

Implementing ICC Explorer: A Mobile-Assisted Framework for Developing Intercultural Communicative Competence in University EFL Education

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Received: 13 October 2025; **Accepted:** 08 November 2025; **Published:** 30 November 2025

Abstract: This article presents the pedagogical design and implementation logic of ICC Explorer, an author-developed mobile application intended to support the development and formative assessment of intercultural communicative competence (ICC) in university English as a Foreign Language (EFL) education. The study is conceptual and implementation-oriented rather than an effectiveness trial; therefore, no unreported experimental gains or statistical effects are claimed. ICC Explorer operationalizes intercultural learning through six sequential modules: Cultural Awareness and Knowledge, Intercultural Perception, Nonverbal Communication, Interaction, Adaptation, and Global Citizenship. Its task architecture is based on scenario-driven decision making, progressive module completion, four-level response scoring, automated feedback, visualized progress, and reflective self-monitoring. The framework is theoretically aligned with Byram's model of intercultural communicative competence, Deardorff's process model of intercultural competence, Fantini and Tirmizi's multidimensional view of intercultural competence, and the Council of Europe's descriptors for plurilingual/pluricultural competence and mediation. Recent evidence on technology-supported intercultural learning further indicates that digital interventions can facilitate intercultural development when technology is integrated with structured reflection, authentic or simulated interaction, and explicit pedagogical guidance. The article explains how ICC Explorer converts broad intercultural constructs into observable learner actions, including interpreting culturally conditioned behaviour, recognizing nonverbal cues, managing ambiguity, selecting context-sensitive interaction strategies, adapting communicative behaviour, and reflecting on global responsibility. A module-to-construct mapping and a formative assessment logic are proposed to support transparent classroom use. The paper concludes that ICC Explorer is best understood as a pedagogical mediation tool that connects intercultural theory, scenario-based practice, and learner reflection; empirical claims about its effectiveness should be made only after controlled analysis of implementation data.

Keywords: Intercultural communicative competence; ICC Explorer; mobile-assisted language learning; EFL; scenario-based learning; mediation; pluricultural competence; formative assessment.

Introduction: Contemporary EFL education increasingly treats successful language use as a socially and culturally situated activity rather than as the production of grammatically accurate sentences alone. In intercultural encounters, learners are required to interpret unfamiliar communicative conventions, recognize culturally conditioned meanings, negotiate differences in perspective, and adjust verbal and nonverbal behaviour to the interlocutor and context. Byram's model of intercultural communicative competence (ICC) provides a foundational account of

these requirements by connecting linguistic, sociolinguistic and discourse competences with attitudes, knowledge, skills of interpreting and relating, skills of discovery and interaction, and critical cultural awareness (Byram, 1997; Byram, 2021).

Deardorff's process model similarly conceptualizes intercultural competence as a developmental process in which attitudes such as respect and openness support the acquisition of knowledge and skills, which in turn contribute to internal outcomes such as adaptability and empathy and to external outcomes

expressed through appropriate and effective behaviour in intercultural situations (Deardorff, 2006). The CEFR Companion Volume extends this logic within language education through its emphasis on the learner as a social agent, plurilingual/pluricultural competence, interaction, and mediation (Council of Europe, 2020). Together, these perspectives imply that intercultural learning should involve not only knowledge about cultures but also interpretation, behavioural choice, interaction, reflection, and mediation.

The methodological challenge is to convert these broad constructs into repeatable learning actions that can occur inside and outside the classroom. Mobile-assisted language learning (MALL) offers an appropriate delivery environment because it can provide short, repeated, context-sensitive tasks; immediate feedback; learner-controlled pacing; and access beyond scheduled class time. However, technology by itself does not constitute an intercultural pedagogy. A meta-analysis of 56 technology-assisted intercultural interventions involving 4,049 learners found an overall positive, intermediate association between technology-supported interventions and intercultural competence, while also showing that the design of the intervention matters (Zhang & Zhou, 2023). Reviews of online and technology-supported intercultural learning likewise emphasize the need to connect digital tools with explicit pedagogical structures, interaction, reflection, and assessment rather than treating digital exposure as sufficient (Yi, Shadiey, & Zhang, 2024; Iswandari & Ardi, 2022).

Against this background, ICC Explorer was designed as a mobile learning environment that transforms intercultural constructs into sequenced scenario-based tasks and formative feedback. The application is not presented as a replacement for teacher-led intercultural instruction or authentic human interaction. Instead, its function is to provide a structured bridge between theoretical ICC constructs and repeated learner practice. This article therefore addresses the following question: how can ICC Explorer be implemented as a theoretically grounded mobile framework for developing and formatively assessing university students' intercultural communicative competence in EFL education?

Theoretical Framework

ICC Explorer is grounded in a convergence of four theoretical perspectives. The first is Byram's ICC model, which is particularly relevant because it links language competence to intercultural attitudes, knowledge, interpretive skills, interactional skills, and critical cultural awareness (Byram, 1997, 2021). From an application-design perspective, this model requires

tasks that move learners beyond factual recall. A learner should be asked to interpret a culturally conditioned event, compare perspectives, justify an interpretation, discover additional information, and reconsider an initial judgment.

The second perspective is Deardorff's process model. Its value for digital design lies in the distinction between underlying dispositions, developing knowledge and skills, internal shifts, and observable external behaviour. This prevents the application from equating intercultural competence with correct answers to culture-fact questions. A scenario response is meaningful only when it reflects a more appropriate interpretive or behavioural choice. Accordingly, ICC Explorer uses graded response options that represent different levels of intercultural adequacy rather than binary right/wrong knowledge testing.

The third perspective is Fantini and Tirmizi's multidimensional account of intercultural competence, which foregrounds knowledge, attitudes, skills, awareness, and language proficiency as interrelated elements of intercultural functioning (Fantini & Tirmizi, 2006). This perspective supports the inclusion of language-mediated scenarios and reflective feedback rather than culturally decontextualized multiple-choice questions.

The fourth perspective is the CEFR Companion Volume, particularly its treatment of plurilingual/pluricultural competence and mediation. The CEFR conceptualizes learners as social agents who mobilize linguistic and cultural resources to construct meaning, facilitate understanding, and manage differences across communicative contexts (Council of Europe, 2020). For ICC Explorer, this means that higher-level tasks should require learners to explain, reformulate, compare, and mediate rather than merely identify cultural differences.

ICC Explorer is organized around six sequential modules: (1) Cultural Awareness and Knowledge, (2) Intercultural Perception, (3) Nonverbal Communication, (4) Interaction, (5) Adaptation, and (6) Global Citizenship. The sequence is pedagogical rather than strictly developmental. It begins with awareness and interpretation, proceeds through communicative behaviour and adaptation, and culminates in broader ethical and civic reflection.

The application follows a progressive-access structure. Learners enter through an individual profile, complete the current module, receive an automatically generated result, and then proceed to the next module after the required learning sequence has been completed. This sequencing serves two purposes. First, it reduces random task selection and preserves a

coherent progression from foundational awareness to more complex intercultural judgement. Second, it allows learners to observe their own progress across modules rather than receiving only a single cumulative score.

Tasks are primarily scenario-based. Instead of asking learners to memorize isolated facts about national cultures, the application presents short situations involving communicative ambiguity, silence, interpersonal distance, nonverbal behaviour, directness and indirectness, international collaboration, empathy, adaptability, and global responsibility. The learner selects a response from four alternatives. The alternatives are scored from 1 to 4, where lower scores represent more ethnocentric, context-insensitive, or communicatively inappropriate choices and higher scores represent more context-sensitive, perspective-aware, adaptive, or mediating choices. This scoring logic is formative: it is intended to make the quality of the learner's reasoning visible and to stimulate reflection. It should not be interpreted as a psychometrically validated proficiency scale unless such validation is conducted separately.

After task completion, ICC Explorer calculates module-level and overall results and displays them through percentages and visual progress indicators. Individual feedback is used to direct learners toward the meaning of their choices rather than simply reporting a score. In pedagogical terms, this creates a feedback loop: scenario interpretation → response selection → feedback → self-monitoring → subsequent task. Such a loop is consistent with the process orientation of intercultural competence and with formative assessment principles that treat assessment evidence as information for further learning.

Module-by-Module Pedagogical Implementation

The Cultural Awareness and Knowledge module introduces learners to the idea that communicative behaviour is culturally situated. Tasks in this module focus on cultural identity, diversity, values, conventions, and the distinction between observable practices and underlying meanings. The intended outcome is not the memorization of national characteristics; rather, learners should recognize that the same behaviour may carry different meanings in different contexts and that cultural generalizations require cautious interpretation.

The Intercultural Perception module targets the learner's interpretive lens. Scenarios are designed to expose rapid judgments, stereotyping, attribution errors, and culturally familiar assumptions. A learner may be asked to interpret silence, delayed responses, conversational directness, or a disagreement that can

plausibly be explained in more than one way. The key operation is evidential interpretation: the learner should distinguish observation from inference and consider alternative explanations before assigning intention. This function corresponds closely to Byram's skills of interpreting and relating and to critical cultural awareness.

The Nonverbal Communication module addresses communicative meaning conveyed through eye contact, facial expression, gesture, interpersonal distance, posture, touch, timing, and silence. Nonverbal cues are particularly suitable for scenario-based mobile learning because learners can be asked to infer context, identify possible misinterpretations, and choose a response strategy. The purpose is not to teach rigid culture-specific rules. Instead, it is to increase sensitivity to the fact that nonverbal behaviour is context dependent and may require clarification rather than immediate evaluation.

The Interaction module focuses on real-time communicative choices. Scenarios include turn-taking, requests, disagreement, politeness, indirectness, clarification, response to misunderstanding, and collaborative decision making. Here ICC becomes observable as language-mediated behaviour. Learners must select not only what they want to communicate but how to communicate it in a manner that considers status, social distance, degree of imposition, interpersonal rapport, and potential ambiguity. This module therefore links linguistic choice with sociopragmatic appropriateness.

The Adaptation module develops behavioural flexibility. Learners are presented with situations in which their preferred communicative style does not produce the expected response. They must decide whether to maintain, modify, explain, or reformulate their behaviour. Adaptation is not conceptualized as abandoning one's identity or automatically adopting another cultural norm. Instead, it is treated as the ability to adjust communication strategically while preserving communicative intent and mutual respect. This interpretation is consistent with Deardorff's internal outcomes of adaptability and flexibility.

The Global Citizenship module broadens the focus from successful interpersonal interaction to responsibility in culturally diverse settings. Tasks address empathy, respect for difference, ethical participation, inclusive communication, responsible decision making, and the consequences of stereotypes or exclusionary behaviour. This module also creates a space for reflection on how language users position themselves in relation to local and global communities. The pedagogical aim is to connect intercultural

communication with responsibility, mediation, and consumption.
reflective judgement rather than with cultural

Alignment of ICC Explorer with Established ICC Constructs

ICC Explorer module	Primary learner operation	Theoretical alignment	Observable evidence
Cultural Awareness and Knowledge	Recognizing culturally situated meanings; distinguishing practices from underlying values	Byram: knowledge; Deardorff: knowledge and comprehension	Explains why a behaviour may have more than one culturally plausible meaning
Intercultural Perception	Interpreting, comparing perspectives, checking assumptions	Byram: interpreting and relating; critical cultural awareness	Uses contextual evidence, considers alternative interpretations, revises premature judgments
Nonverbal Communication	Noticing and interpreting nonverbal cues	Deardorff: observation and interpretation; CEFR: pluricultural awareness	Identifies possible meanings of eye contact, silence, gesture, distance, or timing without treating them as fixed rules
Interaction	Selecting sociopragmatically appropriate verbal and nonverbal responses	Byram: linguistic/sociolinguistic/discourse competence; discovery and interaction	Uses clarification, mitigation, turn-taking, repair, and context-sensitive speech acts
Adaptation	Adjusting communicative behaviour while maintaining intent and respect	Deardorff: adaptability and flexibility	Reformulates a message or modifies interaction strategy in response to contextual cues
Global Citizenship	Mediation, ethical reflection, inclusive participation	CEFR: mediation and pluricultural competence; Byram: critical cultural awareness	Explains perspectives, avoids exclusionary generalization, and proposes communication that supports mutual understanding

The alignment demonstrates that ICC Explorer modules are not treated as isolated thematic units. Each module is linked to a distinct intercultural operation and to observable evidence that can be elicited through scenario-based tasks. This mapping also functions as a content-validity guide: every new item should be traceable to a defined construct and an observable learner action.

Formative Assessment Logic

ICC Explorer combines developmental and diagnostic functions. Its assessment logic is therefore criterion-referenced rather than norm-referenced. The four response levels are intended to distinguish increasingly appropriate intercultural reasoning within a specific scenario. A level-1 response may reflect a rigid or ethnocentric judgment; level 2 may show partial recognition of difference but limited contextual interpretation; level 3 may demonstrate context-sensitive reasoning and willingness to adapt; and level

4 may demonstrate perspective coordination, adaptive communication, or mediation. These descriptors should be applied consistently across items and documented in an item-design rubric.

Automated scores should not be treated as a complete measure of ICC. Deardorff (2006) explicitly argues for the use of multiple methods in assessing intercultural competence, including self-report, observation, and judgments by self and others. Accordingly, ICC Explorer is most defensible when its digital evidence is triangulated with teacher observation, reflective writing, peer feedback, role-play performance, or interview data. The application can indicate patterns in learner decisions, but it cannot independently capture the full complexity of actual intercultural interaction.

Reflection is essential to the assessment cycle. After receiving module feedback, learners should be prompted to explain why a response was more or less appropriate, identify which assumption shaped their

initial choice, and formulate an alternative strategy for a comparable situation. This step converts a scored task into an intercultural learning event. Without reflection, repeated scenario selection risks becoming test-taking practice rather than competence development.

Implementation in University EFL Instruction

ICC Explorer can be integrated into university EFL courses through a pre-class, in-class, and post-class cycle. Before class, students complete a short set of module tasks individually. Their responses create a shared problem space for classroom work. During class, the teacher selects representative scenarios for pair or group discussion, asks students to justify competing interpretations, and then extends the situation through role-play or simulation. After class, students return to the application for reflection, follow-up scenarios, or module completion.

This blended sequence is pedagogically stronger than isolated application use because it connects individual judgment with social negotiation. Technology-supported intercultural learning is most productive when learners have opportunities to articulate perspectives, encounter disagreement, receive feedback, and revise interpretations. Recent research on mobile-assisted intercultural learning provides empirical support for the value of combining mobile environments with interaction and reflective pedagogy. For example, Yang and Yang (2025) found that a mobile-assisted intercultural exchange environment supported intercultural development among Chinese EFL learners, while also identifying practical limitations of mobile platforms. Such findings support the use of mobile technology as an instructional mediator rather than as a self-sufficient pedagogical solution.

Teacher mediation remains necessary. Instructors should avoid presenting scenario feedback as a universal rule about a national culture. Instead, they should emphasize probability, context, individual variation, and the difference between culturally informed interpretation and stereotyping. When students challenge an item or propose a plausible alternative interpretation, that disagreement can become pedagogically productive evidence of intercultural reasoning.

Implementation should also respect data minimization and transparency. Learners should know what information the application records, how scores are generated, and whether data are used for instructional feedback or research. If ICC Explorer data are later used in an empirical study, participant consent, anonymization, ethical approval where required, and a clear separation between instructional assessment and

research analysis should be established.

DISCUSSION

The central contribution of ICC Explorer is not the digitization of cultural content but the operationalization of intercultural processes. The six-module structure converts broad constructs into recurring learner actions: noticing, interpreting, comparing, selecting, adapting, mediating, and reflecting. This is methodologically important because ICC frameworks are often theoretically rich but difficult to translate into ordinary classroom routines.

ICC Explorer also addresses a recurrent limitation in intercultural teaching: the tendency to reduce culture to factual knowledge about countries. Scenario-based tasks shift the instructional unit from “What is true about culture X?” to “What interpretations are plausible in this context, what evidence supports them, and what communicative response would facilitate mutual understanding?” This change reduces essentialist teaching and aligns more closely with contemporary ICC theory.

At the same time, several limitations must be recognized. First, scenario-based multiple-choice items simplify the open-ended nature of intercultural interaction. Real communication allows clarification, hesitation, repair, negotiation, and co-construction of meaning. Second, automated scoring depends on the quality of item design and cannot be assumed to represent stable ICC levels without reliability and validity evidence. Third, cultural scenarios may unintentionally reproduce stereotypes if they are written as fixed national rules rather than context-sensitive communicative problems. Fourth, mobile access and usability can influence participation independently of intercultural learning. Systematic reviews of smartphone-assisted language learning repeatedly note both accessibility advantages and technical, cognitive, and pedagogical challenges (Metruk, 2022).

These limitations indicate a clear research agenda. Future empirical work should examine content validity of the scenario bank, inter-rater agreement in expert scoring of response options, internal consistency where appropriate, test-retest behaviour, relations between app scores and performance-based ICC measures, learner perceptions, and the effect of guided reflection. A quasi-experimental or mixed-methods study could then compare changes across intervention and comparison conditions while also analysing reflective journals, interviews, and classroom observations. Until such data are reported, ICC Explorer should be described as a theoretically grounded implementation framework rather than as an

empirically proven intervention.

CONCLUSION

ICC Explorer provides a structured mobile-assisted framework for integrating intercultural communicative competence into university EFL learning. Its six modules—Cultural Awareness and Knowledge, Intercultural Perception, Nonverbal Communication, Interaction, Adaptation, and Global Citizenship—represent a progression from cultural noticing and interpretation to behavioural choice, adaptation, mediation, and reflective responsibility. Scenario-based tasks, four-level response scoring, automated feedback, visualized progress, and reflective self-monitoring are used to make otherwise abstract ICC constructs visible in learner activity.

The framework is theoretically consistent with Byram's ICC model, Deardorff's process model, Fantini and Tirmizi's multidimensional perspective, and the CEFR Companion Volume's emphasis on pluricultural competence and mediation. Its pedagogical value lies in connecting theory with repeated decision making and reflection, not in replacing authentic intercultural interaction. For rigorous foreign-language pedagogy, ICC Explorer should therefore be implemented as part of a blended instructional cycle that includes teacher mediation, collaborative discussion, role-play or simulation, reflective tasks, and multiple forms of assessment.

The present article does not claim statistically demonstrated effectiveness. Its contribution is the specification of a transparent pedagogical architecture that can be tested empirically. This distinction is important for both research integrity and future validation: the application's theoretical alignment and instructional design can be described now, whereas claims about learning gains require separately reported evidence from a controlled pedagogical study.

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