

Virtual exchange in teacher education programs from Brazil and USA: outcomes and challenges

Intercâmbio virtual em programas de formação de professores do Brasil e EUA: resultados e desafios

Luciana Cabrini Simões Calvo *¹ and Lynn C. Hartle †²

¹Universidade Estadual de Maringá, Maringá, PR, Brasil.

²The Pennsylvania State University, Brandywine, United States of America.

Abstract

Virtual exchanges (VE) are important initiatives to include pre-service teachers (PST) in internationalization practices with others at a geographic distance while they remain in their own contexts of learning (Internationalization at Home – (Beelen; Jones, 2015). VEs contribute to the development of intercultural and global attitudes as well as foster digital and technological competencies. This paper shares the results of a 2022 and 2023 VE eight-week project with pre-service teachers enrolled in second language acquisition-related courses at state universities, one in the US and one in Brazil. This article analyzed data from periodic and end-of-semester surveys and narratives as well as from their interactions and tasks in different digital platforms to explore the outcomes and challenges of the VE. The results discuss the perspective of the involved professors and students as well as established VE teacher education contexts (such as Hanks (2019) and Godwin-Jones (2019) to share insights regarding the virtual exchange experience on PST's global perspective-taking about teacher education and language teaching. Qualitative analysis revealed patterns of desired student outcomes: interactional skills; the development of information, communication technology skills; intercultural communicative competence; content, cultural, language learning, and contextual knowledge. Analyses also illustrated the challenges to those outcomes, such as busy schedules, class format, and difficulties in communications and interactions.

Keywords: Brazil and US. Virtual exchange (VE). Pre-service teachers (PST). Second language acquisition (SLA). Outcomes and challenges.

Resumo

Intercâmbios virtuais (IV) são iniciativas importantes para incluir professores em formação inicial em práticas de internacionalização com outras pessoas em distâncias geográficas enquanto permanecem em seus próprios contextos de aprendizagem (Internacionalização em Casa – (Beelen; Jones, 2015). IVs contribuem para o desenvolvimento de atitudes interculturais e globais assim como promovem competências digitais e tecnológicas. Este artigo compartilha a experiência de um projeto de oito semanas de IV, realizado em 2022 e 2023, com professores em formação inicial matriculados em disciplinas relacionadas à aquisição de segunda língua, nos EUA e no Brasil. Dados de questionários e narrativas assim como das suas interações e tarefas em diferentes plataformas digitais são analisados. Os resultados são discutidos considerando a perspectiva dos professores e estudantes envolvidos assim como de outros estudos de IV (e.g. Hanks (2019) e Godwin-Jones (2019) para compartilhar as percepções relacionadas à experiência dos professores em pré-serviço e suas visões globais sobre formação docente e ensino de línguas. Os resultados identificados foram relacionados a: habilidades interacionais, desenvolvimentos no âmbito da tecnologia de informação e comunicação e da competência intercultural; conhecimento contextual e do conteúdo; aspectos linguísticos. Os desafios mencionados foram: agendas ocupadas; formato das aulas e dificuldades em comunicação e interação.

Palavras-chave: Brasil e EUA. Intercâmbio Virtual. Professores em formação inicial. Aquisição de segunda língua. Resultados e desafios.


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Luciana Cabrini Simões Calvo

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1 Introduction

Previous studies by Institutions of Higher Education (IHE) found ongoing participation in online academic events, webinars, and Virtual Exchange (VE) continued beyond the COVID-19 pandemic

*Email: lcsimoes@uem.br

†Email: lch1@psu.edu

(Bowen *et al.*, 2021; Garcés; O'Dowd, 2020; Woicolesco; Cassol-Silva; Morosini, 2022). Virtual Exchange (VE) includes the engagement of groups of learners in extended periods of online intercultural interaction and collaboration with international peers as an integrated part of their educational programs and under the guidance of educators and/or facilitators (Garcés; O'Dowd, 2020, p. 1). For students unable to physically travel for financial or personal reasons, participation in virtual exchanges serves to complement physical travel through cross-cultural "internationalization at home" (IaH) and provide opportunities to develop intercultural communicative competence and skills (Beelen; Jones, 2015).

One of these VE approaches is the Collaborative Online International Learning (COIL) which brings together classes with a shared syllabus and projects in which participants from universities in different parts of the world come to collaborate, usually for four to eight weeks and embedded as part of the classwork. Participants have opportunities to discuss course materials, solve a problem, compare cultural norms, and often create a gradable project. Participants can interact synchronously (in real time) or asynchronously (not in real time) and can engage with email, in a learning management platform (i.e., Google Classroom), voice, social media, Padlet, or any other form of Information and Communications Technology abbreviated as ICT (O'Dowd, 2018).

This paper focuses on a VE/COIL project developed by the researchers in 2022 and 2023. The Brazilian professor, when looking for others interested in projects based on the COIL model, found the corresponding at a university in the US. The professors saw each other's interests and the VE director at the US university arranged an E-meeting to discuss potential cross-cultural collaborations. After a series of exchanges and realized common goals, professors utilized their knowledge of VE task design (Kurek; Müller-Hartmann, 2017) and this VE project was developed and implemented.

This exploratory Scholarship of Teaching and Learning (SoTL) qualitative research project (Stake, 2005) studied the VE of students preparing to be teachers (called Pre-service Teachers, abbreviated as PST) who were enrolled in Second Language Acquisition (SLA) related courses, one in the US and another in Brazil. In the two years of the VE Project, there were 77 students participating in the initiative. PST in the US were studying how to teach children in their classes who had immigrated to the US and whose first language was not English. PST in Brazil were studying to be English teachers.

In both years (2022 and 2023), professors planned an eight-week VE Project embedded into our existing courses considering: the timeline for the exchanges, the platforms to be used, the tasks to be developed, introductory activities, the topics for the students' cross-cultural projects, the forms of assessment, and the rubric. In 2022 with a class in the US and a class in Brazil and then again with the research design revised in 2023 with two other classes of students in respective courses, professors organized collaborative teams of PST (in each team, PSTs from Brazil and US working together).

The aims of the joint research project¹ carried out by the authors of this paper were a) to develop and study a collaborative inquiry project between students and professors from US and Brazil; b) to study participants' virtual exchange experience and knowledge on teacher education; language teaching and learning in both countries; c) to analyze the development of the participants' intercultural communicative competence (ICC) and learning and d) to investigate the different resources they used when communicating with each other and the benefits and challenges of information and communication technologies (ICT) for the VE experience.

In this text, we focus on the outcomes and challenges of the VE, analyzing data from periodic and end-of-semester surveys and narratives as well as from the PST interactions and tasks in different digital platforms.

2 Literature Review

According to O'Dowd (2018), educators involved in VE initiatives offer their students the opportunity to develop skills such as intercultural competence and critical thinking while working on shared subject content through different cultural perspectives. In teacher education programs, VE projects have been developed with the following purposes: "to help the [Pre-service teachers (PST)] develop digital, linguistic, and communicative skills; to work on students' reflectivity and propensity for crit-

¹ The research project was approved by the Ethics Committee of both universities.

ical thinking, increased openness, and social inclusion; and to prepare prospective language teachers for facilitating their own VEs” (Grau; Turula, 2019). International collaborative practices in teacher education programs have the potential to develop global and intercultural attitudes in pre-service teachers to prepare them to experience different interactions and opportunities in their professional lives (Kopish; Marques, 2020).

Sadler and Dooly (2016) highlight that the experiences in VE in language teacher education programs had an impact both on instructors and pre-service teachers; it changed their mindset and understandings about telecollaboration as well as their roles in terms of instructor-pre-service teacher responsibilities in a way that they could witness a learner-centered pedagogy. Additionally, the authors state that the use of telecollaboration and the cooperation between the teachers are also noticed by the students.

Hauck (2019) found that when tackling the communication, cultural, linguistic and/or technical challenges pre-service teachers faced during VE, they acquired new competencies in terms of behavioral flexibility, interaction management, messaging skills, and language competence some of which interrelate with digital competencies.

Incentives or opportunities, such as VE, can bring to light the importance of the ability to communicate effectively and appropriately in various cultural contexts in an increasingly global society (Deardorff, 2020). Some of the key components to developing Intercultural Communication Competence (ICC) include motivation, self- and other knowledge, mindfulness, cognitive flexibility, and tolerance for uncertainty (Wilberschied, 2015). Direct and thoughtful encounters with people, places, and foreign languages such as through VE with students at other colleges are effective ways to begin to develop ICC (Idris; Widyantoro, 2019; López-Rocha; Vailes, 2017).

Simply engaging PSTs in VE does not guarantee successful intercultural outcomes. The types of activities, adequate time, and mentoring by the instructors are critical to the value of virtual experiences and teacher exchanges (Fuchs; Snyder; Tung, 2022); for them to clearly understand the content their peers from another culture share as well as be able to critically, and with respect examine the content to discover similarities and differences between that culture and their own (Roarty; Hagley, 2021).

Generally, the first task in those projects is to exchange information about each other to establish trust in the partnership. Then, collaborative tasks are developed for analysis and comparison. In the third phase, when it is included, the partners develop “some kind of shareable product or artifact” (Godwin-Jones, 2019). A systematic and well-planned framework with a constructivist lens that affords choices, both synchronous and asynchronous platforms and tools but also guidance with ICT can support the ease of cross-cultural collaboration, reduce frustration, and facilitate student exploration of ideas (Calvo; Hartle, 2023; Hauck *et al.*, 2020; Kopish; Marques, 2020).

The Evaluate Group (2019) found that students problem-solved when certain tech problems occurred with synchronous tools and then switched to a texting online social network – WhatsApp to continue their communications. When facing obstacles, pre-service teachers challenged themselves and others to develop these new ICT collaboration skills. To support their growth, another aspect of the project design should be a built-in system for ongoing reflection so the PSTs can see the value of skills and content learned and how they can apply their learning.

3 Methods

3.1 Overview and Demographics

This exploratory Scholarship of Teaching and Learning (SoTL) joint research project studied the cross-cultural “internationalization at home” through a eight-week (March-May, 2022) Virtual Exchange (VE) of students preparing to be teachers, pre-service teachers (PST) enrolled in Second Language Acquisition (SLA) related courses in the state of Pennsylvania in the US (18 PST) and in the Paraná state, Brazil (16 PST). The VE initiative was carried out with another group of PST (March-April, 2023; US= 21 PST; Brazil =22 PST) with some adjustments based on findings in 2002.

The US course is focused on English as a Second Language (ESOL). The state certification in Pennsylvania requires that PSTs in all teaching disciplines take courses (at least 90 hours of study)

to prepare for teaching children who immigrate to the US with minimal English skills since these children spend 90% of their day in non-bilingual classrooms. The course is taken in their second or third year of their studies. Most US PSTs were not bilingual (N=35% bilingual) and for those who were bilingual, predominantly the first language was Spanish and none spoke Portuguese. The course format was asynchronous web-based enrolling PSTs from several regions of the state.

In Brazil, the group of students were enrolled in the course “English Teacher Education Practice” in the third year of their undergraduate curriculum. They are from the Language Arts undergraduate Program (English major) and they were studying to be English teachers (See Table 1).

Table 1. Courses in US and Brazil and their respective enrollments.

US Preservice Teacher (PST) Course		Brazil Preservice Teacher (PST) Course	
Course: Intro. teaching English Language Learners (ELL) *Required course to teach all subjects/grade levels in the State in the US because most schools “Submerge” Emergent Bilingual students in General Ed classrooms.		Course: English Teacher Education *Required course in the third year of the Language Arts Undergraduate Program.	
Format: Asynchronous Web course, (Asynch. format to accommodate student schedules).		Format: In-person.	
PSTs 2022 = 18	PSTs 2023 = 21	PSTs 2022 = 16	PSTs 2023 = 22

Source: Own elaboration.

3.2 VE tasks implementation schedules 2022 & 2023

US and Brazil instructors planned the VE Project for these SLA-related courses, such as the timeline for the exchanges, the platforms to be used, the tasks to be developed, the topics for the students’ cross-cultural projects, the forms of assessment, the rubric, and the selection of ICT. The interactions were developed using both synchronous and asynchronous platforms: Google Classroom, a platform for both classes to get updates, directions, and submit assignments for this VE project; VoiceThread & Padlet for the autobiographies for them to get to know each other and Google Meet for synchronous interactions when the students presented the results of their projects. The students were also free to choose ICT tools that team members could use to divide up the responsibilities for their research, collate their information, develop their project, decide on formats for presentation, and complete the projects (*i.e.*, WhatsApp, Zoom, Google docs, Google Meet, Google slides; Google chat, Canvas, etc.).

In both years, the VE projects were set up with phases “Getting to Know Each Other” and working on collaborative projects as well as two other phases: presentation and reflection. Teams of students (each team) engaged in semi-structured tasks, such as Phase 1 - autobiographical introductions to get to know each other, Phase 2 - cross-cultural student inquiry projects with culminating presentations focused on topics related to comparisons of teacher development and language and culture development in each respective country, and Phase 3 - peer evaluations of other teams’ cross-cultural projects and reflections on process and projects of their own team’s cross-cultural project (see Table 2).

Professors then guided the VE Project in phases (getting-to-know, projects, reflection/evaluation) for these courses in 2022 and then again with the project design revised in 2023 with two other classes in respective courses. Based on information gathered in 2022, the timeline and tasks were adjusted for 2023 to increase the opportunities for student interactions and for faculty mentoring through periodic formative activities and virtual meetings (see Table 2).

3.3 Data & Analysis

The general aim of our research project is to investigate an experience of virtual exchange (VE) with PSTs from the state of Pennsylvania, US and the state of Paraná, Brazil in terms of teacher development, intercultural communicative competence (ICC), language practices, local and global perspectives, and collaborative practices through information and communication technologies (ICT).

Table 2. VE tasks implementation schedules 2022 & 2023.

2022	2023
<p>Week 1: PSTs were assigned to one of four teams for Cross-Cultural Student Inquiry projects and the professors explained the project. The topics of their projects were: 1) K-12th Grade language teaching & learning in Brazil & USA; 2) Bilingual K-12th Gr. education in Brazil & US; 3) The status of foreign languages in Brazil & US; 4) How teacher education programs in Brazil region & US state prepare to teach/ support English/other languages of K-12th Gr. During this first week, the US professor participated in one of the Brazil classroom meetings and the professors explained the project in a synchronous class for Brazil students. This was recorded and the video was uploaded to Google classroom for the US students to view since their class was asynchronous.</p> <p>Week 2: Students asynchronously exchanged and commented on each others' VoiceThread autobiographies to get to know each other (Per faculty directions: on how to use VoiceThread, required content, and grading rubrics).</p> <p>Week 3: Student-lead & faculty-guided discussions to organize their plans for carrying out their cross-cultural inquiry projects (Per faculty directions: on required content and grading rubrics).</p> <p>Weeks 4 and 5: Students worked on their Cross-Cultural Collaboration projects; Each team conducted library and internet research on the selected topic (Students chose ICT for meetings, planning, and collaboration on the project content).</p> <p>Week 6: Synchronous Presentations (all chose to use PowerPoint).</p> <p>Week 7: Semi-structured Peer evaluations of other teams' cross-cultural projects, and reflections through a survey on the process and projects of their own team's cross-cultural project.</p> <p>Week 8: Faculty met to collaboratively grade, using the grading rubrics and analyzed the projects regarding related ICT used for content, pictures, Live Google meets presentations, and organization.</p>	<p>Week 1: PST self-selected which team to join (to promote ownership of the task) to one of five teams. Added a fifth topic to accommodate larger classes in 2023: Contextual information about Brazil and State in US & their Education System. Added Watch Video general information about what is COIL/ Virtual Exchange & our Cross-Cultural Collaborations (Video explanation); Read short article; then Post reflection. Added a Padlet Intro. activity - post a picture of yourself and about 50 words to describe yourself. Repeated the virtual meeting with professors and Brazil students; four US students attended & others watched the recording.</p> <p>Week 2: Autobiography as 2022.</p> <p>Week 3: – Repeated the discussions. Added a Periodic Progress 1: Semi-structured Narrative post: Students shared their perceptions of the Introductions activities of Week 1 & 2).</p> <p>Weeks 4 & 5: Students worked on their Cross-Cultural Collaboration projects in similar ways to 2022. Added a Periodic Progress 2: Semi-structured Narrative post: Students shared their perceptions of their collaborative process, working in teams on the project.</p> <p>Week 6: Synchronous Presentations (PowerPoint or Canvas).</p> <p>Week 7: Semi-structured survey on the process and projects of their own team's cross-cultural project. Added a Final Narrative of an aspect of the project and included a picture symbolic of the experience.</p> <p>Week 8: Faculty met to collaboratively grade, using the grading rubrics and analyze the projects regarding related ICT used for content, pictures, Live Google meets presentations, and organization.</p>

Source: Own elaboration.

In this text, we focus on the outcomes and challenges of the VE, analyzing data from periodic and end-of-semester surveys and narratives as well as from the PST interactions and tasks in different digital platforms.

For this qualitative case study research method to investigate this cross-cultural collaboration experience between the two SLA classes (Stake, 2005), to explore the research aims of this paper, researchers independently searched for patterns and themes in the participants' interactions in the surveys & narratives of experiences, autobiographies, cross-cultural inquiry projects, experiences with ICT, faculty notes during the presentations, grading rubrics, and faculty reflections on the projects.

Each PST is designated by country (US or BR) and year participated. Each was also assigned by team and an individual number, i.e. US 2022 ST1(team)-6(individual). Coded data were analyzed using a Constant Comparative Analysis Method (Glaser; Strauss, 1967) with triangulation (Denzin; Lincoln, 2000) of independently coded data, in-depth analysis of the existing research, and narratives to explain the findings.

4 Findings

4.1 Cross-Cultural Collaboration Outcomes and Facing & Overcoming Challenges

In both years of the project, each of the respective US and Brazil PST classes experienced similar outcomes and challenges during their collaborations in the projects. Some of the challenges faced in 2022 were addressed and tasks were adjusted in the second year of the VE project (2023) to reflect the professor's and PSTs' expectations and analysis of the 2022 PST's experiences. The accommodations in project design from the 2022 year while did not benefit those PSTs since that class ended, did benefit those who participated in the 2023 VE. For example, the PSTs from the 2022 group stated that they wanted to have more time to get to know each other (not only to develop the assigned tasks from the cross-cultural project). So, the professors added, in the initial phase of the 2023 interactions, a Padlet activity for the PSTs to get acquainted more informally, but still asynchronous to accommodate the format of the US course.

Even in the second year, 2023 of the study with the second group of PSTs, some issues remained as challenges. PSTs from both Brazil and the US shared that similar to other studies, the following were challenges to VE collaborations: coordinating their busy schedules, the asynchronous online format (of the US course), and negotiating time zone differences to find time for interaction and development of their projects as many of them work and study (Fuchs; Snyder; Tung; Han, 2017; The Evaluate Group, 2019; Hauck; Satar, 2018).

Overcoming those challenges and important outcomes were also identified Figure 1:

- interactional skills, such as leadership, initiative, autonomy, and collaboration;
- the development of Information and Communication Technology - ICT (Calvo; Hartle, 2023) and Intercultural Communicative Competence - ICC (Idris; Widyanoro, 2019; López-Rocha; Vailes, 2017);
- content, cultural, and contextual knowledge;
- language issues.

In the Figure 1, there is a representation of the outcomes and challenges of the VE Project.

4.2 Outcomes

4.2.1 Interactional Skills

Participating in a VE Project is a way to develop many attitudes and skills that place the students in the center of their learning process, as they are the ones who need to take the initiative, leadership and autonomy for developing the tasks and collaborations. There is a "truly learner-centered pedagogy" and it results in "increased student-teacher responsibility" (Sadler; Dooly, 2016).

In the analysis, it was possible to notice that some teams readily took the initiative and appreciated the skills learned from the process. The quote below shows how this group of students worked together to develop the project: even being physically distant to each other, the digital platforms enabled connection, sharing of ideas and responsibilities on the tasks.

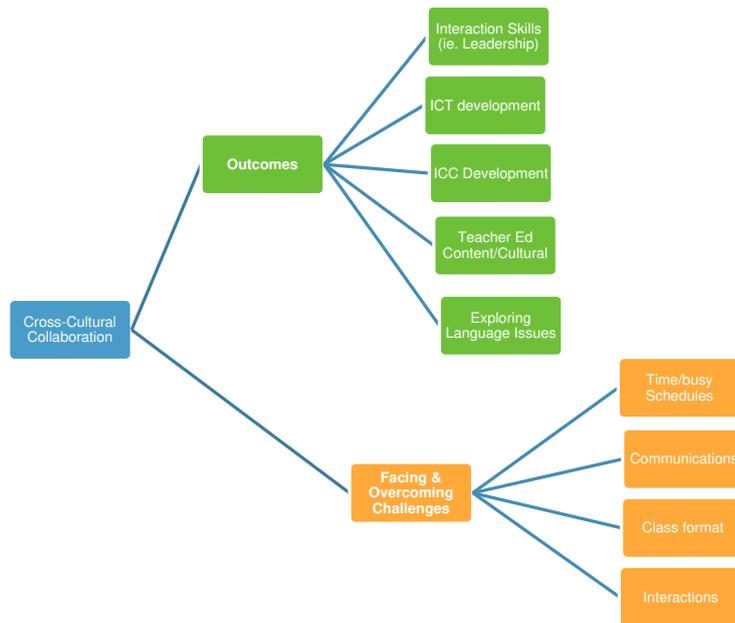


Figure 1. Cross-Cultural Collaboration Outcomes - Facing & Overcoming Challenges.

Source: Own elaboration.

An initial expectation that I had was that we, as a group, would communicate on a regular basis and have some sort of plan to give up responsibilities so that it would be easier for us to work on our project. These expectations were absolutely met. We were in constant contact, and did an excellent job of dividing all of the parts of the presentation up. (US 2023 ST3-42)

Collaboration was another aspect shared in most of the PSTs' answers in the survey. They valued the interaction they had with students from another part of the world; the group work itself and the way they shared their responsibilities for developing the project. This is probably because of the own nature of VE projects that enable a more student-centered approach. In addition, the professors' balance of guidance and autonomy in conducting the project contributed to this collaborative environment.

One benefit from this was learning to be more self-dependent and taking the instructions and collaborating with each other to put the pieces together (US 2022 ST3-8).

My initial expectations for participating was that everyone will add their input in the project and communicate with one another. These expectations were met way beyond my expectations because everyone was on Whatsapp chatting with each other and schedule times to communicate with everyone with the project and everyone added their parts of the project. (BR 2023 ST3-41)

Data also indicated that some teams worked well together. Collaboration was both a positive outcome as well as a challenge they faced and had to overcome by applying different negotiation strategies. Some PSTs reported collaboration in different platforms; shared responsibilities for the project and the creative element when preparing together the presentations. Their experiences with telecollaboration were mixed regarding the ways they felt close or physically distant to their colleagues. Their answers also pointed out that they thought about their future roles as teachers when negotiating actions and working collaboratively with other colleagues, for example:

There is something that is a benefit and a challenge at the same time, that I think that helps me becoming a better teacher, which is working in group. Me as a teacher need to know how to choose the best words to interact and make people comfortable to participate and give their opinion. I tried to do that when talking with my partners about the project, I tried to tell my opinion without being rude and being supportive. (BR 2023 ST2-58)

A benefit I got from this project is I learned the process of working with other educators. In my future career for example, I can use what I learned from this when working with coworkers to plan/research a unit. (US 2023 ST5-47)

These quotes demonstrate that the VE Project was a context for experiencing collaboration and developing some soft skills that are important for their lives. When interacting with colleagues from different cultural backgrounds, they learn to take leadership, negotiate, and deal with conflicts.

According to O'Dowd (2021), student's learning outcomes in different models of VE Projects across the globe have to do with the way they feel "better prepared to communicate and collaborate with people from different cultures". Hurdles or challenges actually enhance participants' ability to find ways to creatively collaborate and communicate with partners from other countries. Based on O'Dowd's suggestion, for the two years of this VE project, professors carefully designed tasks to push students out of their comfort zone, but professors also carefully monitored the process and stayed in touch daily to guide some PSTs who needed reminders or other support.

4.2.2 ICT Development

In a previous paper, the authors of this text identified both the benefits and challenges of ICT during the VE Project. The following benefits stood out: the critical nature of technology for the communications; having choices of platforms; the uses of both synchronous and asynchronous forms of technologies; opportunities to help each other or use trial and error to learn new technologies; learning new technologies that are used in each culture; getting to know other students from other countries through ICT. On the other hand, the challenges were related to time, access to the internet or internet connection; getting in contact (i.e., email and not getting response /communication) with everyone; and difficulties with specific platforms. Though the authors emphasized that there were more benefits than challenges; dealing with the challenges was important for the PSTs to develop attitudes in their professional lives as well as for the professors to consider important aspects of ICT when planning their virtual collaborations (Calvo; Hartle, 2023).

Having WhatsApp made the project go very smoothly. It was a great asset to have in order to communicate with others across the world. I remember discussing this project with my parents, and they told me how lucky I was that we had phones and technology to do so, because when they were younger, they had pen pals they would communicate with by letters! I am very grateful to have had the technology to meet and work with the girls in my group. (US 2023 ST3-42)

The benefits of technologies were the opportunity to be able to communicate with people from another country, in addition to the ease of access to information about who we worked with during the project, in addition to easy access to learning from different contexts. One of the difficulties was how to learn to use the voice thread, because, besides the tutorial we had in the classroom, that platform is complex to use and we had to do some steps that weren't in the tutorial to publish our presentation. (BR 2023 ST2-59)

For both students, the technology itself was indispensable for the interactions to happen. Besides valuing and recognizing its role in recent educational practices, BR 2023 ST2-59, for example, also mentions the difficulties with a specific platform, the VoiceThread. This specific difficulty may have helped the PST to search, learn more and use this platform.

4.2.3 Intercultural Communicative Competence (ICC) Development

While seven weeks of collaboration could yield only limited shifts in such ICC skills as mindfulness, cognitive flexibility, and impacts of second language acquisition (Idris; Widyantoro, 2019; Üzümlü; Akay-oğlu; Yazan, 2020), PSTs shared some memorable aspects of the cross-cultural collaborations, such as motivation for the intercultural encounters, sharing experiences, learning and respecting differences.

The analysis showed that students expressed motivation for interacting and learning with each other. The exchanges allowed them to have contact with people with different stories and life experiences. Often a first step towards ICC is developing self-knowledge, by listening to others to consider

how we are different and similar. Direct and thoughtful encounters with people, places, and foreign languages such as through VE with students at other colleges are effective ways to begin to develop ICC (Idris; Widyantoro, 2019; López-Rocha; Vailes, 2017), as PSTs in the study indicated:

I could see how important it is to try to have a contact with people from other countries and cultures, because we can learn a lot sharing experiences, and we can also learn to be more respectful in face of differences. (BR 2022 ST1-26)

I think this project really showed us just how valuable it is to learn from people that are different from us. There were many times when we just had random group conversations, just discussing our lives, and providing insight into the differences in our lives. (US 2023 ST3-42)

4.2.4 Content Learning and contextual information about the countries

Data indicated that PSTs not only pointed out the contents they learned during the VE, but they mentioned how they could learn them in a cross-cultural way, comparing and analyzing them according to the contextual information and reality of the two countries.

O'Dowd (2021) also found that cultural knowledge was developed through VE Projects. According to him, in some situations, students mentioned the factual information they learned about many social aspects. In addition, students pointed out the development of cultural awareness about diversity in a way to "avoid regarding cultures as monolithic". Similarly, Kopish and Marques (2020) found that students in their study were learning from cultural experiences very different from their own and what helped them was their desire and ability to identify with new cultural partners.

One of the benefits of the project for my teacher education process was to learn about the teacher education from different context and the difference and similarities between both contexts. This is really important for our formation, because there is not only one way that is correct, it really depends of the culture and aspects that we are inserted. (BR 2023 ST2-59)

The benefits would be that it allowed us to view English education and ELLs from a different perspective, as these pre-service teachers are all specifically going to be English teachers but a lot of the students at [university] are going to be educators in a different subject, but are still required to take courses that are necessary for teaching ELLs. (US 2022 ST4-1)

4.2.5 Exploring Language Issues

For many Brazilian PSTs, their English language skills were developed and when interacting with PSTs from another context, they had opportunities to experience language use situations that are different from classroom activities. As all the Brazilian students were from the Letras program (Language Arts undergraduate program), most of them were fluent in their English communication as the VE tasks and interactions were developed in this language.

The following illustrates the way this Brazilian PST was initially worried about correctness; then mentions some other aspects that are more relevant in communication (e.g. getting the message across; negotiating meaning) that would be more important to consider in this kind of interaction.

I could learn many things with my group. The communication was of course a challenge for me, because I was afraid and worried about texting correctly. Some days after, I stopped to worry about the grammar of my written messages on WhatsApp. If my partners did not understand something, I'll text and write again. (BR 2023 ST4-66)

Also, when involved in VE initiatives, participants may also evaluate in different ways their linguistic competence, as one Brazilian PST shared: "These projects clearly help the students to be proud and confident in their speeches". (BR 2023 ST2-56). In this regard, O'Dowd (2021, p. 217) found that different from traditional ways of learning languages that are focused more on accuracy, in telecollaborative opportunities students use the language in a meaningful way.

PSTs from the US university related to other aspects of languages. For example, they mentioned the role of languages in society such as: how languages affect schools and other contexts, how other speakers are fluent in English, how only fluency in English is not enough to avoid misunderstandings, and their future work as teachers of bilingual students.

[. . .] The number of students from other countries both in my school and in Brazil that were fluent in English surprised me. The project just reinforced why it's so important to be bilingual and use one language to learn another. The other students were using what they knew to understand our differences. The experience exceeded that expectation. (US 2023 ST2-36)

It also highlighted how it can sometimes a language barrier can pose a problem, even if both parties are fluent or almost fluent in a language. There was a point where we set up a meeting, but because of confusion based on our language differences, we met at different times and missed our meeting. I think this could be translated to teaching emerging bilingual students. It just opened my eyes to how beneficial working with people who speak other languages can be, but also the difficulties that remain. (US 2023 ST3-42)

Participating in VE Projects are important initiatives not only to develop language skills, but to understand and consider language use and learning in a different perspective. In those excerpts, ST2-36 highlights the important way he sees the bilingual speaker using the two languages to understand and make meaning of the experience. In the second excerpt, ST3-42 calls the attention to the fact that fluency in the language is only one aspect in communication - even being fluent in their communication to schedule a meeting, they missed it because none of the US or BR students paid attention to the time zone differences in the countries. So, by this example, we can notice that communication is more than just using words; it also has to do with negotiating meaning.

4.3 Facing Challenges

4.3.1 Communication, interaction and collaboration

PSTs most often mentioned challenges were related to communication, interaction, and collaboration. Some teams did not feel the participation or initiative by some members met their expectations, mostly due to the US PSTs in those teams not responding right away to the Brazilian students' attempts to communicate and work on the projects. This was probably due to the fact that the US students were not used to communicating with WhatsApp as the Brazilian students were; so, this cultural difference in terms of technological tools for interaction had an impact in the initial phase of the project.

This difficulty in communication affected their organization to start working on their projects. The Brazilian PSTs complained about the "initial silence" from the US PSTs. Data indicated, though that soon after getting in touch with each other, some groups could work well together and share the responsibilities. While they were delayed with initial responses to Brazilian PST's emails, ironically, several US PSTs expressed that they wanted to have some more time for interactions, so email was not the best way to start this cross cultural collaboration.

[. . .] we did not have as much communication as I would have liked or have expected. I do think it was interesting to talk to the students and enjoyed what little conversations we did have. (US 2022 ST3-8)

I would say that one challenge that I had was communication. I had some difficulties communicating with the rest of the group and I believe that this could've been mitigated if there was more in person communication. At least for me personally considering I am not the greatest at seeing my emails. (US 2023 ST5-50)

4.3.2 Time and busy agendas

Most PSTs found ICT solutions to work through the challenges of busy schedules, time zone differences (2 hours difference) and communication with everyone. They learned to adapt and use WhatsApp for group communication, as an asynchronous platform for group activities/tasks even if this was their first time learning the App.

[...] getting ahold of everyone was difficult. For example, our group member emailed us on to create a WhatsApp, and one of our group mates didn't respond until [2wks later]... communication was difficult, even with some of the students at [Univ.] because we were all on different campuses with different schedules...but we used resources like WhatsApp and google slides to help us communicate with one another. I had never used WhatsApp before this assignment, so learning how to use that app was beneficial in case I ever need to use it again. At first, it was difficult to get a steady communication source with everyone. However, we got it all figured out by the time our presentation was due. (US 2022 ST3-2)

Providing both required ICT and developing a well-planned and guided VE framework (Gleason; Jaramillo Cherez, 2021) as well as allowing students to choose their ICT, supported the development of ICC (Kolm *et al.*, 2022). PST in this study showed they were developing skills for communication through asynchronous and synchronous technology, leadership, project management, and cultural diversity through different forms of technology. Besides their busy agendas, the class format of the classes in the two contexts had and impact on the development of the activities. The next section explores this challenge in the VE project.

4.3.3 Class format

Another factor that impacted the cross-cultural collaboration was the class format; while Brazilian students had in-person classes, US students had asynchronous web classes. So, the ways that professors interacted with PSTs were also different; the US professor needed to follow the development of the tasks and interactions by continuous online check-in with their students, while the Brazilian professor had classes with their students twice a week and gave those PSTs some class meetings to develop activities for their respective cross-cultural projects. Considering these differences, though, PSTs felt supported. This Brazilian PST recognized the collaboration process among the professors to organize the VE.

Professor [Brazil] has been very supportive and understandable since we started this program, and so they always made it very clear that they constantly wanted to check our work in progress, by giving ideas, embracing others we had, and that they was always in contact with Professor [US], who was nothing but receptive and empathetic. I really appreciate the fact that **they** are really interested in our culture, knowing so much about it, and being open to our suggestions too. (BR 2023 ST4-65).

This collaboration was also seen in the study of Sadler and Dooly (2016, p. 412) with their PSTs. The authors emphasize the mutual responsibilities and VE joint planning/ development by the teachers. In this way their students could see their collaboration and the use of telecollaboration in their practices.

Because of this class format difference, the US professor took into consideration the importance of additional asynchronous virtual scaffolding and explanation about the project. Balancing the amount of scaffolding (reminders about upcoming tasks or reminders to read their messages from the BR PSTs, extra directions, or video/picture directions) with supporting and encouraging students' autonomy was at the forefront of the professors' consideration when planning and implementing the VE tasks.

5 Conclusions

This study adds to the field aspects of the value of well-designed VE projects to support PST's development of ICC, collaboration, and task design skills, as well as an appreciation for SLA in other cultures (Hanks, 2019). Overall, this VE project yielded many of the desired learning outcomes for PSTs. Suggestions are also provided regarding guidance for professor mentoring that is needed, types of ICT, and processes for VE collaborations. While PSTs were successful on very structured guided tasks; many needed additional scaffoldings for initiative skills required for the cross-cultural projects which required more open-ended decision-making, critical thinking, task persistence, and time management.

As realized by Fuchs, Snyder, and Tung (2022), in some aspects of the process and product development, students may need more extensive mediation and mentoring. Additional support and check-ins for the second class of VE in 2023 – opportunities through getting-to-know-you activities, reminders with all PST emails, online reminders and suggestions during their weekly modules, and some Zoom sessions – were all that some teams of PST needed to begin communications for their cross-cultural projects. Even with those supports, some individual Brazil PSTs in the in-person classes and US PSTs in the asynchronous web needed more scaffolding, hints, guidelines, and push to spend the needed time to work on the projects.

PSTs in the Brazil class asked for class time to work on their projects and appreciated: “[BZ professor] took some time, during class, to answer all our questions and give some advice. Their help was really useful.” (BR 2023 ST2-58) and that there were “...computers to work on the project and the professor that is always there with us to help.”(BR 2023 ST5-68).

Another challenge that will be addressed in future cross-cultural collaborations also has to do with issues of time. Additionally, the results from the PST surveys and narratives seemed to be completed hastily and didn't take into consideration specific information about what was personally valuable to PST, for the entire process; lacking specifics about, *i.e.* Padlet interactions, autobiography of each person's background, or specific communications between students. In Table 3, we explore some features to continue and others to adapt in the third year of the project.

Table 3. Consistency & Adaptations for a third year of VE replication.

Consistent Features to Continue	Adaptations/Additions
Use of Google Classroom as the Platform for organizing the tasks and communicating with the students;	Helping the students with WhatsApp communication;
Organizing students in groups for interactions;	Designating a US & Brazil PST leader for each team;
Use of Padlet for Introductions;	Providing common materials (readings and videos) for all the groups;
PST-lead & faculty-guided discussions;	Schedule of synchronous meetings for the discussion of the topic of the project;
Collaborative tasks;	Use of Zoom breakout rooms for synchronous groups interactions.
Reflections through a survey and a final narrative.	

Source: Own elaboration.

As consistency for the next VE Projects, the professors will continue using the Google Classroom for organizing the interactions and materials; they will explore aspects related to VE for the PST to be aware of the initiative; PST will continue with their introductions at Padlet before developing the tasks and interacting in synchronous platforms; also, professors' scaffolding for the development of joint activities will be maintained as well as the final reflections using a survey and writing a final narrative.

As adaptations and additions, the professor will help them with the WhatsApp communication; also there will be leaders in each team and more synchronous meetings for conversations in Zoom breakout rooms. Instead of the groups developing projects on specific topics related to teacher education, there will be only one theme for their conversations: Global Education.

All those (re)organizations show that even working together for some time, the professors need to constantly reflect and analyze the VE in every year of its implementation. Working together is a continuous development process in our career and teaching.

To finish, it is important to highlight that besides the challenges faced and the (re)considerations professors needed to do and adapt for each subsequent year of the project, the outcomes illustrated during both years of the VE proved to be enriching experiences both for professors and PSTs. They could interact with peers from different contexts and cultures, experience an international activity “at home” and develop many skills and attitudes important to their lives and careers.

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Author contributions

Luciana Cabrini Simões Calvo: Conceptualization, Data curation, Formal analysis, Investigation, Project administration, Validation, Visualization, Writing – original draft, Writing – review and editing; **Lynn C. Hartle**: Conceptualization, Data curation, Methodology, Project administration, Validation, Visualization, Writing – original draft, Writing – review and editing.