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### Technology-enhanced intercultural exchange in language learning and teaching: A scoping review

**Mehrasa Alizadeh**

Otemon Gakuin University

**Neil Cowie**

English Language Academy, University of Auckland

This paper presents a scoping review of recent research on virtual exchange (VE) in higher education, with a focus on language learning and intercultural development. Drawing on 48 peer-reviewed studies published between 2020 and 2025 in Q1 journals, the review analyses terminology, geographical distribution, linguistic and cultural goals, technologies used, research designs, data collection, and key findings. The results confirm that VE is a flexible and inclusive pedagogical model that fosters both language acquisition, particularly speaking skills, and intercultural competence, through tasks emphasizing collaboration and reflection. While commonly used tools include Zoom, WhatsApp, and Google platforms, few studies have integrated emerging technologies such as virtual reality (VR) and AI. Moreover, research in the Japanese higher education context remains limited. These gaps inform the design of a forthcoming empirical study that will connect Japanese university students with peers in Australia and New Zealand through VR- and AI-enhanced intercultural exchange. This review not only highlights best practices and methodological trends in VE research but also identifies underexplored areas and technological opportunities that can shape the next generation of intercultural language education.

*Keywords:* intercultural communication, language learning, virtual exchange (VE), telecollaboration, scoping review

### Introduction

Virtual exchange (VE), also referred to as telecollaboration (O'Dowd, 2018), has long been a widely adopted pedagogical approach in higher education, recognized for its ability to enhance both language acquisition and intercultural communicative competence. Dooly and Vinagre (2022) identified several key features of VE: it is a flexible pedagogical approach that can be integrated into various instructional formats; it offers students opportunities to engage in meaningful interaction and collaboration with peers they would not typically encounter in traditional educational settings; and it is also seen as a valuable alternative to physical mobility, particularly for students facing financial or physical barriers, promoting greater inclusion and access to international learning experiences.

Over the past two decades, many universities worldwide have implemented VE programs to connect students across geographical boundaries who share common linguistic goals, particularly the learning of English as a lingua franca as well as other foreign languages. While such programs were already in place before 2020, the COVID-19 pandemic significantly accelerated their adoption (O'Dowd, 2021). As international mobility and study-abroad programs were suspended, VE emerged as a practical and inclusive alternative, allowing students to engage in meaningful cross-cultural communication from their homes (Weaver et al., 2024). This increased reliance on digital tools also coincided with the mainstreaming of online communication platforms in education, further supporting the scalability and accessibility of VE initiatives.

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### Scoping review of studies on intercultural exchange in language learning and teaching

Given this background, the current study aims to examine the state of the art of VE, with a focus on its impact on language learning and intercultural development. This study forms part of a larger funded project designed to connect Japanese university students with language learners in Australia and New Zealand through virtual reality (VR) and AI-enhanced VE. Before launching the practical component of the project, the researchers conducted a comprehensive literature review to identify theoretical frameworks, pedagogical models, and methodological approaches used in previous studies. The purpose of this review is to inform the design of the forthcoming exchange and contribute to the refinement of VE practices in higher education settings.

The review focused on scholarly articles published between 2020 and 2025, indexed in Scopus, and appearing in Q1 journals. Only peer-reviewed articles written in English and reporting on VE, telecollaboration and similar terms in higher education were included, using the following search query to retrieve relevant studies:

TITLE-ABS-KEY(telecollaboration) OR TITLE-ABS-KEY("Virtual Exchange") OR TITLE-ABS-KEY(vee) OR TITLE-ABS-KEY("online intercultural exchange") OR TITLE-ABS-KEY(one) OR TITLE-ABS-KEY("collaborative online international learning") OR TITLE-ABS-KEY(coil) OR TITLE-ABS-KEY("tandem") OR TITLE-ABS-KEY("teletandem") OR TITLE-ABS-KEY("tandem learning") OR TITLE-ABS-KEY("intercultural telecollaboration") AND TITLE-ABS-KEY("second language") OR TITLE-ABS-KEY("foreign language") OR TITLE-ABS-KEY("language learning") AND PUBYEAR > 2020 AND PUBYEAR < 2025 AND (LIMIT-TO(LANGUAGE," English")) AND (LIMIT-TO(DOCTYPE,"ar"))

The initial search yielded 208 results, which were independently screened by the authors according to the criteria outlined in Table 1. From this pool, 48 papers were retained for full-text review. This concise paper presents the key findings of the review, highlighting emerging trends, commonly used technologies, target languages, theoretical approaches, research methodologies, and pedagogical outcomes. The insights gained aim to identify research gaps and inform the future implementation of an intercultural VE program.

Table 1

#### *Inclusion and Exclusion Criteria of the Scoping Review*

Inclusion Criteria	Exclusion Criteria
1. Conducted in a higher education setting	1. Conducted in non-higher education settings (e.g., K–12)
2. Published in 2020 or later	2. Published before 2020
3. Focused on language learning and teaching with an emphasis on intercultural exchange	3. Not related to language learning and teaching
4. Based on empirical participant studies (qualitative, quantitative, or mixed methods)	4. Theoretical or conceptual papers, literature reviews (systematic, scoping, etc.), or meta-analyses
5. Involving technology-mediated intercultural exchange	5. Involving only face-to-face (non-technology-mediated) exchanges
6. Published in a Q1 journal	6. Published in Q2, Q3, or Q4 journals

### Terminology usage and geographical distribution

Across the reviewed literature, a variety of overlapping terms were used to describe VE practices. The most frequent term was telecollaboration (N=24), followed closely by virtual exchange (N=19). Some studies reflected broader educational goals, such as intercultural competence (N=12) and internationalisation at home (N=3), while others referenced specific pedagogical approaches like tandem (N=9) or COIL (N=2). This variation shows that the terminology is still developing and somewhat inconsistent, probably due to differences between academic fields and the preferences of different institutions. Excluding three studies that involved multiple countries, the United States was the most frequent partner (N=21), followed by Spain (N=11).

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### Linguistic and cultural focus

In general, the reviewed studies demonstrated a broad and not sharply defined set of linguistic objectives. While speaking skills were the most frequently emphasized, described in terms such as oral proficiency, conversation exchange, or translanguaging, the focus extended to sub-skills such as fluency and pronunciation (e.g., Canals, 2020). Other skills like writing (both academic and creative) and listening were mentioned less frequently (e.g., Choi et al., 2021). Reading was notably absent as a linguistic focus. Several studies highlighted linguistic areas that cut across skills, such as vocabulary and grammar, often framed within broader language learning objectives (e.g., Arellano-Soto & Parks, 2021). In addition, some studies addressed more specific language-related topics such as feedback, the evaluation of digital tools, learner motivation and engagement, pragmatic competence, and communication anxiety. A small subset of studies did not identify any linguistic focus.

As expected, intercultural learning was a central theme in most studies, typically framed through Byram's (1997) five-part model of intercultural communicative competence: attitudes, knowledge, skills of interpreting and relating, skills of discovery and interaction, and critical cultural awareness. In terms of content, two types of topics emerged in VE dialogues: (1) Surface-level cultural themes, such as food, music, festivals, family, and holidays that are probably more accessible to learners with lower language proficiency. (2) Deep-level themes, including gender equity, diversity, identity, stereotypes, democratic values, and human rights. The latter were more complex topics requiring higher-order thinking and often stronger linguistic resources (e.g., Rauschert & Cardetti, 2022). Some exchanges also targeted language-related cultural phenomena, such as speech acts, pragmatic variation, and mediation strategies (e.g., Ito-Morales & Fuse, 2025). Pre-service teachers were the most frequently studied population (e.g., Calvo & Hartle, 2024; Yang, 2020), with many tasks culminating in the co-creation of digital artefacts (e.g., videos, collaborative documents, written reflections).

### Technologies Used

Technologies used in the studies could be divided into synchronous tools (e.g., Zoom, Skype), asynchronous tools (e.g., Padlet, Google Drive), and supportive tools (e.g., LMS). However, studies often lacked clarity on the exact nature of use (synchronous vs. asynchronous). Some described the tools vaguely, e.g., 'online exchange took place', without naming platforms or devices. The most frequently mentioned applications were Zoom (N=16) WhatsApp (N=8), Skype (N=7), Padlet (N=6), Google Meet (N=4), Google Drive (N=4), Microsoft Teams (N=3), and Flip (N=3). Beyond these, over 30 tools were each cited only once or twice, including, LMSs such as Canvas, Blackboard, and Moodle, social networking sites such as Line, Facebook, WeChat, Slack, and creative tools such as Movie Maker, Doodle, and Blogger.

Only one study used VR, employing Oculus Quest/Go with Big Screen software (Gruber et al., 2023). Another study included AI tools such as Grammarly, Google Translate, and Duolingo, indicating limited integration of emerging technologies (Sun, 2024). Many studies allowed or encouraged students to choose their own platforms, following a 'choose your own VE tool' approach which fostered digital literacy as a learning objective. Device usage (e.g., phones, tablets, laptops) was rarely specified, reflecting a general lack of attention to hardware in VE studies.

### Research designs and data collection

The studies reviewed employed a variety of research designs, with mixed methods emerging as the most prevalent approach. Fifteen papers explicitly described using a combination of qualitative and quantitative methods to investigate the linguistic, cultural, and affective dimensions of VE (e.g., Luo & Yang, 2022). Among these, qualitative data analysis was particularly common, with 18 studies referencing the use of coding techniques such as constant comparison, content analysis, or thematic analysis (e.g., Sardegna & Dugartsyrenova, 2021). While many studies leaned toward qualitative or exploratory designs, five employed experimental or quasi-experimental methodologies to assess learning outcomes in a more structured manner (e.g., Toscu & Erten, 2020). Other identified designs included case studies, critical discourse analysis, and exploratory research, indicating a rich methodological diversity in this area of research.

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In terms of data collection, the most commonly used sources were student reflections and surveys, found in 11 and 10 studies respectively. These were often used to capture learners' subjective experiences and perceived gains. Transcriptions and interviews were each used in seven studies to analyse interactional patterns or explore learner perceptions in more depth (e.g., Korkealehto & Leier, 2021). Additional data types included e-portfolios, essays, blog posts, social media messages, and photographs.

### Main findings

Given the diverse aims of the studies included in this review, the findings also varied widely. Nonetheless, several recurring themes emerged across the research. One of the most prominent themes was the development of intercultural competence, reported in 18 studies. Contributing factors included reduced stereotyping, heightened awareness of cultural diversity, greater awareness of one's own cultural identity, shifts in attitudes and skills, and enhanced democratic values and empathy (e.g., Machwate et al., 2021).

Language development, especially in speaking skills, was another common outcome, mentioned in 15 studies. A smaller subset also noted gains in student confidence, motivation, and willingness to communicate. Several studies examined translanguaging and found that it can facilitate intercultural competence, especially in overcoming communication breakdowns by drawing flexibly on multiple linguistic resources.

Importantly, there was little to no evidence suggesting that VE fails to enhance either language ability or intercultural understanding. Most studies reported positive outcomes and reflected students' enjoyment of the experience. To further enhance the impact of VE, various recommendations were made: matching students with similar language proficiency levels, incorporating at least some synchronous interaction, encouraging the integrated use of both partner languages rather than keeping them separate, designing collaborative tasks, and allowing learners to choose their own digital tools. In addition, most interventions were relatively short-term, with eight weeks being the longest reported duration.

### Research gaps and expected contribution of prospective study

Despite the success of previous studies in enhancing students' linguistic and intercultural communication skills through VE, several gaps remain. Most existing studies have primarily relied on conventional tools such as video conferencing and asynchronous platforms to facilitate cross-border interaction. While these tools have proven effective, the potential of emerging technologies, particularly VR and AI, remains significantly underexplored in the context of language learning and intercultural exchange. Furthermore, there is a noticeable lack of empirical research in the Japanese higher education context. Few studies have examined how cross-cultural exchange programs can support students in Japan in developing communicative competence and intercultural awareness. This geographic and technological gap presents a unique opportunity for further research.

The prospective study, therefore, aims to contribute to the field in three key ways: (1) by exploring how immersive VR- and AI-supported interactions can promote deeper engagement and more meaningful intercultural communication among university students; (2) by offering empirical data from Japan, thus addressing a regional underrepresentation in VE research; and (3) by providing pedagogical insights into how emerging technologies can be effectively integrated into language learning curricula to support both linguistic and intercultural outcomes.

### Conclusion

This paper provides a scoping review of technology-enhanced intercultural exchange and its role in developing university students' cross-cultural awareness and communication skills. A total of 48 studies were reviewed and analysed for both bibliometric trends and thematic content. The findings highlight the effectiveness of VE in promoting linguistic and intercultural competence, while also identifying areas that warrant further

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investigation. Insights from this review will guide a forthcoming study that aims to connect Japanese students with language learners in Australia and New Zealand through a VR- and AI-supported exchange program.

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