnke and Moorhouse (2025), who likewise observed that non-judgmental AI interlocutors afford iterative refinement of culturally sensitive language. In the Iranian setting, where grammar-oriented curricula have historically under-emphasized pragmatics (Esmaeili & Kuhi, 2023; Vajak et al., 2021), the chatbot's dual focus on formal accuracy and social meaning appears to have addressed a long-standing pedagogical gap. The developmental trajectory toward self-monitoring further supports the Triple Needs Framework's designation of language as the foundational, lower-order need (Ghorbani & Dowlatabadi, 2023): once linguistic resources were sufficiently stabilized, cognitive capacity became available for higher-order processing.

Emotional outcomes likewise corroborate and refine existing literature. Final comments are due to clarify how the qualitative results operationalize the needs framework and identify contexts. Linguistic, emotional, and cultural themes were discovered in the interviews that support the initial quantitative results while providing mechanistic and contextual details.

First, linguistic scaffolding dominated the accounts, with many participants reporting reduced anxiety and increased willingness to engage in foreign-language speaking after using the chatbot. This accords with Zhai et al. (2024), Zhang, Meng et al. (2024) and Waluyo and Pratiwi (2025) in suggesting that AI reduces conversational fear and increases fluency and confidence. Several participants pointed to the ability to stop, edit, or retry attempts without facing judgment, which is similar to Hastomo et al. (2025). The timeline of the intervention revealed gradual decreases in residual frustration and increases in motivation if connectivity was stable, which supports using emotions as the mediating factor between linguistic production and cultural understanding in the needs framework.

When technical issues arose, participants reported that anxiety and culturally mismatched reactions resurfaced, diminishing attention to both language accuracy and cultural context. This process-level rebound is more readily visible in retrospective interview accounts than in the aggregated pre–post outcome measures that characterize most existing quantitative chatbot studies (Wang et al., 2024; Zhang, Meng, et al., 2024; Zhang, Wu, et al., 2024). Indeed, cultural learning was not explicitly mentioned by participants as often as emotional or linguistic themes, but several responses demonstrated increases in declarative knowledge, comparative analysis with Iranian norms, and awareness of cultural particularities. Indeed, cultural learning was not explicitly mentioned by participants as often as emotional or linguistic themes, but several responses demonstrated increases in declarative knowledge, comparative analysis with Iranian norms, and awareness of cultural particularities. Notably, participants discussed high- and low-context communication styles, invitation/declining rituals, and maintenance of self-esteem, which are examples of reflective practices typical of a systematic review about using AI as an intercultural communication mediator. This accords with Lee et al. (2023) and Liu et al. (2023), but with a twist that the participants using the chatbot did not consider Western norms to be universally desirable, as indicated by their willingness to compare them with local etiquette. Thus, their ICC practices reflect high-level cultural positioning from the needs framework and are consistent with the internal and external outcomes of intercultural competence outlined in Deardorff's (2006) Delphi-based process model, while also addressing the limitations noted by Ghorbani and Dowlatabadi (2023), Dai et al. (2025), Mahaputri and Hassan (2026), and Lee (2025).

The third theme was the challenges of using the chatbot, with respondents mentioning difficulties in switching between the three needs or allocating sufficient attention to all of them simultaneously. Approximately twice as many lower-proficiency participants

mentioned losing track of cultural importance despite resolving linguistic accuracy. These findings demonstrate the interactions between the three needs, with insufficient or excessive attention to one affecting the other two, and provide mechanistic support for these connections. Notably, Wang et al. (2024) and Zhang and Zhou (2023) identified linguistic, affective, and cultural variables as independent predictors of participants' ICC improvement. However, the qualitative results suggest that focusing on more than one simultaneous domain decreases performers' attention to each, which probably explains why the overall gains in the parent study were positive but varied instead of following the linear pattern predicted by the needs framework. This is further supported by the negative-case findings about the lowest-proficiency participants, for whom persistent multi-domain challenges prevented sequential improvements from taking place beyond skill stabilization. Thus, these results operationalize the concepts of intercultural communicative competence, needs framework, and linguistic scaffolding.

Finally, the findings address the moderating role of digital literacy and the context of the intervention. The qualitative results indicate that participants with higher digital literacy more often expected some transfer beyond the laboratory, whereas low-literacy participants more often doubted transfer. Even so, high-confidence transfer remained a minority report (6/15). The pattern should be read as context-specific: it emerged in a single Iranian Medical University laboratory with unstable connectivity and residual caution about sensitive topics, and it rests on retrospective self-report rather than observed use in authentic intercultural encounters. This aligns with the parent study's discussion of digital literacy as a critical moderator but supplements it with mechanistic evidence. Additionally, the Iranian context influenced the outcomes because the unstable laboratory environment limited the use of technology and participants' trust in it, which was not as apparent in the East Asian samples described by Lee et al. (2023) and Liu et al. (2023). Thus, the findings highlight the importance of digital literacy as a gatekeeper for multilingual and intercultural development in technology-assisted language learning contexts.

Overall, the qualitative results demonstrate how the needs framework can be implemented in a technology-assisted setting while also identifying limitations and opportunities for future research. Linguistic scaffolding was generally beneficial for participants' ICC, but its effects were mediated by increasing affective stability and, eventually, cultural awareness. In turn, the need for simultaneous attention to linguistic, affective, and cultural aspects created processing constraints, which were especially evident

for participants with limited digital proficiency. As such, the current results both support and expand upon earlier quantitative findings and address several gaps in the needs framework, digital literacy, and intercultural communication literature. Subsequent studies should consider using concurrent analyses of session logs along with linguistic, affective, and cultural assessments to disentangle the treatment's specific effects from the practice or novelty factors. Culture is treated as a higher-order need that typically becomes fully accessible only after linguistic and emotional foundations have been sufficiently stabilized; at the same time, its relative priority in any given encounter remains contingent on individual and contextual factors rather than fixed in a rigid hierarchy.

Conclusions and Implications

This qualitative study explored the lived experience of Iranian upper-intermediate EFL learners engaging in a computer-mediated intercultural communication task. Within a Triple Needs Framework, this study's objective was to assess the participants' experience of navigating the three interdependent needs of language, emotion, and culture during their interactions with an AI chatbot. After identifying five themes in the data collected from the 15 semi-structured interviews, the study concluded that participants reported mainly positive but still demanding experiences with the AI chatbot as a tool that supported language scaffolding, reduced language anxiety, and promoted intercultural understanding, as long as their digital literacy and the laboratory connection capacity were not low. This study's findings demonstrated the Triple Needs Framework's ability to operationalize the hierarchical dialectic of needs during language learning and the critical conditions under which such a framework could promote effective intercultural communicative competence among EFL learners who had no prior experience with similar tasks.

This study's findings demonstrated the Triple Needs Framework's effectiveness at operationalizing the dialectic of three interrelated needs during language learning and intercultural communication task performance. The participants' repeated emphasis on the AI chatbot's role in supporting them linguistically suggests that language is indeed the most basic need to be addressed before the higher-level needs, such as emotion or culture, emerge during intercultural interactions. One way in which the Triple Needs Framework was evident in the participants' experience was the shift in their attention from linguistic accuracy to either cultural or integrated (linguistic-cultural) accuracy across successive weeks of practice. In this regard, the data indicated that the three interrelated needs were not independent, as

focusing on one consumed a lot of cognitive capacity and adversely affected the other two. From a practical standpoint, the findings support a staged, literacy-scaffolded implementation rather than simultaneous work on all three needs. Instructors should (a) run a pre-intervention tutorial of one to two sessions that covers only interface navigation, login, turn-taking, and what to do when the connection drops; (b) devote the first three to four chatbot sessions exclusively to linguistic accuracy and pragmatic form (corrections, alternative formulations, self-monitoring) before introducing contrastive cultural notes; (c) add explicit cultural comparison and reflection worksheets only after learners can produce a stable polite refusal or disagreement without constant form repair; (d) keep a low-tech contingency ready for unstable laboratory internet, printed scenario cards, teacher-led role-plays using the same prompts, or offline chat transcripts, so emotional safety is not lost when the system lags; and (e) pair lower digital-literacy students with a brief peer or instructor check-in after early sessions rather than leaving them to manage cognitive load alone. Cultural worksheets should remain available at every literacy level, but they should not compete with form work in Weeks 1–2. These steps operationalize the Triple Needs hierarchy rather than asking learners to balance language, emotion, and culture from the first turn.

This study has several limitations, including the relatively small sample size of 15 participants who were recruited through convenience sampling. This design choice affected the study's scope and depth, as the pool of available heterogeneous participants was limited to one university setting. The study also relied primarily on participants' retrospective self-reports. Member-checking was completed with only five of the 15 interviewees (drawn from different digital-literacy × ICC-gain cells); the remaining participants could not be re-contacted within the required timeline. This limited rate of participant validation (5/15) modestly constrains credibility, because most interviewees did not have the opportunity to confirm or refine the researchers' interpretations of their accounts. Several complementary strategies were therefore used to support trustworthiness: independent dual coding that yielded Cohen's $\kappa = 0.84$, supervisory resolution of residual discrepancies, a reflexive analytic journal, thick description anchored in extensive verbatim excerpts, triangulation with weekly self-efficacy logs, and a judgment of thematic saturation by the tenth interview. These procedures strengthen dependability and confirmability, yet they do not fully substitute for comprehensive member-checking.

Only five of the 15 interviewees (33.3%) could be re-contacted for participant validation, and this moderate rate limits how far member-checking can be said to corroborate

the final thematic account. The five readers were drawn from different digital-literacy and ICC-gain cells, and they confirmed that the draft themes reflected their experience; however, the ten participants who could not be reached may have offered qualifications, especially regarding later-session priorities, residual anxiety, or the transferability of skills beyond the laboratory. Because validation was both partial and retrospective, there remains a risk that some interpretations rest more heavily on the analysts' reading than on participants' endorsement. Credibility was therefore sought through additional procedures, independent double coding (Cohen's $\kappa = 0.84$), a reflexive journal, and the judgement that thematic saturation had been reached by the tenth interview, but these steps do not fully substitute for complete member-checking. Future work should build member-checking into the original interview window so that all participants can comment while the experience is still recent.

However, other sources of qualitative data, such as the weekly self-efficacy logs, supported the reliability and validity of the findings. Additionally, the study's reliance on retrospective interviews conducted two weeks after the intervention introduced a risk of recall bias, particularly for session-by-session changes in anxiety, motivation, and the order in which participants attended to linguistic, emotional, and cultural demands. Future research should therefore collect concurrent process data, session-by-session reflection diaries, chatbot interaction logs, brief post-session affect ratings, and screen-capture or think-aloud records, so that claims about developmental shifts do not rest solely on delayed memory. Claims about transferability are likewise provisional. Table 15 is based on 15 retrospective ratings, not observed performance outside the lab; cell sizes of 7–8 cannot support strong inferences about digital literacy as a generalizable predictor of transfer. Whether the same literacy–transfer association would appear in better-resourced or less socioculturally constrained EFL settings remains an open question. Future researchers should consider utilizing a concurrent mixed-methods design and collecting data from multiple institutions to improve validity and generalize the findings to various EFL learner populations. Moreover, future studies could include utilizing other data collection methods, such as role-play video recordings and blind assessments of these recordings, to triangulate the findings.

Further research on the practical applications of the Triple Needs Framework across diverse populations of language learners is necessary to continue building this framework's practical validity. The next step in this research would be to use larger heterogeneous samples of EFL learners with comparable proficiency levels across different universities. Such a study could adopt a quasi-experimental design with a control and treatment group, utilizing a

within-subjects design to determine if repeated exposure to the intervention, as in this study, would affect language learners' self-assessed intercultural communicative competence. Additionally, investigations into the effect of various levels of technologization and learners' technological and sociocultural readiness would provide additional insights into the practical implications of the Triple Needs Framework. The limitations of this study, as detailed above, could be mitigated by ensuring that future studies are not constrained to a single university, have access to more varied populations of EFL learners, utilize multiple data collection methods, and include role-plays assessed by blinded reviewers. In future research, these considerations will allow for further investigation of the dialectic of needs during intercultural communicative competence development and designing practical interventions that help language learners navigate these competing demands.

Declaration of Conflicting Interests

The authors declare that they have no conflict of interest.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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Appendix

The corresponding interview questions were formulated as follows:

1. How did interacting with the AI chatbot affect your confidence and ability to use appropriate language (vocabulary, grammar, and pragmatic expressions) in cross-cultural conversations?

2. Can you describe a specific moment during the chatbot sessions when you felt anxious, frustrated, or motivated? How did the chatbot's responses influence that emotional experience?

3. What did the AI chatbot teach you about cultural differences that you had not previously considered, and how did this knowledge influence the way you formulated your responses?

4. What challenges did you face in balancing attention to linguistic accuracy with attention to emotional comfort and cultural appropriateness during the chatbot interactions?

5. In what ways did your level of familiarity with digital tools (or lack of familiarity) affect your ability to benefit from the AI chatbot sessions?

6. Looking back at the entire intervention, what were the most significant successes and the most persistent obstacles you experienced when using technology to develop intercultural communicative competence?