

Service-Learning as Inclusive CALL: A Hong Kong Case Study

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Abstract

This study investigates the intersection of computer-assisted language learning (CALL) and service-learning (SL) in higher education, focusing on language educators' experiences of offering SL subjects to children and adults from underprivileged communities in Hong Kong. While research on SL has primarily centered on students' learning, this study addresses the understudied perspectives of faculty practitioners. The research explores how teachers integrate SL into language subjects, the role of digital technologies in language-based SL subjects, and the challenges faced by educators implementing innovative pedagogies. Using a qualitative approach, this case study examines four SL subjects offered by a self-financed tertiary institution in Hong Kong from 2022 to 2024. Content analysis was conducted on data including semi-structured interviews with SL proposers and teachers (N=5), SL subject artifacts (teaching plans, assessment guides, and subject deliverables), and teacher-researchers' autoethnographic accounts (N=2). The study aims to provide insights into the benefits and difficulties of combining CALL and SL, challenges and coping strategies, and the impact of emerging technologies like podcasting and generative artificial intelligence (GenAI) on language instruction. By exploring these aspects, this

paper seeks to contribute to the understanding of inclusivity in language education and inform curriculum development for CALL practitioners engaged in service-learning initiatives.

Keywords: Computer-assisted language learning (CALL), Service-learning (SL), Inclusivity, Language teachers, Generative artificial intelligence (GenAI), Qualitative study

Introduction

Rapid technological advancement has been transforming higher education more than ever. Admittedly, language educators are largely practitioners of computer-assisted language learning (CALL)ⁱ in the post-Covid era (Tafazoli, 2021; Wu et al., 2023), enhancing their teaching by facilitating computer technologies' accessibility and efficacy for language learners (Elmahdi et al., 2024; Park & Son, 2009). On the other hand, as the societal fabric becomes increasingly diverse, it is necessary for them to also cater to the needs of language learners from a wide spectrum of backgrounds, not limited to gender, race, abilities, special needs, socio-economic status, and unforeseeable conditions such as war and persecution (British Council, 2012; Cheng & Lai, 2020; Delaney, 2016; Gitschthaler et al., 2024; Paiz, 2019; Stadler-Heer, 2019).

Meanwhile, service-learning (SL), a novel pedagogy synthesizing academic focus with civic engagement, has been widely adopted and gained popularity globally in the past three decades (Colby et al., 2000; Kenny & Gallagher, 2002; Liu, 1999). It begins to gain recognition as an important space for inclusive education (Carrington et al., 2015; Chambers & Lavery, 2017; Singha, 2024) since SL's target service recipients are often from underprivileged and underrepresented communities. Over the past ten years, the integration of SL into higher education has witnessed a significant increase in Hong Kong. SL's benefits for students include improved self-assurance, empathy, and cultural understanding (Ngai et al., 2019; Shi & Cheung, 2024). What happens, then, when language teachers integrate CALL into their SL subjects?

Although studies on SL adopt various research methods, their primary interests remain largely in students' learning outcomes, experiences, and perceptions. According to Lau et al. (2022), 86% of studies of SL in Hong Kong are on students, 10% of them are on communal reception, while research on faculty is only 4%. A surprisingly small number of studies focus on SL practitioners whose first-hand experiences of developing SL and identifying needs of service recipients and students can shed light on further engagement of SL at the tertiary level. This study,

therefore, aims to reveal teachers' experiences and perceptions of offering skill-based or content-based language service learning while incorporating various CALL tools.

This paper works under the overarching premise that SL *per se* is an inclusive pedagogy, as SL guides students to address the needs of an underprivileged or under-represented community. SL requires students to serve by applying what they have learned in the classroom, hence extending their experience beyond private and classroom learning. Fundamentally, this case study seeks to answer a broader question regarding inclusive CALL: *What are the challenges of inclusive CALL for Hong Kong tertiary-level teachers?*

To answer the above question, the research questions guiding this study are:

RQ1. How do Hong Kong CALL teachers integrate SL into their language subjects?

RQ2. What are the roles of digital technologies (e.g., podcasting, generative AI) in language-based SL subjects?

RQ3. What are the major challenges faced by the CALL teachers implementing SL in Hong Kong? How do they resolve such challenges in their own capacity and contexts?

Review of Literature

Inclusive CALL

Stadler-Heer (2019) insightfully points out that “the notion of inclusion entails a transformed view of (language) teaching” (p. 219). She argues that inclusive education calls for shifting from traditional views of individual differences in typical classrooms to a comprehensive, organizational, and interactive approach. This perspective, rather importantly, encompasses all aspects of schooling, including infrastructure, financial resources, community building, and staff training. Stadler-Heer concludes her article by advocating computer-assisted technology as one of the key methods to engage all learners.

Research on using technology for inclusive language education has been abundant in recent years, ranging from studies on efficacies in CALL instruments and learner needs to more ideologically and culturally diverse inclusiveness in language education. Unlike conventional English for Specific Purposes (ESP) classrooms, in which teachers use digital tools for developing learning materials and providing contexts that cater to students' needs (Arnó-Macià, 2012), inclusive CALL requires more innovative use of digital tools that accommodate even more diverse needs in real-life settings. For example, Yamashita (2024) examined the effectiveness and

inclusiveness of human-delivered synchronous written corrective feedback (SWCF) in English-as-a-Second-Language (ESL) writing programs at an American university. The study found that SWCF could improve performance of learners with low language analytical ability and thus contribute to inclusive teaching. Kaçar et al. (2023) explored the experiences of four English-as-a-Foreign-Language (EFL) preservice teachers designing online flipped tasks. Analyzing teacher logs and lesson plans, the study revealed that, despite pedagogical challenges, the teachers experienced increased self-efficacy, agency, and digital competence. The tasks aligned well with Universal Design for Learning (UDL) principles, i.e., promoting learner engagement, addressing student diversity, and thus encouraging inclusivity (Capp, 2017). Cunha-Pérez et al. (2023), on the other hand, introduced teaching strategies such as ad hoc online learning software to improve English vocabulary for 20 Down Syndrome students. Andujar and Nadif (2022) studied the application of an inclusive blended learning environment in an EFL class with six students with physical and cognitive disabilities. Videos with captions, text, and sign language were provided as interventions, after which the researchers conducted in-depth interviews and a perception scale of flipped learning. The study found the learning outcomes positive, especially for those with disabilities.

Other studies, contrastively, emphasized less specific student needs but broader spectrums of religion, culture, and identity. For instance, Sadeghi and Pourbahram's (2023) systematic review on social justice in CALL reveals that there is an increased focus on social justice issues in online classes following the pandemic. The reviewed studies emphasize the crucial role of language teachers as advocators for social justice, highlight the growing digital divide among learners, and discover the influence of hegemonies and governing powers on social media content.

The rise of generative artificial intelligence (GenAI) since 2022 also sparked concerns about bias and ethics, with inclusivity being one of the key foci of research in language education. The perspectives of CALL researchers on the prospect of AI use are, in general, positive with some reservations, as GenAI chatbots are often considered "24/7," "tireless language-learning assistants" (Kohnke et al., 2024, p. 538), but how to use them ethically and appropriately remains an issue (Chan & Colloton, 2024). Yuen and Schlote (2024) focused on AI-powered features enhancing technology-based language learning. They applied pedagogy, heutagogy, and self-determination theory to guide the design and application of AI in supporting language learning. With 151 participants from two Canadian universities, their study found that apps are considered engaging,

convenient, and structured for early L2 learning stages. Additionally, AI integration for speech recognition and conversation simulations provides more personalized learning experiences. Anis (2023) studied how inclusivity in English language teaching (ELT) is enhanced with AI and explored how integrating AI tools can address learner diversity and foster inclusivity. Findings suggested that AI can revolutionize individualized instruction, accessibility, and differentiated learning experiences, thereby advancing inclusive ELT practices. Meanwhile, Tafazoli (2024) offered balanced views on the opportunities and difficulties posed in English language education in the AI era. He investigated the transformative potential of ChatGPT and addressed new challenges for Iranian English teachers based on key themes such as accessible learning materials, personalized learning experiences, ideological influences, technological barriers, and isolation from global trends. His study highlighted GenAI's ability to enhance inclusive education by offering personalized experiences that cater to various cultural backgrounds and learning needs. Overall, scholars hold the belief that with the wider acceptance of AI in education across the world, language educators will be able to facilitate equity and inclusive education more effectively and creatively (Acay et al., 2024; Anis, 2023).

Challenges of Inclusive CALL

Nonetheless, reviewing the rich literature on inclusive CALL, educational researchers and language educators may be aware that the practical application of CALL in inclusive language education is not easy. Indeed, it relies heavily on collaboration and support from institutions, government policies, tech companies, and community partners, in addition to frontline teachers. For example, teachers may go through a serious identity crisis as language educators if technology takes over the classroom entirely (Bahari, 2022). Buendgens-Kosten (2020) discussed the monolingual bias in CALL research and product development, highlighting a lack of support for learners using multiple languages. Aside from arguing against monolingual bias, the author suggested future research areas in multilingual CALL (MCALL). Hilt (2017) offered an analysis of the processes of inclusion and exclusion for newly arrived minority language students at the risk of marginalization in Norway. Teachers' attitudes towards multilingual students and their first-hand experience of learning languages with various technological tools make a significant difference in students' language learning experience (Dunn, 2011; Gilham & Fürstenau, 2020; Kast & Schwab, 2023).

To address these challenges, collaborative efforts among institutions or even individual teachers are important. For example, Knouse and Salgado-Robles (2015) investigated how a collaborative critical service-learning course can increase students' second-language production opportunities and strengthen effective support. In addition, integrating CALL into service-learning might be one of the solutions, as elaborated below.

Service-Learning Language Education

Service-learning (SL) is a term that first emerged in the United States in 1967 (Kenny & Gallagher, 2002). It offers college students academic credits for actively engaging in community projects. Decades after, SL is increasingly recognized as an essential force in promoting educational and social change (Camus et al., 2022; Chambers & Lavery, 2017). In this context, SL as an experiential pedagogy emphasizes fostering civic responsibility and social justice both locally and globally. More recently, Butin (2006, 2015) and Mitchell (2008) supported critical service-learning programs that prioritize practice informing theory, asserting that only a justice-focused approach can address power imbalances and foster real social change. Thus, SL pedagogy has evolved from enhancing transformative learning for students to advancing social responsibility and justice.

In response to this changing landscape, language educators are consciously embracing community-based service-learning (CBSL) approaches that engage students directly with the community (Baker, 2019) and through socialization (Duff, 2007). Rauschert and Mustroph (2022) argued that intercultural SL can connect intercultural learning and foreign language acquisition through meaningful service. Sun and Yang (2015) incorporated SL into an EFL speaking class using Web 2.0 tools such as YouTube and Facebook. Their findings indicate that the project improved students' public speaking skills, developed their own learning strategies, and offered new opportunities for SL to reach a worldwide audience. Singh and Nguyễn (2018) emphasized localizing Chinese language needs and applied materials and concepts from China critically in their SL programs. Chen's (2023) study found that the SL subject involving teaching English as a foreign language (TEFL) to Taiwanese elementary schools fostered students' social responsibility, as well as professional and academic knowledge about TEFL and children's language learning behaviours. Through interacting in English with community partners in a multicultural service setting, Shi and Cheung (2024) proposed that the digital storytelling service-learning subject

enhanced students' cultural understanding aside from learning English for writing and recording stories. In all, when designed carefully, SL with ESL/EFL/CSL/CFL components can address different students' abilities and limitations (Suprayogi et al., 2017; Tomlinson, 2001), encourage students to interact with teachers and beneficiaries (Carrington & Selva, 2010), as well as raising their awareness about the communities surrounding them.

It is noteworthy that literature on SL and inclusive CALL is very scarce. To address this gap, the present case study is situated at the intersections of CALL and SL in the context of Hong Kong, a multilingual and multicultural Asian city that prides itself in connecting the East and the West. We also shift the focus of student-oriented research regarding SL to a teacher-oriented one, in order to shed light on language teachers' first-hand experiences of developing, teaching, and modifying language-based service-learning subjects as technology advances at an exceedingly fast pace.

Methods

Research Design

The present study adopted a qualitative case study approach to investigate the service-learning teachers' views on the use of digital technologies in their SL subjects. In comparison to quantitative approaches, qualitative approaches captured their rich and complex experiences as they reflected on their teaching practices. These experiences cannot be generalized through quantitative methods. In specific, through narrative inquiry (Barkhuizen et al., 2014), the teachers were invited to talk about their processes of and perspectives on digital technology use. Therefore, paying close attention to individual experiences allows us to analyze in depth the challenges that they faced when attempting to adopt digital technologies or otherwise in their language-related SL subjects (Clandinin, 2016).

Context and Participants

Our case study took place in a self-financed tertiary institution in Hong Kong. We investigated four SL subjects offered by the Division of Languages and Communication for at least two years (2022-2024), namely, 'Teaching Primary School Students English as a Service-Learning Experience' (English workshops hereafter), 'Chinese as a Second Language for Ethnic Minority Children'" (Chinese Handwriting hereafter), 'Experiencing Art for the Visually Impaired Through

Audio Description’ (Audio Description hereafter) and ‘Storytelling for Understanding: Refugee Children in Hong Kong’ (Digital Storytelling hereafter). Research participants are SL leaders and lecturers (N=7) responsible for the subject design, implementation, teaching, and on-site supervision.

All seven teachers were either current or former teaching staff of a Hong Kong self-financing tertiary institution (hereafter “the College”). As lecturers of the languages and communication division at the College, the SL subjects they taught, and the content knowledge applied in the service settings are related to language teaching, digital storytelling and applied language art. The service recipients were mainly the marginalized communities in Hong Kong, such as new immigrants from Mainland China, ethnic minorities from Southeast Asian countries, asylum-seeking refugee children, and visually impaired Hong Kong locals. The teachers’ profiles, the SL subjects, and the lengths of each interview are summarized in Table 1.

Table 1

SL Teachers' Profile, Corresponding SL Subjects and Interview Information

Teachers (pseudonyms)	Gender	Age	Full-time Teaching Experience (years)	Roles	SL subjects	Interview length
Edan	Male	36-40	6	Subject lecturer; on-site supervisor	Digital Storytelling	N/A*
Winsome	Female	41-45	11	Subject leader; subject lecturer; on-site supervisor	Digital Storytelling	N/A*
Manfred	Male	36-40	9	Subject leader; subject lecturer; on-site supervisor	English Workshop	50 minutes
Natalie	Female	36-40	10	SL coordinator; Subject leader; subject lecturer; on-site supervisor	English Workshop	65 minutes
Helena	Female	36-40	5	Subject leader; subject lecturer; on-site supervisor	Audio Description	77 minutes
Helarie	Female	41-45	20	Subject leader; subject lecturer; on-site supervisor	Chinese Handwriting	63 minutes
Elenor	Female	41-45	14	Subject lecturer; on-site supervisor	Chinese Handwriting	47 minutes

*Note: Edan and Winsome (the authors) provided their detailed autoethnographic accounts on teaching the SL subject instead of being interviewed.

Data Collection

The data of this study were collected from two main sources: teachers' interviews and autoethnographic accounts of the two authors, who are also SL lecturers. The semi-structured interviews followed the questions developed into a protocol, with an aim to capture the interviewees' views and experiences before, during, and after teaching the SL subjects (see Appendix). The questions were designed based on the research questions arising from the literature review, aside from what the present study seek to answer. These questions elicited the teachers' understanding of the concepts of SL inclusivity, CALL, and the challenges that they faced when they incorporated inclusive CALL strategies into SL and language teaching. The questions enabled the teachers to form unique narratives reflecting on their experiences, in that areas of interest for the present study and common themes across the narratives can be identified and categorized.

Another source of data for this study arose from the two authors' autoethnographic reflections as SL developers and lecturers. The first author (Winsome) was the convenor, subject leader and lecturer for the Digital Storytelling, offered since the academic year 2022-2023. From a background of Literature, she taught storytelling concepts and skills to enable students to form personal stories, organize storytelling workshops, and co-create stories with the service recipients, who were asylum-seeking refugee children in Hong Kong. The second author (Edan) was the SL course developer and onsite supervisor of the same course. While he assessed students' performance as they served at the refugee center, he also taught the students basic technological skills for digital storytelling (e.g., recording and editing digital podcasts) and using GenAI tools (e.g., ChatGPT and Stable Diffusion in Poe, a third-party carrier of multiple large language models - LLMs) to draft stories and create images to supplement the stories.

Data Analysis

The present study adopted qualitative content analysis (Kuckartz & Rädiker, 2023) to examine the SL teachers' interview verbatim and the authors' autoethnographic accounts. This approach aims to examine their views on what digital technologies were used to teach SL subjects for enhancing inclusivity, the role of technology in SL with CALL pedagogy (SL-CALL) and what challenges they faced when adopting technology in their SL subjects. As the data captured the teachers' experience and potential factors contributing to their choices and perceptions, the qualitative approach provides an interpretive lens to the findings and avoids over-generalization. In addition,

through the narrative inquiry method (Barkhuizen & Consoli, 2021), the present study describes and discusses the rich and ‘thick’ data (White & Marsh, 2006) in a comprehensive manner, in that the teachers’ narratives offer valuable insights into ways in which inclusive CALL can be materialized in SL subjects.

After interviewing the SL teachers, we first familiarized ourselves with the transcripts. We then manually coded the data, the codes of which were relevant to the themes of (1) the teachers’ views on what makes CALL service-learning subjects ‘inclusive,’ (2) the role of digital technologies in the language-based SL subjects, and (3) the challenges faced by the SL teachers. These codes were then juxtaposed with our autoethnographic accounts, which were reported in the Findings section below, as the teachers’ views are thematized according to the research questions and then quoted or paraphrased to illustrate the data.

This study does not seek to merely promote the inclusiveness of SL and/or CALL. Instead, the teachers’ reflections offer insights into whether CALL and digital technologies should be considered a necessity or just an option in SL subjects, in addition to highlighting the challenges that they encountered in the face of technological advancement. In other words, the findings will provide a more balanced view on technology, SL and CALL. Another way to enhance the trustworthiness of the analysis is member checking (Candela, 2019). The interviewees were invited to read the manuscript to identify any misinterpretations of their views and provide further details whenever necessary.

Findings

Following the qualitative content analysis of the interview transcripts and the authors’ autoethnographic accounts, we have identified three main themes regarding (1) how SL and CALL intersected in our context, in that the SL subjects were considered ‘inclusive’ even before CALL elements were introduced. The other two themes concern the SL teachers’ views on (2) the role of digital technologies in the SL subjects with the academic focus relevant to language teaching and (3) the challenges faced by the SL-CALL teachers in relation to adopting digital technologies. The subthemes under each main theme will also be elaborated in the sections below.

Intersecting ‘Inclusivity’: SL and CALL

Inclusive Nature of SL

As language-related SL subjects, one main principle recommended by the College’s SL liaison office was that the subjects should not be teaching-oriented. This is because the students in these SL subjects were not trained as teachers, although the academic components may be associated with teaching, such as workshop and activity planning, classroom management, and second language education theories (Natalie). In addition, the SL students came from different disciplines other than language and communication programs. Language learning, as the academic focus of the subjects, was therefore adjusted to suit the students’ language proficiency and, in some cases, moved away from its traditional sense. From the subject description documents, in Digital Storytelling, English use largely emphasized its communicative and creative purposes; in Audio Description, instead of writing academic essays, the main learning outcome was audio descriptions of museum artwork for visually impaired individuals, and in English Workshop, students’ interpersonal and communication skills were trained for interacting with new immigrant children in Hong Kong. These SL subjects bring students experiential learning experience in that they can apply literacy knowledge and communication strategies in authentic settings. In addition, these language learning opportunities ensure inclusiveness by encouraging equal collaboration and participation among learners.

Aside from academic knowledge about language, another essential learning outcome of these subjects was students’ positive, empathetic attitude towards service recipients. They were required to “sincerely help the (recipients)... and be responsible for them and the non-government organizations” (Manfred). They also needed to understand that these subjects were not “volunteer work... but an initiative for them to recognize inclusiveness and the existence of the service community” (Eleanor). In Digital Storytelling, the students enhanced their cultural sensitivity by participating in human libraries and refugee walks (experiencing routes to different refugee assistance organizations), aside from actively listening to refugee children to co-create stories (Edan and Winsome). The above reflections demonstrate that the SL subjects are designed to be inclusive also for service recipients, in that students engage in critical evaluations of how their learning experiences can be transformed into practices that benefit not just themselves but also a broader community, so the served individuals can be better integrated into society.

Working towards Inclusive CALL

The interviewed teachers stated that they used digital technologies to various extents as they delivered academic content. While all teachers used digital visual aids such as PowerPoint slides, the teachers of the ‘Storytelling’ subject (Edan and Winsome) adopted digital technologies such as podcasting and GenAI to train students how to create stories and illustrations with these tools. The adoption of these new technologies sought to “enhance digital competencies and intercultural dialogues... and also allow the students to concentrate on the voices of... and dialogues... with the refugee children” (Shi & Cheung, 2024, p. 10). While leading the English Workshop, Natalie did not require her students to prepare language workshop materials with GenAI tools or other technologies “but just used printed illustrations or images as aids” (Natalie). Currently in another institution fully embracing GenAI, she had “already included AI tools as a must” (Natalie) in her SL subject syllabus, as long as students have their original ideas. With these views, technologically enhanced language learning in SL can encourage multiple beneficial outcomes, such as promoting self and cultural awareness. However, from the interviews, we also found that not all the SL subjects fully adopt newer digital technologies in their delivery or service components, with reasons related to subject deliverables and limited facilities. Manfred mentioned the use of in-class interactive technologies such as Poll Everywhere to foster students’ participation in the learning activities. However, in the service setting, his consideration of adopting technologies was “indeed none, since he wanted the service beneficiaries (i.e., new immigrant children) to have something tangible to bring back home.” Examples of tangible products are activity sheets involving short pieces of writing and drawing for the children to show their parents. In Elenor’s subject, the service recipients’ learning outcome was mastering Chinese characters by handwriting them on the whiteboard, so “there was no point in using computers.” Facilities were also one main constraint for not adopting technology. Elenor resisted using teleconferencing programs such as Zoom to deliver her SL subject, as the service recipients “might not have iPads or stable internet connection” (Elenor). Helarie added that, “if situations had allowed, students would have been given iPads to interact with the recipients through play.” However, Helena objected to overusing new technologies such as AI, as “building emotional rapport is very important in our subject,” and AI might not be able to facilitate that yet.

Roles of Digital Technologies in Language-Based SL Subjects

All the interviewees did not prioritize digital technologies over language acquisition or content-making in their SL subjects. Except for Natalie, who considered adopting digital technologies a “trend and indispensable,” other teachers described the role of technology in their SL subjects as “ancillary” (Elenor), “not predominant or necessary” (Helena), “assistive” (Helarie), “zero consideration” (Manfred), and “peripheral, but at times pivotal” (Edan and Winsome). The teachers’ explanations for such descriptions can be categorized into two aspects: (i) to what extent technology is needed for learning and assessment and (ii) how they considered ‘human’ elements as indispensable in the subjects.

Variability of Technological Needs for Learning and Assessment

To most of the teachers, the role of digital technologies varied in their SL subjects. For those who considered digital technologies “peripheral” or “ancillary,” that was mainly because such technologies were not fully integrated into learning and assessment criteria. Helena did not regard “PowerPoint slides, multimedia contents or even online quizzes... as new technologies”, mainly because these were not the assessment deliverables produced by her students, but merely as pedagogical tools used in the classroom. Her view differs from Winsome’s, who regarded PowerPoint slides as a type of CALL when the students prepare workshop materials for the service recipients. To Manfred, “technology must be involved more or less in language teaching mainly for motivational and interactive purposes,” but he stressed that it cannot be overly complex for both teachers and students. For the teachers who believe in the important roles of technologies in their subjects, their considerations might also involve service recipients. Edan and Winsome found that, to their surprise, students in Digital Storytelling did not fully rely on GenAI and textual products generated by GenAI tools. However, both their students and the service recipients found pleasure in “generating and selecting AI images together for their stories” (Edan). In addition, the children were also given opportunities to read aloud and record their stories in their own voice, “which was often unheard in Hong Kong” (Winsome). Natalie, who found technology “indispensable,” asserted that these “both the SL students and less privileged beneficiaries... need to learn new technology,” or they would be “lagging behind the trend in the digital era.” In all, while technological needs differ across the language-related SL subjects, what was essential to the

teachers was how technology would maximize the learning experience for both students and service recipients.

Irreplaceability of ‘Human’ Affective Emotions and Interactions

The main argument that the teachers put forward was that technology cannot replace face-to-face interactions between the students and the service recipients. Taking the use of teleconferencing platforms (e.g., Microsoft Teams and Zoom) for example, no SL subject in the Division was implemented in the electronic mode. During the Covid-19 pandemic, all the Division’s SL subjects were cancelled: none was offered online. Aside from technical and facility constraints (Manfred), the teachers from the Chinese Handwriting and Digital Storytelling subjects also reported that their NGO partners “were frank about how ineffective it would be to do the services online” (Winsome). To Elenor, “using Zoom to deliver the service fails to achieve inclusiveness, because doing so may exclude underprivileged onesⁱⁱ without advanced devices.” This suggests that, for SL, one key to inclusiveness is to ensure that communication and interaction can be established with equal access to technology. To avoid inequality caused by digital divides, SL teachers unanimously chose to prioritize in-person interaction and engagement.

Another argument was the importance of affective emotions that make SL “human.” Adding to her previous comment on AI “not being able to build emotional rapport,” Helena valued face-to-face interactions as much as her students, who “would do close readings... textual or visual materials.” In her Audio Description subject, describing artwork required “a lot of involvement and participation from humans,” such as identifying specific types of brush strokes and narrating “cultural and historical specifics of the artwork, making the... scripts enjoyable to listen to.” Edan also recalled that students delivering storytelling workshops had strengthened the bond between them and the children, who would proactively greet and play together during the service period. Winsome also pointed out the impact of such face-to-face engagement on the students; for example, “they showed willingness to return to the refugee center to share their experience in SL” and “confronted local colleagues for making discriminative remarks on ethnic minorities.” These reflections highlight that foregrounding ‘human’ elements is not just a matter of preference or solely for the subject learning outcomes but also impactful in the long run, as physical contact may promote reciprocity and intercultural competence (Collopy et al., 2020).

Challenges Faced by SL-CALL Teachers

As previously reported, the interviewees did not primarily foreground digital technologies or CALL as the academic components in their SL subjects. Although these teachers projected plans to include CALL elements in their SL curricula in the future, they indicated various challenges in the implementation stage. While facility constraints had been explained previously, other issues involved institutional support, potential shortcomings of GenAI, and limited time for SL-CALL teaching preparation. Although not all these issues were fully resolved, the teachers suggested solutions that might enable SL subjects to incorporate more CALL components in the future.

Limited Institutional Resources

To achieve CALL in the SL classroom, Manfred emphasized the importance of institutional support, such as employing teaching assistants or allocating a budget for purchasing equipment. He would have been able to “convert materials into digital forms or create online polling if [he] had a teaching assistant... so that the SL teacher can focus on teaching instead of logistic matters.” He also reflected that the limited budget “had great impact on the course design, causing technology to not be able to play a bigger part of the program.” Budget constraints might also be a possible reason for Helarie not adopting much technology in the subject design, but she and Elenor chose to “remain neutral... and unaffected by challenges related to technology.” That said, ideally speaking, Helarie wished that each student could be given a tablet, a mobile phone, or other ancillary tools to “enliven the activities during the service period and foster interactions between students and service recipients.”

Potential Shortcomings of GenAI

Regarding GenAI, Natalie acknowledged the emergence of GenAI as both “a challenge and an opportunity.” She recognized the problems that “have been exposed owing to AI... but it cannot be totally banned.” Helena only found GenAI and other digital technologies “imposing more challenges” than being useful, in that she would only use it for “paperwork... to proofread... and edit.” In terms of “preparation or the delivery of the service... it is not as useful.” Edan and Winsome shared a similar view, as the storytelling workshops organized at the refugee center for the children required students to engage in real-time conversations with them. Consequently, GenAI was not deemed useful in interactional settings despite its capabilities of generating story

ideas and illustrations. Still, Natalie gave a positive view that SL teachers “had a mission to sense the existence of AI, aside from empowering them to fulfil service requirements.”

Time Constraints for Preparing SL-CALL Subjects

In general, the interviewed teachers showed acceptance of different digital technologies. The only obstacle remaining, however, was the extra time and effort required for integrating digital technologies into SL curricula and teaching strategies. Manfred acknowledged that “teaching preparation involving technology can be troublesome given the time needed for learning the relevant knowledge and skills, or the teaching and learning materials turned into digital formats.” His view was echoed by Natalie, who stated that “encouraging students to use GenAI... is definitely another challenge, because teachers would need to learn a lot of new things under a tight schedule.” To be eligible to teach her SL subject, Helena even took a certified course in audio description (100 hours, including a practicum) for the visually impaired at weekends, sacrificing her leisure time.

Despite these efforts expended to offer the best learning experience to students, these teachers were often not rewarded with extra teaching remission or assistance (e.g., teaching assistants). While this issue remained largely unresolved, one possible workaround that Winsome proposed was co-teaching, in that a more technologically knowledgeable teacher can share some of the CALL lesson designs. For example, with knowledge about digital recording and GenAI, Edan was responsible for instructing the students in the ‘Storytelling’ subject how to draft their stories with AI and record their narratives as podcasts. This did not require extra teaching support, and the teaching hour deduction was shared between him and Winsome.

Discussion

This study investigated how undergraduate language teachers in Hong Kong utilize and perceive technology in their SL initiatives. The findings corroborate the reviewed literature in that it is important for language teachers to stay updated with new digital tools while staying alert to the diverse needs and backgrounds of language learners (Anis, 2023; Buendgens-Kosten, 2020). When integrating CALL tools into their SL subjects, the interviewed teachers prioritized the needs of the service recipients, taking into consideration their religion, race, and language proficiency levels. They then prioritized their service partners (NGOs) before the student’s learning experience,

especially when their resources, such as facilities and manpower, cannot cater to a large number of students in one setting or allow them to visit the service venues frequently. When all parties involved were cared for, appropriate CALL tools were implemented accordingly. We also discovered that the later the SL subject was implemented, the more technologically aware the CALL teachers became and that the content-based SL subjects tended to be more interested in using more advanced technology for content-creating (audio description and personal narrative podcasts) compared to the skill-based subjects. Essentially, to answer the first RQ, Hong Kong CALL teachers prioritized the quality of service and human interaction over the use of technology, hence achieving what Butin (2006, 2015) advocates as ‘critical SL’ that is primarily interested in practicing social justice through experiential learning.

It is also apparent that the language-related SL subjects in the present study emphasize language learning through socialization (Duff, 2007), highlighting the importance of personal touch and physical contact. Even when GenAI was readily available after 2023 to provide timely feedback and ‘human-like’ interactions, AI tools were not implemented due to the nature of skill-based subjects (‘Chinese Handwriting’ and ‘English Workshop’) as well as the service recipients’ age (young children aged 5-10). For ‘Digital Storytelling,’ GenAI was used minimally for illustrations that accompany the personal stories. The subject team aimed to achieve authentic communication and allow students to interact with the community. However, in the SL subjects, students are expected to apply linguistic knowledge and communicative skills and learn reciprocally from the service recipients by engaging in interactions with them. Consequently, the role of technology that may support inclusive CALL remains peripheral unless digital literacies are considered key learning outcomes of the subject or technology is applied in other SL settings, such as virtual or hybrid service-learning.

In addition, the challenges and constraints identified in the findings are not uncommon among CALL teachers across the world. Admittedly, enhancing their digital and AI literacies might facilitate their teaching preparation. As with those targeting students’ competence, such literacies encompass the knowledge and curation of adaptive digital tools for developing teaching and learning materials, the understanding of these tools’ strengths and limitations, and their potential ethical concerns that may impact originality and critical thinking (e.g., Chan & Colloton, 2024). Enhancing teachers’ AI and digital competence may increase their self-efficacy in adopting such tools in their curricula. In light of this, teaching professional development initiatives can focus

on technological, pedagogical and content knowledge (TPACK) (Rosenberg & Koehler, 2015), e.g., material design, implementation, and scaffolding with digital technologies (Park & Son, 2009).

However, what remains difficult to resolve is how much institutions should support SL-CALL teachers and recognize their efforts. Additional time spent on teaching preparation out of teachers' passion may lower job satisfaction and cause teacher burnout or even attrition. In addition to fostering their competence in CALL and AI/digital literacies, it is equally important to encourage a Community of Practice (CoP) that encourages discussions and help among members "to capitalize on the cognitive and social benefits" (Knouse & Salgado-Robles, 2015, p. 58). Another solution is co-teaching, a collaborative teaching strategy common in language and content teaching. In the case of SL-CALL, this co-teaching strategy can involve language teaching as content teaching, supplemented by technological knowledge instruction. Emphasizing social learning, co-teaching may foster teachers' personal and professional development.

The findings are consistent with educational theories and emerging critical service-learning modes. The use of technology was not blindly implemented just because of the pressure of utilizing the newest digital tools. Instead, both the interview data and the autoethnographic accounts have shown that CALL teachers carefully tailored their instruction and service to the diverse needs of learners as well as service recipients. This aligns with the Differentiated Instruction principles (Tomlinson, 2001), that is, catering to students' differences, recognizing their strengths, and accommodating their limitations (Suprayogi et al., 2017). This also aligns with the notions of critical social theory (Carrington & Selva, 2010), which informs the practice of SL that creates a dynamic interaction among the educators, the students, and the beneficiaries.

This qualitative study has provided unique insights into frontline CALL teachers through in-depth interviews and content analysis; however, its main limitation is that this study is a small-scale case study, highly contextualized within the institution where the language-based SL subjects take place. It may not be able to offer theoretical generalizations about inclusive education in this distinctive combination of CALL and SL elsewhere. We, therefore, propose that more in-depth interviews be conducted with language teachers who are currently responsible for SL initiatives at the Hong Kong tertiary level and that a larger-scale quantitative survey be done to provide a more balanced and inclusive macroscopic view on the CALL teachers' realities in Hong Kong and by extension, East Asia.

Conclusion

This study contributes to the fields of technology-enhanced language education and SL pedagogies in the context of the multicultural and multilingual city of Hong Kong. By studying the teachers' first-hand experience of offering language-based service-learning subjects that aim at removing language barriers for new immigrants, ethnic minorities, visually impaired, and refugee children, the study reveals challenges of CALL in SL contexts and coping mechanisms teachers came up with.

At a practical level, this paper presents possibilities of critical SL that goes beyond pure language teaching but probes deeper into social justice, civic responsibility, and reciprocity among SL partners and participants. On a theoretical level, this paper seeks to advocate for more human-centered, inclusive language education that demands more institutional, societal, and governmental support that is not limited to technological infrastructure or resources.

Notes

i. With the rapid changes of technological advancement, CALL is inevitably undergoing redefinitions as well: at the turn of the millennium, the internet, World Wide Web, email communication, and multimedia related to the uses of computers in the language classroom gained scholarly attention (Gündüz, 2005); in the 2010s, mobile apps, social media platforms, blogging, and podcasting were foci of studies (Lim & Aryadoust, 2021); 2023 witnessed a sea change in education when Large Language Model (LLM) supported generative AI was made publicly available (Tafazoli, 2024), hence a surge of research on generative AI as a form of CALL.

ii. SL teams are very careful with their wording and practice when serving the communities. For example, students were dissuaded from using terms such as “refugees,” “poor,” or “minorities” when delivering services. As for the digital devices, the subject team of the digital storytelling SL made sure that every child had an iPad as a “story station” to present their recorded personal narrative as a podcast in the final week of story exhibition.

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Appendix: Inclusive CALL 2024 Interview Protocol

Pre-teaching:

1. How long did it take for you to propose an SL subject?
2. How did you come up with the idea of teaching a particular language to a particular community? What was the thinking process like?
3. Why did you choose that community? And NGO partners?
4. What kind of SL theory did you review?
5. What kind of language teaching pedagogy did you envision?
6. What is your relationship with technology like as a language teacher?
7. Administratively, how was it like to propose a SL subject? What was the most difficult part/parts in that process?
8. Did you take into consideration the use of technology in your SL preparation and proposal?
9. What is your understanding of SL before teaching it?
10. Did you incorporate multicultural perspectives and materials into your lessons?

During SL:

1. Do you find it hard to teach SL? If so, what are the difficulties you have encountered in your teaching process? Give us some specific examples?
2. What kind of software, digital elements or technology did you use to prepare your students for the on-site workshops? Any specific language teaching tools online?
3. Did you find the Hong Kong Polytechnic University's online service-learning module useful for students?
4. What were the most essential things you have taught the pre-service students?
5. What did the students find the most difficult when they put academic focus into use in the service?
6. Were students able to implement the pedagogical tools you taught them?
7. Did they become better teachers and students? If so in what ways?
8. Did the students understand their service recipients better?
9. What did the students report to be the most difficult thing they encountered during SL?

10. Were technologies able to enhance the SL program? In what ways and how?
11. Were students competent enough to teach the target language to service recipients?

After SL:

1. Do you have advice for future SL language teachers or proposers?
 2. What is the key to success in an SL program?
 3. What are the challenges for language teachers in SL?
 4. Do technologies help SL teachers with their work? Or do they pose more challenges to them?
 5. Do you think SL is a form of inclusive education? And how does language play a part in inclusive education and learning? How does technology play a role in it too?
 6. What kind of institutional support do you think SL teachers need?
 7. What is your understanding of SL after teaching it?
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