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Generative AI for professional communication training in intercultural contexts: where are we now and where are we heading?

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Abstract: It is a common feature of the 21st century workplace to be multicultural. Working professionals need to possess strong Interactional Competence to handle professional communication in various intercultural encounters in their workplace. This has however posed challenges to professional communication education since educators need to incorporate different cultural practices and interlocutor profiles in their teaching and assessment materials. In this paper we reflect on the practical challenges of professional communication education in intercultural contexts and envisage what AI can offer in this place. We start with some practical, on-the-ground dilemmas in integrating diverse cultural representation in professional communication education. We then use an operational AI-mediated assessment tool to elaborate the possibilities, affordances and caveats in using AI to develop teaching and assessment materials for professional communication education. We conclude with directions for future research and practice in the emerging space of AI for professional communication in intercultural contexts (AI-for-PCIC).

Keywords: AI; generative AI; gen AI, professional communication; intercultural communication; interactional competence

1 Introduction

The surge of generative artificial intelligence (AI) has created both disruption and inspiration to research and practice in intercultural communication (ICC). To explore

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the rich affordances and potential caveats of AI-for-ICC, the field of ICC needs to further engage with AI scholarship and the technical knowledge (e.g., Large Language Model or LLM for short) of AI. Simultaneously, to achieve more robust applications of technologies, AI specialists can benefit from interdisciplinary collaboration with ICC scholars, who possess expertise in analysing the linguistic, social, cultural, and political dimensions of AI-mediated ICC. Phrased differently, AI-for-ICC calls for transdisciplinary thinking that requires flexibility and adaptability in how researchers and practitioners co-develop knowledge and practice in the ever-shifting AI-for-ICC landscape.

This discussion paper embraces this transdisciplinary ethos by bringing together diverse disciplinary perspectives from sociolinguistics, psycholinguistics and learning analytics. We select professional communication in intercultural contexts (PCIC) – such as clinical communication, legal communication and business communication – as a focal site of our discussion. Our rationale for choosing PCIC is that compared to everyday intercultural encounters, the intersection between culture and workplace makes PCIC a particularly challenging arena of communication, mismanagement of which can impede career development and disrupt life plans (Dai 2024a). In the following sections, we start with some practical, on-the-ground challenges PCIC educators experience, which prompts them to turn to AI for inspiration. We then present a brief overview of what AI has currently offered us in terms of PCIC training and education while highlighting caveats if AI were to be applied to PCIC without careful consideration. From this, we substantiate our observations with a case study of an AI-mediated PCIC educational program that is operationalized in a higher educational context in Japan. We conclude the paper with thoughts on how AI-for-PCIC can move forward with open minds, dialogues and collaborations among researchers and practitioners in a transdisciplinary manner.

2 Practical challenges in teaching professional communication in intercultural contexts

PCIC is an underexplored domain of language use in ICC. It has its theoretical underpinning in communication theories (Bhatia 2014) and a specific focus on practical, real-world problems such as how to develop professionals' communication skills in multicultural workplaces (Dai 2024a; Holmes 2018; Spencer-Oatey and Wang 2020; Vine et al. 2022). This practical orientation of PCIC is driven by real-world demand. One of the authors of this paper, Dai, was once employed as a professional communication lecturer by a medicine faculty at a university to teach professional

clinical communication to their health students. The rationale behind the appointment was that although the clinical lecturers in the medicine faculty can be expert communicators in their respective clinical domains, they do not usually possess the linguistic knowledge or training to unpack their tacit, routinized interactional practices in PCIC. This issue becomes especially pronounced as many of the health students come from a wide array of first language and cultural backgrounds who require explicit instructions on the linguistic, paralinguistic and sociocultural dimensions of PCIC. Many other professionally oriented disciplines such as law and business face similar pressures as they also need to prepare their multilingual and multicultural students for effective professional communication in workplaces that are simultaneously multicultural and multilingual.

Although employing professional communication lecturers in tandem with subject content lecturers to teach PCIC is certainly an effective solution worth advocating, there are aspects of PCIC that can remain challenging even for such an interdisciplinary teaching team. Successful PCIC hinges on professionals' ability in 1) moment-by-moment management of interpersonal communication, 2) enactment of professional identity, and 3) mastery of professional content, all three of which are situated in complex intercultural contexts. This ability is termed professionals' Interactional Competence (Dai 2024a) and is an ability that working professionals need to develop to thrive in the complex multilingual and multicultural workplaces where they find themselves. Since most communication educators are applied linguists trained in the study of language, social interaction and culture, they can analyze and make explicit for their students how professionals approach interpersonal communication (Nguyen 2019; Pekarek Doehler et al. 2017) and construct their professional identities using a wide range of semiotic resources (Dai and Davey 2023; Hall and Pekarek Doehler 2011; Melander 2017). However, when it comes to the last constituent of PCIC, professional content, the majority of communication educators lack the practical, on-the-ground content knowledge of their respective professional domains. One example from Dai's experience at the early stage of his employment was when he, a professional communication lecturer, was teaching a physiotherapy student in an individual practice session. The patient profile given to the student was a talkative Chinese patient in her eighties. The student needed to prescribe some exercises to the patient, who was roleplayed by a physiotherapy lecturer. While teaching the patient the exercises, the student asked Dai how to have small talk with the patient in the meantime. Just when Dai was about to elaborate on language use in small talk, the physiotherapy lecturer roleplaying the patient interjected and commented that when the patient was in a prone position in this particular exercise, it was inadvisable to have small talk with them as it would be difficult for the patient to talk face-down. This incident highlights one of the challenges in PCIC training as

effective PCIC education requires a combination of expertise in professional communication, professional identity construction, and professional content knowledge. An ideal PCIC practice session would require the presence of both communication and content experts as in the previous incident. This, however, is not always feasible due to logistical constraints and the resource-intensive nature of constantly having a minimum of two lecturers of complementary disciplinary backgrounds for one student. Although it is not impossible for communication experts to develop content knowledge and vice versa for content experts to cultivate linguistic expertise in unpacking professional communication, it would require a substantial investment of time and institutional commitment.

In addition to the challenges in providing feedback on PCIC, there are other layers of complexities in PCIC education. Another example from Dai's employment in the medicine faculty is the simulation of professional scenarios. In order to faithfully represent the multilingual and multicultural nature of today's workplaces (and in Dai's case, healthcare workplaces), the patient profiles in health students' practice scenarios often include a wide range of linguistic and cultural backgrounds, such as a 45-year-old Vietnamese-first-language (L1) plumber who injured his ribs, a 76-year-old retired teacher who was originally from Macedonia and having a chest infection, or a 32-year-old Burmese-L1 pregnant woman who spoke little English. As it is expensive and impractical to hire actors to roleplay patients of these specific profiles for all students, clinical lecturers, communication lecturers, and peer students are usually recruited to roleplay patients. The resource-intensive nature of arranging such real-time simulation sessions aside, this pedagogical practice raises the question of whether anyone, be them clinical lecturers, communication lecturers or peer students, can represent the linguistic and cultural diversities that exist in professional clinical communication or any other domain in PCIC. Worse still, in pretending to be a patient of a specific linguistic and cultural profile, the human roleplay interlocutor can unintentionally reinforce, reify, and reproduce biases and stereotypes about patients from certain backgrounds (for in-depth discussions on biases and stereotypes in AI, see Jenks 2024; O'Regan and Ferri 2024 in this issue). These very real and practical challenges in PCIC training have encouraged PCIC educators to explore what possibilities AI can generate in this space.

3 Generative AI, application to communication training, and caveats

Since OpenAI made ChatGPT publicly accessible in 2022, Generative AI has captured the attention and imagination of the wider communication training industry

(Babu and Suruthi 2024). In a recent study surveying the applications of LLMs in language and communication education (Yan et al. 2023), the authors noted that current cutting-edge technology brings great promises in supporting various teaching and learning tasks such as profiling and labelling (e.g., dialogue act classification, speech tagging, and educational content labelling), detection (e.g., semantic analysis and confusion detection), and teaching support (e.g., developing online learning conversation agents and intelligent question-answering applications. See Brandt and Hazel 2024 in this issue for more discussion on AI agents). When it comes to teaching PCIC, by harnessing the capabilities of generative AI, educators can create immersive and realistic scenarios that simulate diverse speaker profiles and cultural settings. Through generative AI, educators can generate simulations that go beyond basic language instruction and aim to encapsulate the intricacies of PCIC. For instance, PCIC learners can engage in simulated business negotiations, where cultural etiquette, negotiation styles, and communication norms vary based on region. These tailored practice scenarios can not only enhance language proficiency but also encourage reflections on the sociocultural factors influencing effective PCIC.

Additionally, generative AI allows for the creation of profession-specific scenarios, such as the healthcare context as discussed before, where PCIC is vital. Medical professionals need to navigate diverse patient populations, considering cultural perspectives on health, communication styles, personalities, and expectations. By immersing learners in AI-generated clinical consultations reflective of various cultural and intercultural contexts, clinical communication learners can develop the interpersonal skills necessary for culturally sensitive patient interactions. If implemented successfully, AI can effectively address the logistic constraints in PCIC education as mentioned earlier where communication lecturers, content lecturers, peer students or hired actors need to roleplay certain patient profiles. Furthermore, the adaptability of generative AI facilitates role-playing scenarios in PCIC education, especially in terms of giving real-time feedback to learners and enabling learners to make adjustments to match the evolving nature of global communication dynamics. Generative AI can provide instant feedback to learners during and after role-playing scenarios, identifying gaps in content knowledge, correcting language usage, and offering suggestions for enhancing cultural sensitivity. This addresses the other practical challenge in PCIC education where a combination of communication and content expertise is required.

Despite the promises of generative AI, its application in PCIC education comes with notable challenges (for a recent review see Alasadi and Baiz 2023). Here we will focus on three in particular: emotional engagement, language input and language output. Firstly, the current limitations in **emotional intelligence** within generative AI models present a substantial hurdle. Strong Interactional Competence in PCIC requires the interpretation and response to emotional cues (Dai 2024b), which vary

significantly across cultures. A scenario where an AI-generated character expresses politeness might not accurately capture the nuanced ways in which different cultures express and interpret politeness, leading to potential miscommunication and cultural insensitivity.

Secondly, the natural language processing in generative AI relies on **input**/training datasets that are usually specific to some particular varieties of the target language (Billingsley and Gardner 2024). If the AI interlocutor was trained to understand only certain accents, and in most cases, standardized L1 accents (e.g., North American English accent or British English accent), speakers of non-L1 backgrounds (e.g., Vietnamese or Burmese English speakers) that interact with such an AI interlocutor will be disadvantaged as the AI interlocutor will not be able to comprehend their accents well. This limitation of generative AI can privilege certain language varieties and disadvantage PCIC learners of non-L1 language and cultural backgrounds.

Thirdly, generative AI can perpetuate biases and stereotypes within its **output**/generated content, a point also discussed in other contributions in this special issue (e.g., Jones 2024). If the underlying datasets used for training the AI models are not meticulously curated, cultural biases present in those datasets can be reproduced in the generated simulations (Ferrara 2023). For instance, a scenario involving a business negotiation might unintentionally portray certain cultures in a broad-stroke manner as more assertive or passive, reinforcing stereotypes rather than promoting a nuanced understanding of diverse communication styles.

These challenges highlight the need for careful consideration and mitigation strategies to ensure responsible and effective use of generative AI in PCIC education.

4 A case study and some reflections

To illustrate the complexities of using AI for PCIC education, here we present a case study of a lower-stakes communication context: interpersonal and academic communication in tertiary settings. Our second author, Suzuki, is currently working on a project called the Tutorial English AI (TEAI) project (<https://www.teai-waseda.jp/en/about/>), a component of which involves using generative AI to teach and assess Japanese university students' speaking skills in interpersonal communication. In the following we explain the motivation for the TEAU project, how AI is applied in this particular communication context, and what lessons we have learnt so far. Furthering the three gaps we identified earlier, here we will specifically discuss three key areas for future development in using AI for PCIC education: 1) improving the AI interlocutor's emotional engagement with the learner, 2) developing more culturally

authentic training datasets used to generate AI interlocutors, and 3) ensuring that AI does not privilege certain varieties of the target language that learners speak.

The motivation for this project is two-fold: Firstly, the project is expected to examine how end-users' sense of the trustworthiness of decisions by AI can be enhanced in a relatively lower-stakes communication context, that is, tertiary educational context, as opposed to more professionally oriented, higher-stakes PCIC contexts such as medical or legal communication. Secondly, from a practical perspective, this project aims at developing and validating a fully automated speaking test, *LANGX Speaking*, by means of conversational AI interlocutors and an automated scoring system. To this end, the project is associated with a campus-wide English language program named *Tutorial English* at Waseda University in Japan, and since its first implementation in 2023, the speaking test has been delivered to more than 10,000 students as of writing this paper. Due to individual variability of speaking skills among students, the course assigns them to one of the course levels corresponding to A1 to C1 levels on the scale of the Common European Framework of Reference for Languages (CEFR; Council of Europe 2001). In accordance with the TEAI curriculum, the speaking test returns one overall score and six analytic scores, all of which are based on the CEFR scales by means of multimodal feature extractions and neural-network algorithm (Matsuura et al. 2022), which allow for detailed diagnostic feedback on learners' communication (cf. Alderson et al. 2015).

The whole process of the AI interlocutor's utterance generation commonly entails the following five modules: automatic speech recognition (ASR), natural language understanding (NLU; i.e., the extraction of the user's intention from the ASR result), dialogue management (i.e., the generation of the system's intention), natural language generation (NLG; i.e., the generation of language corresponding to the system's intention), and speech synthesis or text-to-speech (TTS; for details, see Saeki et al. 2021). Among them, generative AI or LLMs play a significant role in the second and fourth steps, whereas the first and final steps are specifically related to speech technologies. Importantly, although these four steps can be achieved by adopting external resources such as Google ASR and GPT models, the third step – dialogue management – should be carefully designed for the given communication task. For instance, to maximize the opportunity for learners to demonstrate their communication skills, when AI interlocutors detect long silences after asking a question, they should decide either to wait until the learners complete their utterances or to help them by rephrasing or simplifying the question. The architecture of the spoken dialog system in the TEAI project is visually represented in Figure 1.

To evaluate the quality of conversational experience from the learner perspective, we compared learners' self-perceived engagement between the conversational AI interlocutors and experienced human interlocutors. Drawing a parallel to the clinical communication education example mentioned earlier, this

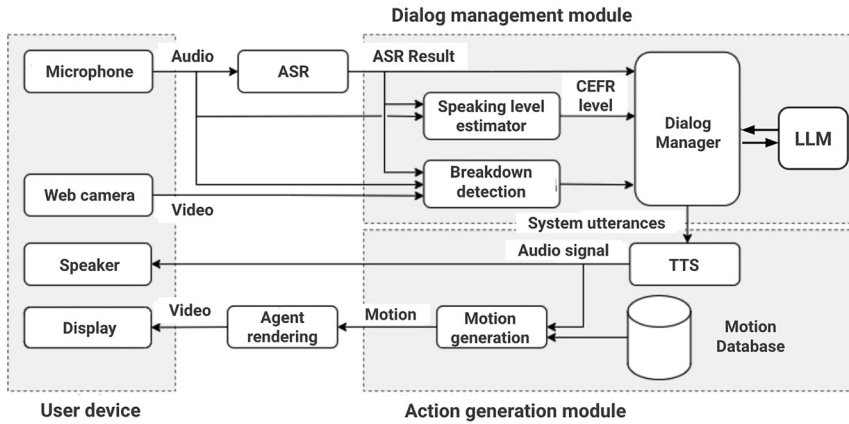


Figure 1: The system architecture of the conversational AI agent, adopted from Kurata et al. (2024). *Note.* In this figure, the module of natural language understanding is embedded in the dialog manager with the assistance of a large language model (LLM).

would be comparing a 32-year-old Burmese pregnant woman created by generative AI versus one roleplayed by a human interlocutor. In this study, seventy-one Japanese-L1, English-second language (L2) learners completed two different sets of a roleplay task and a discussion task with experienced academic communication educators and conversational AI interlocutors. After the completion of each task, the learners responded to questionnaire items, which altogether tap into behavioural, cognitive, emotional, and social dimensions of engagement. Results showed that there was no significant difference in learners' behavioural engagement scores between the two conditions of interlocutors, whereas students reported higher scores of cognitive, emotional and social engagement when interacting with human interlocutors than with the generative AI interlocutors (for more details, see Kurata et al. 2024).

The TEAI case study highlights the many affordances and challenges in applying AI to PCIC education. As we have demonstrated, TEAI is an operational learning and assessment interface that can easily accommodate a large number of learners. Being able to quickly provide diagnostic feedback on language use, similar platforms such as TEAI can effectively reduce the burden of having both content and communication educators onsite to provide feedback to PCIC learners. Although TEAI is not situated in a higher-stakes PCIC context such as clinical or legal communication, it is reasonable to expect that with the growing application of AI to PCIC, we will see more platforms such as TEAI being developed that target specific, higher-stakes PCIC contexts.

Despite the promising directions we have observed in TEAI, TEAI concurrently reveals some key areas for future research in AI-for-PCIC. Mirroring the three identified challenges – emotional engagement, language input and language output – from the previous section, here we respond to each of them using TEAI as a case in point.

Firstly, current generative AI interlocutors can reasonably produce the transactional/behavioural dimension of communication but fall short on the interpersonal (e.g., cognitive, emotional, and social) dimensions of PCIC (Dai 2024a, 2024b). In the case of tertiary interpersonal communication in TEAI, the AI interlocutor is only expected to provide institutional but not emotionally engaging responses to learners. Since PCIC entails diverse cultural practices where speakers rely on the interpretation and response to emotional cues to make sense of one another's conduct, insufficient engagement at the emotional, cognitive and social levels from AI interlocutors can undermine the learning outcome for AI-mediated PCIC education programs.

Secondly, current AI technologies as the one used in TEAI can privilege input from learners of certain language and cultural profiles. Since learner utterances need to be processed through ASR where the system developer needs to choose a certain variety of English, the quality of interaction (e.g., AI interlocutors' understanding of learner utterances) and the assessment feedback based on the interaction with AI interlocutors are inevitably affected by the discrepancy between the selected English accent and learners' pronunciation. For instance, the test score of a group of Burmese-L1 learners can be systematically biased if Burmese English was not used in the training dataset.

Lastly, in terms of the language produced by TEAI, developers need to specify the variety of English for the system's output (i.e., speech synthesis). If the output English variety is set to be an L1 English one (e.g., North American English or British English), this would reinforce native speakerism and perpetrate bias and discrimination towards non-L1 speakers who speak English with an accent that was not used to train the AI interlocutors. This limitation can affect migratory professional workers disproportionately since many of them do not speak the language variety privileged by their destination country.

5 Concluding remarks: potential solutions and grounds for optimism

In this discussion paper, we have laid out the practical challenges faced by PCIC education and the potential of AI to address some of these challenges. The integration

of generative AI into PCIC education holds immense potential for transforming the way learners develop professional communication skills in diverse cultural contexts (see Stamer et al. 2023 for a discussion on this in clinical communication education). By leveraging realistic and tailored simulations, educators can create immersive learning experiences that transcend traditional language instruction. However, these opportunities are accompanied by challenges related to biases, emotional intelligence limitations, and natural language processing constraints. Through strategic measures, such as dataset curation, continuous refinement, and the development of blended learning approaches combined with human feedback, we are hopeful that these challenges can be effectively addressed. The result is a dynamic educational landscape where generative AI serves as a powerful tool for enhancing ICC skills and preparing professionals to navigate the complexities of a globalized world.

Looking forward, to successfully integrate generative AI into the education of PCIC, educators must employ strategies to mitigate potential issues and enhance the technology's efficacy. Addressing biases requires a conscientious effort in curating diverse and culturally sensitive datasets. For example, when developing scenarios for intercultural academic discourse, business negotiations, and clinical communication, educators can ensure that communicative styles, interactional norms, and cultural nuances are accurately represented and free from stereotypes as much as possible. Regular audits and refinements of the AI-generated content are essential to identify and rectify biases that may emerge over time. This ongoing process ensures that technology evolves in tandem with societal changes, promoting inclusivity and cultural sensitivity. AI specialists can also collaborate with PCIC and ICC researchers to validate and enhance the authenticity of the scenarios, ensuring that the simulations align with real-world cultural dynamics and learner needs. Improving emotional intelligence in generative AI models involves incorporating cultural nuances into the algorithms. For instance, a healthcare simulation can be refined by the inclusion of diverse expressions of patient emotions, expectations and sociocultural practices, which allows PCIC learners to navigate complex interpersonal landscapes with cultural sensitivity.

Finally, advancements in natural language processing might be able to address the technology's limitation in handling intercultural nuances. But before we get there, PCIC researchers and educators can develop and use blended learning approaches, combining the strengths of generative AI simulations with real-time feedback from human educators. Whether it is academic discourse, business negotiation or clinical communication, we can potentially let learners engage with AI-generated content to develop their professional content knowledge, while using human educators only for personalized guidance and cultural insights. This hybrid

model leverages the adaptability of AI technology and the nuanced understanding provided by human educators, offering a comprehensive and adaptive solution for effective PCIC education.

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