Fostering academic citizenship through ubiquitous technologies in an online academic conference: A framework and its implications

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ABSTRACT: Based on the concept of Communities of Practice (CoPs), this study describes the design and implementation of an online academic conference, Pedagogy and Practice in Technology Enhanced Language Learning (PPTELL) 2021, as a backdrop for exploring how to effectively promote the development of academic citizenship within the PPTELL CoP. To address this, we propose a framework focusing on four interrelated and interdependent dimensions: ubiquitous technologies, social practice, knowledge building, and academic citizenship. The conference utilized Zoom, Second Life, Slido, and several social media apps for various sessions and activities. A triangulation design was employed to analyze data from a post-conference online survey and observation notes. Our findings highlighted the effectiveness of the design in fostering academic citizenship, supported by multiuser virtual worlds like Second Life that enabled social engagement and knowledge building. We also discuss potential solutions to the challenges encountered, taking into account the nature of academic and higher education environments today.

Keywords: Communities of Practice, Academic citizenship, Technology enhanced language learning, Virtual technologies, Peripherality

1. Introduction

Since Lave and Wenger (1991) first introduced the concept of communities of practice (CoPs), it has been widely used to explain the collective learning process of people in shared fields (e.g., Cruess et al., 2018). A CoP is composed of three elements: the domain, the community, and the practice. People are connected through a network because of shared interests. To pursue their shared interests, they are committed to get together and participate in activities to share, discuss, collaborate, and support each other. This process enables them to form a community and establish reciprocal relationships. They act as practitioners in the community of practice as they also share practical experience. For example, as part of their role as academic citizens (Macfarlane, 2006), educators establish a community of practice with the aim to improve their knowledge and skills in the field of education through expertise exchange, experience sharing, and professional dialogue, thus creating a professional learning community (Tam, 2015).

Academic associations, such as the Taiwan Association of Pedagogy and Practice in Technology Enhanced Language Learning (PPTELL), serve as one type of CoP. PPTELL, as an emerging CoP, has attracted a group of TELL researchers at all career stages to regularly share ideas and experiences and learn from each other. This sharing often occurs via forums such as international conferences. According to Lan et al. (2021), international conferences generally aim to facilitate experience sharing, professional development, community building, and interpersonal connection. The achievement of these goals also contributes to academic citizenship, which Macfarlane (2006) defines as the critical role academics play in sustaining academic communities and their interaction/engagement with the wider community through making practical impacts. In fact, an international conference can be considered a CoP if these goals are realized.

When an international conference is hosted physically and attendees meet in person, the goals of interpersonal interaction, expertise exchange, and experience sharing are relatively easy to accomplish (Raby & Madden, 2021). However, it becomes more challenging when an international conference is hosted fully online (Hoffman et al., 2021). In the aftermath of the COVID-19 pandemic, many international conferences, including PPTELL, moved online (Lan et al., 2021), which posed challenges in establishing and maintaining a sense of community (e.g., Hoffman et al., 2021). Technically speaking, promoting social interaction between oral presentation

sessions and during poster sessions can be particularly challenging in online environments (e.g., Achakulvisut et al., 2021).

The Fourth PPTELL Conference (PPTELL 2021 hereafter) faced similar challenges to many other fully online conferences. Following the online PPTELL 2020, the PPTELL 2021 once again was shifted online. Taking into account lessons learned from the PPTELL 2020 conference (Lan et al., 2021), new strategies were necessary to accommodate the needs of interpersonal interaction, social engagement, and knowledge exchange. The strategies adopted included real-time online poster sessions and social interaction among conference participants during the three-day event, facilitated using a 3D multiuser virtual platform.

Building upon suggestions and feedback gathered from participants in the PPTELL 2020 conference (Lan et al., 2021), the planning and execution of the PPTELL 2021 conference concentrated on two key aspects: (1) fully capitalizing on the capabilities of ubiquitous technologies to provide an immersive and engaging online conferencing experience, and (2) employing academic citizenship to fortify the social practice of the PPTELL CoP. Academic citizenship, as defined by Macfarlane (2006), refers to the vital role that academics fulfil in supporting academic communities and fostering interaction and engagement with the broader community by making practical impacts. In the context of PPTELL 2021, the conference aimed to cultivate academic citizenship by encouraging collaboration, knowledge sharing, and social interaction among its participants.

Underscoring the aims of the study, these two areas led to the formulation of the following research questions:

- Which technological platforms and tools proved to be most effective in enhancing participant engagement during an online international academic conference?
- In which ways and to what degree did the platforms and tools promote interaction and engagement among members of the PPTELL 2021 CoP?
- What implications does this innovative design hold for the theory and practice of CoPs concerning online academic events and beyond?

The subsequent sections elaborate on the theoretical foundation that underpins the CoP in this study. A framework is proposed to contextualize the design of the PPTELL 2021 conference, which consists of four emerging dimensions that are interrelated and interdependent in alignment with the objectives of this study.

2. Literature review

2.1. Community of practice

Following Lave and Wenger (1991), the term community of practice (CoP) was defined by Eckert and McConnell-Ginet (1992) as:

An aggregate of people who come together around mutual engagement in an endeavour. Ways of doing things, ways of talking, beliefs, values, power relations – in short, practices – emerge during this mutual endeavour. As a social construct, a CoP is different from the traditional community, primarily because it is defined simultaneously by its membership and by the practice in what that membership engages (p. 464).

This definition emphasises the dynamism, richness and complexity of the concept of a CoP (Holmes & Meyerhoff, 1999) and the notion of practice in social settings. As later Wenger (1998) insists, learning is an inevitable aspect of life that is fundamentally a reflection of social processes. He examines how an individual becomes a member of a community – joining a new workplace, a group, or even a new family through marriage – all involves learning. To ensure individuals appropriately perform in this process of becoming a member of the community, peripherality is key as defined by Lave and Wenger (1991), which is a characteristic of ways of belonging in the social world. Individuals may choose to gradually move from a peripheral membership to take on a core membership, while some may prefer to remain on the periphery (Holmes & Meyerhoff, 1999). In order for new members to develop into experienced members and engage in more interactive activities, efforts should be invested to provide opportunities for "legitimate peripheral participation" (Lave & Wenger, 1991, p. 37). Initial participation often means engaging in simple and low-risk tasks through peripheral activities and becoming more familiar with tasks, speech and organising principles and other community members. Lave and Wenger (1991) elicit three levels of participation relative to the periphery. First, central participation, implying that there is a centre, politically, physically, or metaphorically to a community with respect to an individual's status in it. Second, complete participation, which suggests a closed domain of knowledge or collective practice

that is measurable by newcomers or new members to the community. This means that individual participants can evaluate efforts invested in contributing to the community and that they can adjust participation accordingly. Full participation is then intended to focus on justice and diversity of relations involving different forms of community membership. This may involve partial participation (or not), where newcomers' participation should not be framed in a fixed way – that is peripherality, suggesting "an opening, a way of gaining access to sources for understanding through growing involvement" (Lave & Wenger, 1991, p. 37-38). Conferences provide one such opening.

2.2. Online community of practice

According to Wenger (1998), three dimensions of a CoP are crucial to understanding and implementing the concept in practice: (1) mutual engagement, (2) a joint negotiated enterprise, and (3) a shared repertoire of negotiable resources accumulated over time (p. 76). As Liu (2012) states, the online CoP focuses on a domain of interest involving a group of people who share and develop knowledge, beliefs, values, and experiences through regular social interactions facilitated by technologically mediated communications. However, it is essential to acknowledge that sustaining regular interactions in online conferences might be challenging, given the ad-hoc nature of such events (Pedaste & Kasemets, 2021). Indeed, online CoPs require more than just technological tools to maintain regular and meaningful interactions (Moreira et al., 2022; Wu & Yu, 2022).

Considering this nuanced understanding of online CoPs, further research is needed to explore how an online conference can adopt CoP as a conceptual anchor for its design while addressing the challenges of sustaining regular interactions and fostering knowledge development. Existing research has indicated that the online CoP has supported various aspects of professional learning and development, such as digital literacy (Bostancioglu, 2018), interculturality (Hajisoteriou et al., 2018), pedagogy (Wang & Lu, 2012), self-efficacy beliefs (Inel Ekici, 2018), and effective communication with peer teachers (Hou, 2015). Moreover, positive teacher CoP impacts on student learning outcomes have been demonstrated through blogging (Zandi et al., 2014). There has also been growing interest in exploring how social media platforms and embedded features and tools support educators' online CoP, with examples including WeChat (Xue et al., 2021; Qi & Wang, 2018), Facebook, and Twitter (Goodyear et al., 2014; Wesely, 2013; Wong et al., 2011). However, the gap in the literature regarding online CoP in the context of online conferences warrants further investigation.

2.3. The role of technology in developing academic citizenship through the community of practice

Macfarlane (2006) asserts that an essential part of academic citizenship is educators and practitioners actively engaging in CoPs. Often a CoP provides a location for participants to perform their role as academic citizens in a range of ways, including mutual knowledge building through the sharing of research and experience, providing social and professional support to each other, and creating opportunities for research and other forms of collaboration. McDonald and Star (2008) explore the concept of CoPs in academic communities through a case study in an Australian university. They reported that the emerging academic CoP provides a location for individual academics who are new to the institution to focus on learning and teaching against a background of existing tensions in the higher education environment – casualisation, the competitive nature of the environment, and a maxim of "publish or perish" (p. 235). They argue that the CoP is a safe arena for reflexive practice and collaborative efforts in overcoming the challenges of mass education, one example being the increasing diversity and complexity of student cohorts in higher education.

One space where academic CoPs often gather and interact is at academic conferences. As noted by Macfarlane (2006), conference attendance is an important opportunity for academics to fulfil their obligations as academic citizens to contribute to the (disciplinary or expertise) community. Digital technology has become increasingly ubiquitous in society over recent decades, penetrating all aspects of our lives. CoPs and academic conferences are no exception to the increasing presence of digital technology. For some time now, digital technology has been seen as a potential means of enhancing various aspects of academic conferences, such as social interaction and knowledge building. At the same time, questions about the effectiveness of digital technology to value-add to traditional approaches to running academic conferences have attracted academic attention. Jacobs and McFarlane (2005) state that little attention at that time had been paid to research conceptualising an understanding of knowledge building as a conference practice or to developing a means of assessing to what extent academic conferences are deemed successful in this regard. Moreover, the role of technology in enhancing this practice was ripe for further investigation. Their study of the introduction of a range of new communication technologies into a face-to-face academic conference revealed that while digital technologies have the potential to contribute

to the achievement of the goals of a CoP, new skills and practices are required by participants to facilitate the effective use of new technologies and support the knowledge building process important to academics attending conferences.

In addition to knowledge building, academic conferences also provide participants with important avenues for social interaction. During such interaction attendees can learn more about others and their work and can tell others about themselves and their own work. McCarthy et al. (2004) argue that traditionally, opportunities for such interaction are not evenly distributed due to factors such as one's status within the CoP, level of participation (e.g., new and peripheral, established and central, etc.), one's native language, and so on. To distribute opportunities more evenly to participants, they designed and put in place a suite of proactive display applications. This approach enabled attendees to easily reveal something about their background and interests, and thus potentially facilitate interaction. Analysis of the observation data and individual participant's responses to a survey revealed that while the design and implementation of the applications did create new opportunities for interaction, some attendees felt the displays were a distraction.

The concepts of CoP and academic citizenship and exploration of their practical application in varying forms and settings provide a useful prism through which to view the role and requirements of academic conferences in academic life. In organising the PPTELL 2021 conference, several emerging dimensions that had a significant impact on the construction of our community of practice were noticed. In response, a framework was proposed to address concerns and challenges of developing a sustainable PPTELL community of practice in the face of severe limitations imposed by the COVID-19 pandemic.

3. A proposed framework

Our work is situated and informed by Lave and Wenger's (1991) Communities of Practice placing the emphasis on learning as "an integral part of generative social practice in the lived-in world" (p. 35). We propose a framework to explain how our innovative strategies were designed to serve and contribute to the PPTELL conference and community and to fully utilise the affordances of ubiquitous technologies to engender an engaging online conferencing experience and strengthen the social engagement and practice of the PPTELL CoP. The framework outlines the ways each dimension interacts with the others to meet the specific goals of the 2021 conference and to address the pitfalls identified in the 2020 conference (Lan et al., 2021).

Figure 1. A proposed framework enables the community of practice through an innovative design
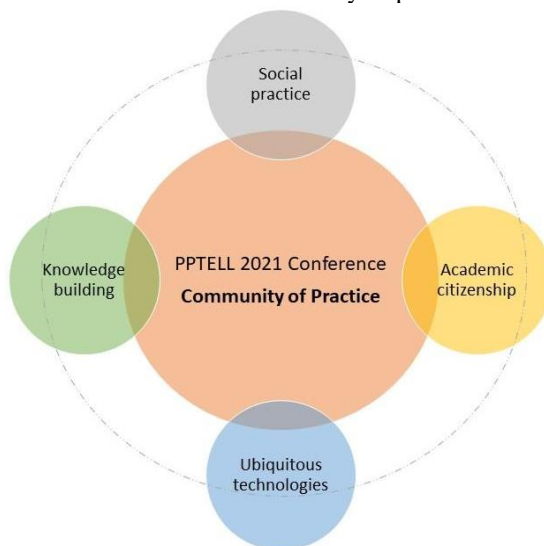
The interplay of language, technology, and learning is the foundation of the overall, amorphous PPTELL CoP. As Lave (2019) points out, within the larger, less structured community, participants can at times feel somewhat disempowered in terms of opportunities to move towards more intensive participation. Conferences, by bringing members of the community together regularly for set periods of time, can potentially be empowering by providing new opportunities for articulation between the more amorphous community that exists between conferences and the community created by and during conference participation and interaction. Conferences provide a focused location where each participant can connect to the practice of interest and other members of

the community in different and dynamic forms. However, the transition from physical to virtual conferences may lead to significant differences in the sense of "focused location" (Falk & Hagsten, 2021). In times of large-scale disruptions, such as the COVID pandemic, ubiquitous technologies, such as Second Life, Zoom, social media, and other online platforms, afford and enable ongoing legitimate peripheral participation (Lave & Wenger, 1991).

In the professional learning context of an academic conference, participants at any career stage can share and exchange knowledge with interest, passion, and commitment to create further impacts at the nexus of language, technology, and learning. "Being there" and "being together" (Lehman & Conceicao, 2010, p. 12) have been critical in the intentionality of different learning environments and developmental activities for individual participants. The informed use of digital technologies has brokered a sense of social presence and engagement. Differing from social presence in the Community of Inquiry framework that focuses on facilitating and supporting social, cognitive, and teaching presence in online education (Garrison et al., 2010), individual participants in the PPTELL community of practice and learning context are not linearly situated and are citizens in both the academic and the digital society at large. As part of their professional agency and attributes, each participant in the conference helps develop positive and reciprocal relationships that help them evolve as potential collaborators, work partners, and colleagues where distributed leadership (Spillane et al., 2001) is manifested with shared activities as leaders, providing opportunities for both leadership and followership in this community of practice (Lave, 2019). Embracing our complex and evolving professional identities as researchers, educators, practitioners, and academic citizens, the PPTELL conference is a location representing a situated community of practice that creates conditions for interaction with the four dimensions of our proposed framework to intensify and enhance academic intellectual, social, and affective engagement. Both formal and informal interaction is supported by the combination of several different virtually afforded multimodal resources in the online conference-based community of practice.

Considering the potential differences between physical and virtual conferences, we propose a revised framework that takes into account the unique challenges and opportunities presented by virtual conferences (Falk & Hagsten, 2021; Seidenberg et al., 2021; Wu & Yu, 2022). The four dimensions illustrated in Figure 1 interact with one another and highlight interdependence, emphasizing peripherality as a core value of the community of practice, which supports academic peers engaging in ongoing learning and development. Guided by this proposed framework, we unpack our approach to enhancing participation in the PPTELL 2021 conference through analyzing diverse ubiquitous technologies and exploring how they have contributed to the design and implementation of the conference in response to the needs of individual participants in the PPTELL community as well as among this contextualized, specifically online conference-based community of practice.

4. Our design

4.1. PPTELL

The Taiwan Pedagogy and Practice in Technology-Enhanced Language Learning Association (PPTELL Association) was established in July 2020 with a strong focus on promoting collaboration among researchers in the fields of Technology-Enhanced Language Learning (TELL) and Computer-Assisted Language Learning (CALL) to contribute to research on a global scale. The PPTELL Association originated from the Technology Enhanced Language Learning Special Interest Group (TELL SIG) under the Division of Information Education, Ministry of Science and Technology. TELL SIG has over 200 members based in Taiwan, Singapore, Hong Kong, Macau, New Zealand, and Australia. The PPTELL Association has organized three successful conferences that have connected researchers, educators, and practitioners to discuss the integration of language learning theories and advanced technologies for cultivating learners' critical competencies. Each conference theme emphasizes the contemporary requirement of competency-oriented and contextualized language learning, with rich and diverse topics including smart learning environments, AI, robotic technology, augmented/virtual reality, big data, mobile computing, and educational games. PPTELL's work in the TELL field is essential to the advancement of language learning technologies and their impact on education.

The 4th Pedagogy and Practice in Technology Enhanced Language Learning (PPTELL 2021) conference, which drew approximately 100 participants from various countries, was a hybrid online event held from June 28-30, 2021. The conference revolved around the theme of contextualized multimodal language learning (CMLL), with the primary objective of exploring the potential of technology to enhance language learning effectiveness across diverse contexts. The conference centered on examining the impacts of multimodality in language learning, including how technology, learning environments, and pedagogical approaches have influenced learners and instructors in contemporary classroom settings.

4.2. Choosing platforms

Regarding the choice of an online conference platform, ease of use and technical support are seen as critical because some participants and speakers are unfamiliar with operating complex conferencing software. Zoom, Google Meet, Microsoft Teams, and Cisco Webex are the most popular and commonly used videoconferencing apps in recent years. Each provides the functionality needed for videoconferencing, including video, screen sharing, chat, recording, and more. These platforms were investigated for their suitability (see Table 1). Due to wide adoption amongst academic institutions around the world and ease of use, and to the fact that it had been previously used successfully (Lan et al., 2021), Zoom was chosen as the main online platform for the opening and closing ceremonies and the keynote and parallel sessions (see Table 2).

While Zoom is an excellent platform for more formal sessions, it has limited capacity to mediate spontaneous social interaction, or what has been called "collision conversations" (McKendrick, 2020), where colleagues run into each other randomly (or intentionally) and have spontaneous (or planned) conversations that can lead to new ideas and collaborations or even facilitate established collaborations (Irving et al., 2020). As a platform for researchers to showcase their work and engage in meaningful discussions with their peers, poster sessions play a critical role at academic conferences. At many academic conferences, poster sessions create serendipitous opportunities for attendees who share the same research interests to meet and network with each other at scheduled times or during break periods. Informal socializing and networking also often occur during these breaks, when attendees and presenters can relax and enjoy refreshments, as well as at other social events that take place during the conference, such as dinners and social evenings (McCarthy et al., 2004). These activities and interactions are key features of a community of practice. They distinguish it from more formally structured interactions, such as those that occur in committees and meetings (Nagy & Burch, 2009). Poster sessions not only facilitate the exchange of scientific information but also foster opportunities for future collaboration. However, there are several challenges to organizing poster sessions in an online conference setting. First, it is difficult to replicate the in-person exchanges that are typical of physical poster sessions in a virtual setting. These interpersonal dynamics are critical to fostering meaningful connections and conversations. Second, technical limitations can hinder the seamless display and navigation of digital posters, potentially compromising the overall experience for both presenters and attendees. Finally, maintaining the engagement of the audience during an online poster session can be challenging, as it requires additional effort to overcome the lack of physical presence and body language cues.

In light of this, the organizers conducted research on various complementary multiuser platforms that could facilitate both poster presentations and spontaneous social interaction and networking. Table 3 presents potential platforms that could meet the conference's needs, most of which entail significant costs, limited interaction, limited customizability, and/or require powerful computers to run. Consequently, Zoom was selected for the opening and closing ceremonies and primary presentations, while Second Life was chosen as the social networking platform for constructing a virtual poster exhibition area, refreshments area, and disco area to promote greater levels of social interaction. The following section will focus on the development of Second Life and how it can be effectively designed to facilitate the formal and informal social interactions desired at the PPTELL 2021 conference.

Table 1. Online conference platforms survey

Platform	Monthly cost (US$)	Max. number of attendees	Meeting length	Screen sharing	Chat	Personal message	Waiting room	Share files	Recording	Cross-platform support
Zoom meetings	Free $ 15 $ 20	100 300 500	40min 24h 24h	✓	✓	✓	✓	✓	No Yes Yes	Windows, Mac, Web, Android, iOS
Google Meet	Free $ 12 $ 18	100 150 500	60min 24h 24h	✓	✓	X	X	X	No Yes Yes	Web, Android, iOS
Microsoft Teams	Free $ 5 $ 12.5	100 300 300	60min 30h 30h	✓	✓	✓	✓	✓	No Yes Yes	Windows, Mac, Web, Android, iOS

Cisco Webex	Free	100	50min	✓	✓	✓	✓	✓	No	Windows,
	$ 15	200	24h						Yes	Mac,
	$ 25	200	24h						Yes	Web,
										Android,
										iOS

Table 2. Selected academic conferences heled in the key online platforms

Platform	Conference
Zoom meetings	AECT 2020, 2021
	AERA 2020
	PPTELL 2020, 2021
	GCCCE 2021
	ICALT 2020 (with Remo), 2021
	ICCE 2020 (with Remo), 2021 (with Airmeet)
Google Meet	ICITL 2020, 2021
Microsoft Teams	X
Cisco Webex	X

Table 3. Virtual worlds/virtual interaction tools survey

Name	Purpose	Attendee capacity	Cost	OS	Pros/Cons
Second Life	Virtual Interaction Poster Presentations	Unlimited	Participants for free	Windows, Mac	3D Environments, More Interactive / Hard to build
OpenSimulator	Virtual Interaction Poster Presentations	Unlimited	Free	Windows, Mac	Open source, 3D Environments/ Virtual regions hosted on a multitude of different grids so can be confusing for new users
Gather	Virtual Interaction Poster Presentations	25 500 500	Free $ 3 Per day $ 7 Monthly	Windows, Mac, Web	Video conference functions, Customized space for 2D environments/ Difficult to get started
Remo	Virtual Interaction Poster Presentations	100 200	$ 270 $ 680	Web	Interactive virtual event platform, Support 2D/3D custom floor plans
Mozilla Hubs	Virtual Interaction Poster Presentations	30	Free	Web	3D Environments, Multiple devices / High-end devices, Host on AWS
Slido	Poster Presentations	unlimited	Free $ 8 $ 25	Web	User-friendly, High integration/ Only text-based interaction

4.3. Choice of 3D MUVE platform on Second Life

Second Life is an open sandbox world that has no embedded gameplay and that owes its heritage to the text-based social virtual world of LambdaMOO of the early 1990s (Bartle, 2010). Established in 2003 by Linden Lab, large communities of educators (Stevens, 2021) formed very early on in Second Life's history. Second Life provides many of the elements important to both international conferences and the communities of practice they represent. Two key elements are co-presence and social interaction (Kohonen-Aho & Vatanen, 2020). These elements are facilitated using avatars to interact with the virtual environment and others through the technical affordances of the platform for verbal and non-verbal communication (e.g., voice, text, gesture, multimedia functionality). Moreover, users can work collaboratively in the 3D virtual environment to co-create new digital content (Gürsimsek, 2014). For PPTELL 2021, a virtual poster exhibition hall and socialising space were custom designed and built for the conference that included a reception area (Figure 2), several poster stands (Figure 3), a virtual refreshments area (Figure 4), and a virtual dance floor (Figure 5).

4.4. Design and implementation of the 3D MUVE environment

The poster exhibition hall had fully customised conference branding and was used both synchronously and asynchronously. Via their avatars, visitors could move freely about to look at the posters and interact with other visitors, staff, and presenters. Sign boards with clickable links for the main conference website were also set up in the reception area.

Conference poster presenters were present at their respective stands at set times to talk about their research and answer questions from visitors. Posters could also be viewed at other times when presenters were not present and pre-filmed presentations could be viewed on the virtual video screens on each stand. Questions to the respective presenters could also be posted via panels on each stand linked to Slido (https://www.slido/; also see Table 3). Visitors arriving in the reception area (see Figure 2) were greeted by live PPTELL conference staff in voice and/or text mode and assisted with obtaining a virtual lanyard. They were also assisted with learning how to use the Second Life interface and guided to the different areas of the exhibition hall. Having live staff available to interact with visitors was one key element in making the virtual experience accessible, productive, and enjoyable for visitors.

Each poster stand was set up so that when talking in voice only those within the marked boundaries of each stand could hear what others at the stand were saying. This prevented audio disruption from other attendees who were talking in other areas of the exhibition hall, such as the reception area (see Figure 2), the refreshments area (see Figure 4) and the dance floor (see Figure 5). The virtual refreshments area was set up with virtual facilities such as chairs and tables and virtual food and beverages. This was aimed at making attendees feel more at home, and to create an environment that enabled relaxed communication (Cruz et al., 2014). Networking and social interaction was also facilitated by a dance party on the virtual dance floor at the end of the first day of the conference (see Figure 5). Cruz et al. (2014) argue that the use of avatars is important to the sense of presence that users can experience in virtual worlds like Second Life. They further argue that presence has an influence on collaboration because it helps users to better understand multiuser virtual environments and use them more intuitively.

Figure 2. Reception area

Figure 3. Poster exhibition stands

Figure 4. Refreshments area

Figure 5. Refreshments area

5. Methods

This study utilized a triangulation design for mixed methods research, drawing on post-conference online surveys and organizers' observation notes. The triangulation design is a research approach that uses multiple data sources or methods to increase the validity and reliability of research findings (e.g., Hawkey, 2006; López & Tashakkori, 2006). By employing multiple data sources, the study aimed to answer the first two research questions and enhance the validity of the research. Combining both methods provided a more comprehensive and accurate understanding of the research questions, thereby improving the overall quality of the study. The selection of each instrument was based on the study's aims, ethical considerations, and data collection and analysis procedures, which are explained in detail as follows.

5.1. The post-conference online survey

As soon as obtaining the human ethics approval by Researcher B's institution, and the conclusion of the PPTELL 2021 conference, an online survey using Google Forms was distributed to all participants (n = 100), from which 25 valid responses were collected for analysis. The survey was voluntary, and respondents remained anonymous throughout. Its objective was to gain insight into the participants' experience of a fully online academic conference, their perceptions of technological tools and platforms used for knowledge building and social practice, and their individual development of academic citizenship through interactions with the global PPTELL community.

The conference organizers designed a total of 34 survey questions, consisting of both closed- and open-ended questions. Firstly, the survey inquired about the preparation work prior to the conference, including the choice of communication software, information dissemination, and provision of tutorials. Secondly, it addressed the user experience of the conference platform, encompassing the use of Zoom and Second Life platforms, security issues, scheduling, discussion and interaction, and video sharing, among other factors. Thirdly, the survey explored the quality and satisfaction of conference activities, including paper presentations, social networks, poster exhibitions, Slido application, break time, opening and closing ceremonies, keynote speeches, and panel discussions, among others. Finally, the survey asked about personal experiences and feelings, such as preparation work, the most challenging aspects, favorite experiences, meeting expectations, potential areas for improvement,

recommendations for other scholars, and plans for future participation. These questions provided valuable insights into attendees' evaluations and feedback on the conference, enabling organizers to extract meaningful information to further enhance future conference planning.

Descriptive data analysis was employed to report on general trends found in selected closed-ended questions, while thematic analysis was used to analyze the open comments. To ensure the reliability and validity of the analytical process, two researchers were involved in the thematic analysis, following the procedures outlined by Braun and Clarke (2006). Researcher A retrieved the open-ended responses and reviewed them, highlighting important quotes in an online Excel worksheet, while Researcher B coded and identified the emerging themes, along with the useful quotes that were reviewed and agreed upon by Researcher A.

5.2. Observation notes

The authors of this study were key members of the PPTELL 2021 conference organizing committee, whose observation notes were collected after the conference as delayed reflective accounts on what they experienced and observed when acting in multiple roles in different sessions (Baker, 2006). An observation table (see Appendix A), based on the preliminary analysis of the survey responses focused on four key themes, comprising interaction, communication, challenges, and suggestions. Thematic analysis (Braun & Clarke, 2006) was employed by Researcher B and the emerging themes were reviewed by the other three researchers.

6. Results

6.1. Ubiquitous tech supports knowledge building & academic citizenship

As shown in Table 4, most of the respondents were based in the Asia-Pacific region. Among these 25 survey respondents, two main areas of research interest were reported: TELL (n=23) and Linguistics (n=2). 14 respondents had experience of an online academic conference before PPTELL 2021 while 11 had not. This finding correlates with Table 5, where the respondents with experience of using Zoom in their academic role mainly used it for teaching activities and scheduled meetings. Only five responses specified that Zoom was adopted for online conferencing and workshops in their academic settings. The 11 respondents who had never attended a fully online conference other than PPTELL 2021 reported not having any Zoom related activities in their academic role. Given Zoom was the main platform used for PPTELL 2021 for main sessions, pre-conference tutorials were conducted to prepare participants for attending these sessions. As indicated in the responses, at least these 25 respondents considered these tutorial sessions necessary and helpful, with some noting that "the information provided appeared to be sufficient" and "very helpful and unique in the international conference."

Table 4. Survey respondents located during the PPTELL conference period in 2021

Respondent location during the PPTELL conference days	N
Australia	2
Canada	1
Hong Kong	3
Home	2
Peru	1
Taiwan	15
N/A	1
Total	25

Table 5. Frequency of mentions indicates multi-purposes of Zoom for academic work

Purpose of using Zoom in respondent academic activities	Frequency of mentions
(Language) Teaching	10
Conference and workshops (incl. PPTELL 2020)	5
(Regular) Meeting (incl. faculty meeting)	8
N/A	11

A question regarding satisfaction with the discussion and interaction on Zoom received a very positive response – all 25 respondents reported on their "really enjoyable" experience of using Zoom for knowledge building

through intellectual and insightful discussions before, during, and after keynote and oral presentations at the conference.

Two instant messaging group chats on Line and WeChat were also set up for any urgent communication before and during the conference. All 25 survey respondents confirmed their familiarity with the apps and used either or both during the conference. There was a high level of satisfaction due to timely updates, including reporting and sorting out technical issues and timing announcements about parallel oral presentation sessions conducted in different Zoom meeting rooms. Table 6 demonstrates the survey respondents' preferences over the two apps.

Table 6. Respondents preferred social media apps for keeping in touch on PPTELL 2021

Preferred social media apps for keeping in touch	N
Both Line and WeChat	2
Line	18
WeChat	3
Other	2
Total	25

Although respondents were satisfied with Zoom's functionality and stability, one mentioned Google Meet as an acceptable alternative platform, while another suggested, "Zoom is fine as we don't have any better options in the market!"

In response to the identified issues arising from the emergency shift of the conference online (Lan et al., 2021), Second Life was introduced as the platform for the poster presentations and social networking. Academics in higher education generally value conferences highly for developing academic citizenship. The survey respondents reported a positive attitude to having a tour in Second Life during the pre-conference tutorial, and 23 selected "yes" to indicate the appropriateness of adopting Second Life for this type of presentation and social practices. They used keywords such as "good for networking," "very innovative and interesting," "fun," "impressive," "quite special," "intriguing to present the posters via Second Life," and "really good and new experience." These keywords reflect the excitement of these respondents as participants.

During poster presentation sessions, some respondents indicated that they withheld questions with the expectation of interacting with poster presenters/authors on Slido, embedded in Second Life to support asynchronous Q and A. Two of them mentioned,

…it's real-time and user-friendly. But it would be better if it would send a notification to me whenever people drop questions.

I didn't receive any answers by the end of the conference.

Survey results show Slido was not used by most participants. A few respondents said this was because they did not see many interactions on Slido, although two comments highly recommended Slido for asynchronous Q and A as "it was real-time and user-friendly."

The following comments articulated and highlighted the aspects of social practices that Second Life afforded, even enhancing the experience in ways that real-life conferences may not be able to contest.

Second life indeed made the poster exhibition more interactive. Guests could share their questions or thoughts through vocal calls or simply through sending messages with each other. There was even a bar for guests to dance and chat! I was also surprised by the zoom-in function of Second Life, in which we can clearly see the information on the poster.

… without a doubt, Second Life gave us a cool experience of interacting with other attendees and took part in the exhibition in a virtual way.

I met one of the US professors and had quite a long chat with him. I also had a long chat with a New Zealand colleague as well.

One respondent also appreciated the use of Second Life to help fill the breaks during the conference. In response to the question "Were you bored while waiting for the next session" they responded, "not at all. Second life is great! The music played during the break was also nice. Feel relaxed."

A few respondents reported that they had a problem accessing Second Life. As one respondent specified, "it was a bit time-consuming to install the application and create an account." At the same time, another respondent did not think that this platform supported the poster presentation sessions well as shown in the comment below:

No, I don't think so. In fact, the words are too small to read through on SL. Besides, it's not too easy to move or scroll down the poster.

6.2. Overall satisfaction and appreciation of the online conference organisation

Equipped with ubiquitous technologies, the PPTELL 2021 conference was perceived as a mostly "100%," "excellent," and "strongly recommended" TELL conference by all 25 survey respondents. They also believed that an online conference like this was "innovative," with one respondent commenting, "it opens my vision regarding how to organise the conference, and I'm exposed to a lot of interesting and creative research projects." Similar comments focused on the nature of the academic conference, which was for building knowledge as it "covered a lot of research ground that is of interest," "provides great opportunity to keep learning about the latest trends in TELL" and so on.

Most respondents also shared their perceived highlights of the conference. These mainly related to the social networking activities on Second Life and to gaining insights from interacting with keynote sessions and presentations for knowledge building and development. Some examples are:

The dancing and socialising at the end of day 1.

The [dance] ball and drinking bar are just perfect and creative!

The scenes in the Second Life. It's authentic, and I feel so real when people are asking questions about my poster.

Dance in second life.

Relating to CoP, the survey respondents considered PPTELL annual conferences as a community that provided "the chance to get together" and "the opportunity to catch up with colleagues from around the world & to hear about their research." One of the comments elicited this participant's appreciation, passion, and sense of belonging to the PPTELL community:

I always like PPTELL conferences. It's warm and welcoming. You don't feel isolated in this conference as everyone is very nice and friendly. You learn a lot from each presenter at this conference.

I have been given a chance to listen to great scholars sharing their insights and opinions on the use of technology in enhanced language learning.

Survey responses also acknowledged unavoidable pitfalls of attending an online conference from home, some of which are discussed below.

6.3. Key challenges experienced by the survey respondents during the conference

6.3.1. Time difference

The PPTELL conference was originally targeted for Pan-Pacific regions and attracted a great majority of participants living within the region. The subsequent rescoping of the PPTELL association resulted in broadening its market to a global context not limited to Asia-Pacific. As a result, there were several participants at the 2021 conference from North and South America who suffered significantly from time zone difference related issues. As two of them reported on the survey,

Unfortunately, the time difference between Taiwan and Quebec is 12 hours. So the conference started too late for me. There is nothing you can do to avoid this problem, though!

For me, being in Peru (-13hrs difference to Taipei) was great until early afternoon sessions (13:00 or 14:00 Taipei Time)

Even those in more friendly time zones still found it difficult to squeeze in time for appropriate breaks during those conferencing days.

The time arrangement was appropriate for attendees, but not that appropriate for some volunteers. Some volunteers had to be online during the noon break, maybe it would be better to adjust the afternoon's schedule.

There wasn't enough break time for lunch.

6.3.2. Human-to-human face-to-face interactions

The open-ended questions asked participants to illustrate the most challenging aspects of participating in the conference. As expected, many respondents expressed their willingness and desire to physically gather and interact with other colleagues at the real-life conference event.

6.3.3. Technical issues

Not all participants found time to join pre-conference tutorial sessions, therefore technical issues were still apparent for several participants. Some explained that they wished they had more time for practice using the tools and platforms. They appreciated the professionalism of the conference committee and were amazed by the mostly smooth, impressive planning and operation experienced during the conference. Technical concerns leaned more towards "using Second Life," reflected in comments like, "it takes some time for my laptop to run SL, and my character can't move smoothly from time to time."

6.4. Conference organisers' observation notes

All the observers confirmed that social media apps (e.g., Line and WeChat) supported the interactions between conference staff and between staff and conference attendees to foster collaborative work and effective problem solving. One particularly noted, social media "helps overcome communication problems that might have caused by issues with Second Life or Zoom. Attendees have a continuous stable means of keeping in communication with assistants as they work through any technical issues with Second Life or/and Zoom."

It was also observed that it was essential to have conference staff or volunteers in Second Life to meet, greet and assist visitors. As one noted, "I observed a number of visitors to the virtual poster hall being 'tutored' by Kelly and the other assistants. Having someone constantly [at] present at the virtual reception desk for when visitors arrived seemed to be very welcomed by the visitors…" The interaction carried out in voice mode was also noted as "easy" and "upbeat."

One organiser commented that during sessions she chaired on Zoom she reminded attendees to turn their cameras on during Q & A sessions to "offer the presenters a sense of belonging to this particular community." The sense of belonging was also observed in the Second Life virtual poster and networking venue which afforded an "immersive" and "live" experience of the poster sessions that was absent from the previous fully online PPTELL conference in 2020 held fully on Zoom. The same organiser recalled seeing each poster stand being "crowded with attendees" during live sessions, and that "some very valuable intellectual conversations" were happening. This addition of the 3D virtual venue illustrates the potentiality of multiuser 3D virtual environments to further satisfy CoP needs (formal and informal networking) for attendees participating in academic conferences online.

Organisers also acknowledged a challenge for any event held on VR world platforms like Second Life. As indicated in the survey, PPTELL attendees experienced a range of technical issues when exploring Second Life. These issues, including "internet connectivity" and "bandwidth," were regarded as "problems hard to anticipate or resolve as they can vary quite widely from attendee to attendee." In response, another observer suggested considering the adoption of other tools, such as "Discord," for future online conferences. He explained that "Discord" can "…transmit conference information and event reminders through bots and can be used for voice communication to assist participants in solving problems." Another suggestion reported in the observation notes was to add more training or practice time with assistants to support attendees.

In the next section, discussions around the results that underpin the four dimensions in the proposed framework are presented. Centring academic citizenship, the PPTELL 2021 conference as a CoP evidently provided

peripherality for the conference attendees to experience knowledge building and social practice with the support of appropriate technologies.

7. Discussion

Our findings suggest that the PPTELL 2021 online conference garnered positive feedback from attendees, primarily owing to the inventive design enabled by Second Life for poster sessions and social activities. This observation was substantiated by the conference organizers, who were instrumental in both the design and execution stages. Despite facing minor technical challenges, primarily resulting from device constraints, internet connectivity, and bandwidth, most participants indicated that the conference successfully facilitated their immersion into their preferred virtual Communities of Practice (CoP) within the virtual environment. This engagement allowed attendees to interact with fellow academics and potential collaborators for knowledge building, experience sharing, and socializing while navigating virtual environments accessible through various digital platforms, such as Zoom, Second Life, Slido, Line, and WeChat. By fostering a virtual CoP, the PPTELL 2021 conference enabled the actualization of peripherality (Lave, 2019), empowering members at different career stages to partake in community events and social practices without concern for hierarchical structures or power dynamics. This approach highlighted the importance of reciprocity - learning from one another, sharing and exchanging knowledge and experiences, and offering formal and informal support - as the crux of academic citizenship, even when represented by avatars (Cruz et al., 2014). As a result, PPTELL 2021 was regarded as a "friendly" and "welcoming" academic conference, leaving an enduring impact on attendees from diverse backgrounds within the TELL community and beyond.

Although Slido was integrated into the Second Life poster stands to enable smooth, real-time communication between attendees and poster presenters/authors during and after live sessions, it was noted that conference participants were generally unaware of this functionality. Among those familiar with Slido, some expressed a preference for "notifications" to inform them of new questions and answers being posted to enhance their involvement in the Q&A sessions. With an ample number of standby assistants in the virtual world, this concern was considered relatively minor and could be readily addressed by providing additional training and practice sessions prior to the conference and increasing live assistant presence during the event. In contrast to the continuous participation enabled by in-person attendance at physical conferences, virtual academic attendees may need to manage multiple tasks, commitments, and substantial workloads and pressures before and during the conference (McDonald & Star, 2008), a factor warranting attention in future events.

Academic conferences are of significant value to most academics, who perceive them as a means of fostering their academic citizenship (Macfarlane, 2006). This viewpoint was supported by PPTELL 2021 survey respondents. Consequently, it is crucial to establish opportunities for social engagement and interaction within CoPs, such as virtual refreshment areas and dance floors (Figures 4 and 5), allowing attendees to enjoy "fun" and "relaxed" moments (Cruz et al., 2014) between formal scheduled sessions. At the PPTELL conference, attendees could converse with other participants in voice or text while partaking in virtual beverages or coffee. Regardless of their real-life dancing skills, Second Life provided a judgment-free environment for attendees to dance while "being there and being together" (Lehman & Conceicao, 2010). As the PPTELL conference attendees emphasized, these appealing features augmented social practices that may surpass those offered by real-life conferences. In conclusion, this study contributes to the innovative design of virtual Communities of Practice (CoPs) in online academic events in several ways. By effectively integrating Second Life, the study demonstrates how engagement and immersion can be facilitated, allowing participants to forge relationships and share knowledge beyond the constraints of traditional conferences. To optimize engagement, the study underscores the importance of addressing technical issues, providing support, and considering the various commitments of participants. Furthermore, our research illuminates potential advancements in the theory and practice of CoPs in the context of online academic events and beyond by incorporating opportunities for social engagement and promoting academic citizenship.

8. Conclusion

Drawing upon our proposed framework for devising online academic conferences, this study reinterprets peripherality within virtual Communities of Practice (CoP) to augment academic citizenship in conjunction with, and interrelated to, two other dimensions: social practice and knowledge building. This is achieved through the utilization of multiuser 3D virtual worlds (e.g., Second Life) and an array of technological tools and platforms. As a central feature of CoP (Lave and Wenger, 1991), peripherality is rooted in social contexts. During the

PPTELL 2021 conference, a virtual CoP was established to immerse participants within multiuser virtual environments, enabling them to navigate among various platforms and tools while engaging in synchronous and asynchronous interactions with other attendees. Although our research offers meaningful insights, we recognize its limitations concerning the response rate. A mere 25 participants provided comprehensive responses, which may not be adequate for drawing reliable conclusions. This constraint was primarily due to the 34-question survey and the limited number of respondents willing to complete it in its entirety. Nevertheless, our research presents valuable perspectives on the challenges and opportunities presented by online communities of practice.

Furthermore, we acknowledge the intricacies of ubiquitous technologies and the potential for technical concerns to overwhelm online conference organizers. In the digital era and the rise of metaverses, we assert that this study illuminates the significance of recognizing and optimizing the potential of virtual worlds and other technologies and their integration into professional contexts, such as academic conferences, to enhance social practice and knowledge building experiences. Gourlay (2022) contends that interactions via video platforms like Zoom are "just not the same" as face-to-face encounters (p. 67-68), lacking many of the subtle communicative aspects inherent in physical interactions essential for human communication. Attempting to replicate real-world interactions on these platforms is deemed "futile" and "doomed to failure." However, this conclusion "emphasizes the necessity of enhancing participants' sense of relationality, connectedness, and inclusion in alternative ways and forums" (Gourlay, 2022, p. 67), which we argue this research demonstrates was accomplished to a certain extent through the incorporation of the virtual venue in Second Life.

Acknowledgement

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