

Designing Telecollaborative Projects for Professional Communication and User Experience

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Abstract: This article draws on Trans-Atlantic and Pacific Project (TAPP) collaborations (e.g., [Arnó, 14] [Vandepitte, 16]) to show how students in already-existing technical communication classes can join other classes in realistic transnational projects through ICT and thereby acquire and enhance various types of transversal competences necessary to students' future performance in a globalized workplace.

Keywords: telecollaboration; professional communication; transversal competences; learner autonomy, usability studies, UX (User Experience), personas

Categories: K.3.1, K.4.3, L.2.7, L.3.6, L.6.0, L.6.1, L.6.2

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1 Introduction

Preparing graduates for a globalized workplace requires engaging university students in interdisciplinary work that integrates transversal competences. Moreover, curricula should incorporate an international dimension [Leask, 15]. Accordingly, telecollaboration can be a useful tool to foster intercultural communication, collaboration, and digital literacies, transversal competences that can promote graduates' employability in internationalized scenarios [Estes-Brewer, 15] [Guadamillas, 17].

A model for telecollaboration is the Trans-Atlantic and Pacific Project (TAPP), a grassroots network that has linked classes internationally for over 20 years and has

covered a variety of projects. Such projects have encompassed both flexible short-term assignments and others lasting an entire academic term, with all of them reflecting realistic professional scenarios. As a framework for developing graduate competences for employability, TAPP collaborations, with students arranged in cross-cultural virtual teams (CCVTs), allow students to apply their experience and knowledge in meaningful simulations of authentic scenarios. Integrated into already-existing courses, TAPP collaborations epitomize interaction in “globally-networked learning environments” [Stärke-Meyerring, 08], through readily available technology (freeware) for communication and collaboration.

Telecollaborative practices have a long tradition in the field of language teaching and learning. Through e-tandem exchanges, students of different languages engage in tandem learning of each other’s language while affording the opportunity to gain insights into each other’s culture [Appel, 06] [Walker, 09] [Resnik, 19]. The broader term telecollaboration refers to structured exchanges involving students from different locations who are assigned specific tasks to be developed in online teams with the aim of improving language and intercultural skills [Guth, 10], a practice that, if integrated in language learning, can lead to a more active and conscious student role [Sadler, 16]. In turn, to lay the groundwork for intercultural learning to take place, teachers must incorporate some degree of reflection on it [O’Dowd, 15]. Due to the expansion of technology-enhanced learning, telecollaboration—also termed intercultural online exchange or, more recently, virtual exchange [O’Dowd, 18]—has gained momentum as a way of providing a sustainable, low-cost means for university internationalisation [Verzella, 18]. It has also seen a shift from a grassroots movement towards greater integration in institutional policies, as seen for example, from the recent creation, in Europe, of the Erasmus+ Virtual Exchange initiative [Helm, 18]. Within this context of telecollaboration, the TAPP has extended the learning aims of the partnerships beyond language learning courses to include other courses (specialised communication, usability studies, project management) relevant to realistic workplace projects. Replicating real-life international professional communication, TAPP partnerships can link up to seven partners to work on projects that involve managing the complexity of intercultural communication (often multilingual) and project management that characterises current globalized workplaces [Maylath, 13a, 13b].

Special emphasis will be placed on user experience (UX) as it has received scarce attention in telecollaboration, although it forms part of almost any professional project. UX will be analysed from the point of view of personas as both a UX strategy tool and project outcome that promotes empathy, an awareness of cultural differences, and skill with telecollaboration tools (especially in remote work contexts), which are more relevant to current professional communication than ever.

2 Approaches to telecollaboration within the TAPP

In this section, we broadly describe the TAPP network’s approach to telecollaboration, including how structures for collaboration have expanded over time and how usability and UX have become increasingly central. The types of projects undertaken under the auspices of the TAPP network have been as varied as they have been far-flung. Initially they involved bilateral exchanges pairing technical writing classes and translation

classes collaborating on the writing and translation of procedural instructions [Humbley, 05]. Later iterations expanded into multilateral collaborations involving as many as seven writing, usability, and translation classes, in as many countries, in co-authoring, testing, and translating procedural instructions in up to four languages at a time [Maylath, 13a, 13b]. Projects focused on the humanities and social sciences have often since been involved [Hammer, 14]. In addition, projects have sometimes reversed the direction of text travel by having translators translate source texts, with native-speaking editors editing their target texts [Tzoannopoulou, 18] [Mousten, 19]. No matter the disciplines or texts involved, all TAPP collaborations resemble real-life work projects with distributed teams of (co-)writers working in tandem with translators and/or usability testers to produce multilingual documentation. In addition, bilateral projects have been expanded to reflect multiple media and types of outputs produced in authentic disciplinary communication, such as the oral presentation of technical projects in engineering communication [Verzella, 21].

Subsequent sections discuss specific TAPP collaborations in more detail, including implementation of these collaborative projects, student roles, and project outcomes. In particular, we describe how TAPP collaborations prepare students for workplaces by providing a realistic communication context. The TAPP's capacity to facilitate these contexts has been expanded by recent collaborative projects focused on usability and UX, leading us to report on these collaborations in the most detail. In such collaborations, classes often begin by exploring the basic tenets of usability, which is defined by the international ISO 9241-11 standards as the "extent to which a system, product or service can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use" [ISO 9241-11:2018]. Although varying qualities are used to describe usability, Quesenbery [Quesenbery, 04] is known for her description of the 5Es of usability, which include effective (how well users can achieve their goals using a product), efficient (the speed at which users complete goals), engaging (how satisfying a product is to use), error tolerant (how well a product can prevent or recover from errors), and easy to learn (how intuitive a product is and how well it supports continued learning) (p. 5). While often interchanged with UX, usability is better understood as a component of UX, which "encompasses all aspects of the end-user's interaction with the company, its services, and products" [Norman, n.d.]. Both usability and UX are situated within the broader philosophy of user-centred design in which "users are active participants in the design, development, implementation, and maintenance of the technology" [Johnson, 98, p. 32]. As user-centred design practices have evolved from their early articulations in the 1980s [Norman, 88/13], the emphasis on user-centred models as opposed to systems-centred ones has been persistent, especially within the field of technical and professional communication [Sullivan, 89] [Johnson, 98] [Johnson, 07]. Usability and UX are crucial for the TAPP's goal to provide realistic communication contexts. Usability facilitates input from real users, while the UX assignments we report require students to shift between varied roles and apply creative problem-solving skills.

3 Project Implementation

3.1 Project Phases

Projects are structured and implemented in distinct phases, namely preparation, development and debriefing, which help both students and instructors to organize the partnership, set goals and milestones, provide guidance to participant students, and especially to keep track of the progress done at the different sites, crucial in distributed collaboration environments. What merits special attention is the debriefing phase, which enables reflection, evaluation of tools used and activities done, as well as the integration online activities in classroom work, all of which are essential elements in telecollaboration [O'Dowd, 15]. Therefore, given the complexity of the TAPP network and variety of partnerships and projects involved, it is necessary to follow such stages, in order to ensure that all participants are on the same track. Accordingly, the typical structure of a TAPP project develops according to the phases of preparation, development and debriefing, described below.

The preparation stage involves setting up the partnership and establishing guidelines for the project. Instructors at the different sites agree on the assignments and distribute instructions and calendars (with the different phases) among participants. In the case of multilateral projects (linking up to six classes), such schedules have to be negotiated among participants, along with guidelines and requirements for each of the documents to be produced (e.g., procedures, translation briefs). In spite of their complexity, one of the advantages of multilateral projects is that they have a long tradition in the network and, therefore, newer instructors can benefit from materials and guidance provided by more experienced instructors. On the other hand, smaller-scale bilateral projects allow more flexibility and creativity, as instructors can adapt the partnership to their classes' needs. At the preparation stage, teams are formed and topics chosen, which often belong to specific disciplines (e.g., engineering), in the case of students of specialized languages/communication.

An important part of the preparation stage is deciding on the technological tools to be used. Collaborative platforms can be assigned by instructors for project management (i.e., sharing documents and organizing milestones) and project communication (e.g., video conferencing or instant messaging). In addition to the assigned tools, student pairs or groups work may set up their own spaces (and decide on what tools to use) for socializing and organizing work (e.g., email or WhatsApp). This results in a high degree of control of learning technologies and modes on the part of the student increased by the ubiquity of mobile devices [Reinders, 16].

The second stage is that of project development, the central part of the collaboration, carried out by partners at the different sites. Whether it involves the production of multilingual documentation (i.e., writing and translation) or the review of written or spoken texts, such projects involve tangible results, similar to those produced in real(istic) situations. Appropriate pedagogy is thus a task-based approach [Lai, 11], so that team participants focus on shared goals and meaningful outcomes and deal with language matters as the need arises.

The last stage, debriefing, is as important as the preparation stage, which not only involves reporting on outcomes, but also reflection. This stage usually involves a joint videoconference, through which participants discuss project outcomes and clear up any difficulties that may have arisen during the project. Sharing final documents and

sending farewell messages (part of the social dimension) also help to close the project. Similar to the preparation stage, the post-learning report encourages reflection on the learning experience. In turn, as telecollaborative projects are an integral part of the courses that they form part of, it is essential to integrate autonomous online work with classroom work, as students and instructors discuss project questions and outcomes during classroom sessions.

3.2 Real(istic) Scenarios

TAPP partnerships are designed to prepare students to transition to from classrooms to workplaces, a persistent challenge given the differences between classroom and workplace contexts. Freedman, Adam, and Smart [Freedman, 94] name four basic differences between classroom and workplace writing:

Classroom Writing	Workplace Writing
<i>Epistemic</i> : For its own end.	<i>Instrumental</i> : For a separate end.
<i>Writer-oriented</i> : Focused on the writer's knowledge or skill. A rhetorical display.	<i>Reader-oriented</i> : Focused on how it affects the reader.
<i>Ephemeral</i> : Exists/is used only for a brief time.	<i>Continued</i> : Exists/is used indefinitely.
<i>Evaluated</i> : The reader has no stake in the document's success and therefore merely evaluates the document.	<i>Collaborated on</i> : The reader has a stake in the document's success and therefore collaborates with the writer.

Table 1: Differences between classroom and workplace writing

Spinuzzi adds that, in workplaces, writers are in dialogue with a community of peers, while students are in a very different relationship with a single reader [Spinuzzi, 96]. He further suggests that fictionalized scenarios meant to simulate the workplace are limited because they are ultimately bound to teacher expectations and the classroom context. Even so, in his synthesis of learning transfer theory, Brent suggests that importing aspects of workplace practice into classroom activities can provide opportunities for drawing the forward-reaching links between contexts that is crucial for successful transitions [Brent, 11].

TAPP collaborations provide a "realistic" communication context, not only by including a real reader (i.e., not an imagined one) for students' documents but also an authentic purpose for correspondence. This international correspondence between students is both instrumental and reader-oriented while being an occasion to collaborate, to varying degrees, on technical documents. In this way, collaboration is embedded further into the course than a single group assignment can accomplish, which is crucial for long-term development of expertise [Brent, 11]. Moreover, not only does this collaborative element emulate workplace dynamics; in addition, collaboration and reflection have been tied to improved self-efficacy [Dunlap, 05], and collaboration and feedback have been shown to improve students' perception of how well academic

programs prepare them for workplaces [Schneider, 05]. Workplace dynamics are further emulated through frequent communication activities tied directly to writers' ongoing work [Hoffman, 14] such as the correspondence between collaborating students.

Finally, TAPP collaborations combine the typically structured environment of the classroom with less structured conditions typical of workplaces [Wendlandt, 08]. That is, clear expectations are established for students' interactions (as well as between collaborating faculty), but the exact shape of peer-to-peer exchanges is negotiated by students as needs arise. In addition to emulating key aspects of workplaces, combining structured and unstructured components also helps students negotiate the tension between social accommodation and social innovation [Dannels, 00] [Sullivan, 11]. As Dannels suggests, situated learning allows students to both familiarize themselves with established work practices and learn new practices they can contribute to workplaces when they arrive. This goal is accomplished by combining unstructured components with unpredictability of international interchange. Adler, Scherer, and Black discuss the example of outsourcing IT work, arguing that pertinent choices are prone to failure if social context, competing cultural values, and political agendas are not considered [Adler, 03]. These aspects of communication can be practiced through cross-cultural collaborations that are structured without being completely predictable, so that there are different options and routes within a common goal. Thus, students have the opportunity to exercise different types of choices, in terms of technology tools to be used, specific roles to be assumed by or assigned to team members, which entails high degrees of student initiative and is indicative of a view of learner autonomy based on choice and responsibility [van Lier, 96].

This combination of structure and open-endedness is seen in the TAPP: once an assignment has been given (e.g., writing a technical text), with guidelines specifying format, deadlines and online platform, participants have room to decide on a wide range of aspects related to ICT tools to use, topic, project management and forms of communication, among others. Regarding communication, it should be noted that, in addition to producing the target text, this type of partnership offers students the opportunity to practise communication in a variety of unexpected (and nuanced) situations arising from different needs, such as clearing up misunderstanding, making polite requests when partners do not reply, or giving/accepting criticism. Therefore, the TAPP telecollaboration becomes the learning ground for students to engage in realistic professional communication without any of the risks that would be involved in real world tasks [Moustén,18].

3.3 Student Roles

As in professional scenarios, developing such projects through virtual collaborative teams involves the interrelation of a variety of student roles, ranging from content experts, like engineering students working on technical topics with English majors acting as language experts [Maylath, 13a], to translators, peer reviewers, project managers, or user experience (UX) evaluators. Some students take on one of the roles exclusively (e.g., subject-matter expert) or in addition to another role, as in multilateral projects when English majors from the US act both as language experts and project managers in charge of coordinating teams that include translators and usability testers [Maylath, 13b].

The complexity of multilateral projects enhances students' practice at managing projects [Arnó Macià, 14], a key demand on today's professionals. Students must draw on different skills as they familiarize themselves with various, authentic professional and academic documents and practices (procedures, translation briefs, UX evaluation reports). In such contexts, roles emerge explicitly based on students' major (e.g., engineering students as owners of technical topics, or translation and English majors as language experts) and are therefore clear from the outset. Sometimes certain roles are less explicit and based on power relations, whether they involve ownership of language or ownership of activity. This is seen, for example, when US English majors take on the role of project manager, or when local teams of engineering students in Spain write texts based on their own engineering projects and thus claim the role of subject-matter experts and authors. Through classroom discussions and reflections, students can reflect on their own roles, for example non-native speaker (NNS) owners (i.e., writer and provider of technical content) vs. native speaker (NS) reviewers (language consultants). Such exchanges can help balance power relations in the case of NNS students with lower levels of language proficiency, apart from helping raise students' awareness of both their multilingual repertoire and of the use of English as a *lingua franca*, a tool for international professional communication [Arnó Macià, 19]. This brings to the fore that all contributions are valuable and lays the groundwork for experiential work on the linguistic pragmatics of TAPP collaborations, as students negotiate different roles, actions and power relations while also trying to maintain one's and others' face [Mousten, 12].

3.4 Types of Project Outcomes

One of the affordances of telecollaborative projects like the TAPP is the wide range of project outcomes, written texts, oral presentations and specialized translations, among others, that can be developed through partnerships. Because of its transversal role and uniqueness in technical communication, project outcomes from collaboration focused on UX will be dealt with in a separate section.

The most common type of technical writing done under the auspices of the TAPP involves writing instructions. Such procedural writing is probably most common in the domain of real-life technical writing as well. One common pairing in recent years has been to have a technical student from a European university act as subject-matter expert (SME) and provider of technical content while collaborating with a language major at US university. This type of collaboration [Maylath, 13a] involves writing instructions collaboratively on Google Drive. This platform is frequently used in many other sorts of TAPP collaborations as well, as it helps co-authors keep track of changes and can even include the instructor if the students require assistance [Vandepitte, 16]. The affordances of Google Drive for the development of writing skills through dialogue and collaboration have been examined from the perspectives of sociocultural theory and a process approach [Slavkov, 15]. Google Drive's affordances are similar to those of other platforms for online collaboration, such as Wikis, which facilitate learner-centeredness, increased metalinguistic awareness, attention to the writing process, and negotiated task development [Arnó-Macià, 17] [Kuteeva, 11]. Given its comments feature, Google Drive not only facilitates online writing; it also allows students to engage in simultaneous dialogue to edit their text. The combination of joint editing and dialogue between participants can lead to a variety of dialogues, on the text (code), on

the channel of communication (e.g., redirecting other participants to more agile communication channels, such as instant messaging). Such a written platform not only allows participants to jointly edit the main text but also hold an exchange adjacent to it, which leads to edits that individual participants may not have arrived at on their own. With a focus on process, participants combine the main collaborative platform. Online collaborative writing thus results in a dialogic process in which participants negotiate and jointly construct the document, while creating spaces for reflection on language and technical communication.

Broadening from the domain of technical writing to the more expansive domain of technical communication, some partnerships have involved spoken technical English, most especially oral presentations. Local teams of engineering students in Europe studying technical communication as part of their English for Specific Purposes (ESP) courses co-author and deliver oral presentations about authentic engineering projects, which they share with their peer-review partners. These partners are US-based NS engineering students enrolled in a technical writing course, and they act as language and technical communication consultants. Examples of such projects—part of students' work toward their engineering degrees—have included the design and development of an electric motorbike for an international engineering student competition and designing a flying drone, among many others. Over the years, these presentations have developed into the development of creative videos. The progressive incorporation of digital artifacts has an impact on the technical communication syllabus, as instructors have to include elements of multimedia communication and design (e.g., developing storyboards) in addition to language contents [Hafner, 2020].

In the context of real international communication, engineering students have to decide how best to present their projects to an international audience as they apply both their specialized knowledge and the language and technical communication concepts learned during the course. Through interaction with and feedback from NS students, NNS engineering students can develop greater awareness of the importance of language and communication in the development of an engineering project.

Scientific translation has also become a different type of bilateral partnership involving the collaboration between a science writing class from the US with a sci-tech translation class from Italy. American students wrote scientific literature reviews as well as feature articles for a public audience on the same topic, then corresponded with their translation partners in Italy about how best to render the texts accurately. Working with documents for both scientific and public audiences gave translators experience with both technical language and more idiomatic, culturally laden language. Moreover, translators had a rare opportunity for direct dialogue with writers, receiving answers about intended meaning and audience assumptions and sometimes prompting writers to revise passages to better prepare them for translation. Because the writers were science majors, corresponding with translators not only helped them recognize their cultural and disciplinary assumptions but also helped them take ownership of their growing expertise in language, writing, and culture, in addition to scientific content.

4 Usability and User Experience in Telecollaboration

Whether in bilateral or multilateral projects, TAPP collaborations involving procedural writing have often included a usability evaluation stage, adding even more realism to TAPP projects, linking them to industry needs and practices. This attention to usability within the TAPP has grown into collaborations focused on user experience (UX), particularly with an assignment focused on personas.

Over the years, usability evaluation within the TAPP project has evolved from usability tests conducted by students at one site only to international collaboration [Maylath, 13b] [Isohella, 18]. The focus has also expanded from usability testing to UX [Isohella, 18] as “stand alone documents or documents that are major parts of systems are also user experiences” and therefore require user-centred approaches [Redish, 11, p. 93]. First, in 2000, usability tests of technical instructions were conducted by students at the University of Wisconsin—Stout (UWS), USA, who wrote instructions for translation to students at Belgium’s Mercator College of Translation & Interpretation (now part of Ghent University). In 2010, students at the University of Vaasa (UVA), in Finland, joined the project and conducted usability tests of instructions written—and also tested—by students at North Dakota State University (NDSU) in the United States [Maylath, 13b]. Two years later, in 2012, instructions were written collaboratively by students at NDSU and engineering students from the Polytechnic University of Catalonia (Universitat Politècnica de Catalunya, UPC) and tested by both students at NDSU and UVA [Maylath, 13a]. The tests’ primary purpose was to assess the usability of instructional documentation for a target audience reading in English. In the autumn of 2017, user experience was brought into focus, allowing students to situate user-centred design within the broader context of user experience, which is a natural extension of the work that technical communicators already do [Lauer, 16].

In the following sections, we describe the details of the 2017 collaboration focused on UX. First, we discuss it briefly by looking at phases, scenarios and student roles. We then focus on project outcomes and present personas that get at the heart of user-centred design. In addition, we describe the ways personas were used in international collaboration.

4.1 Phases, Scenarios, and Student Roles

For their collaboration in 2017, McCall and Isohella divided their usability and user experience classes at NDSU and UVA into small, internationally paired groups. The NDSU class, offered by the Department of English, had 10 undergraduate English majors and nine graduate students (all but one in either the department’s MA or PhD degree program) enrolled. The UVA class had 17 graduate students in the Technical Communication Program, a joint MA program of the Department of Communication Studies and the Department of Computer Science.

As discussed in section 3.1, the typical structure of a TAPP project develops according to the phases of preparation, development and debriefing. This was also the case in the collaboration focused on UX. Although this type of a smaller-scale bilateral project would have allowed more flexibility, this was the first time a UX approach was incorporated into the collaboration as an independent project within the TAPP network. Therefore, the project followed the typical structure of a TAPP project.

In the preparation phase, instructors agreed on the project schedule and the assignments, i.e., that each group would select an artifact (e.g., Netflix, LinkedIn) to develop a collection of 2-3 types of UX documents around (i.e., personas that describe users' tasks, behaviours, and attitudes; task models that show what a user needs and expects to do to complete a goal; user journeys about the steps that a user takes to complete a task or goal; content requirements about what text, image, sound, etc. is needed to help users achieve a goal, or a sitemap about the navigation structure and key pages of a website) based on models from Caddick and Cable's *Communicating the User Experience* [Caddick, 11].

Slack, a cloud-based collaboration application, was chosen for communication, as it allows communication through public and private channels that can be project- or group-related, or topic-specific to include the most relevant people in each conversation. In this iteration of a TAPP collaboration, students created private channels to use for group chats and file sharing. In addition to Slack, email was also used for communication.

In the development phase, students conducted research to gather the information that they needed by visiting online forums to read and collect user stories and explore trends in passions, frustrations, questions, and solutions that they were sharing. For example, for a persona based on an imagined user of LinkedIn, students at UVA collected statistical data (such as age distribution) on LinkedIn users in Finland. Students then created personas to be sent to their partners.

The pairs peer-reviewed one another's documents, and students individually wrote their own peer reviews to send to their individual partners. In their peer reviews, students focused on the organizational scheme of the documents (i.e., on whether the photos, persona names, user quotes, key goals and behaviours are present in the personas) and on how effectively the personas identify user key goals, behaviours, and attitudes.

In the last stage, debriefing, students discussed the broader experience of their collaboration in a real-time videoconference, which took place at the end of the semester. For most students this was the first time that they saw or heard each other. During the 1.5-hour videoconference, students discussed UX documents, peer review, exchanges, learning outcomes and competences gained from the TAPP project. Students were also asked to give advice to future classes working on similar projects.

As discussed in section 3.2, TAPP partnerships are designed to prepare students for workplaces. This TAPP collaboration, focused on UX, helped students with adapting the mindset of UX practitioners; students learned to see usability and UX not as a straightforward process but as an often constructive, messy one [Chong, 16] that requires creative problem-solving, research and teamwork skills—namely, those required in work life. Besides these skills, students benefit from international collaboration by gaining knowledge of usability and user experience in different institutional and cultural contexts. This type of TAPP collaboration resembles real-life work projects in the sense that projects are developed by distributed teams, which are located in geographically different sites. At UVA, each group had at least one member working entirely online, which enhanced the complexity of the project.

This UX-focused TAPP collaboration also provided students the opportunity to assume different roles, which model the ones discussed in Section 3.3. By learning about and producing a variety of UX documents such as personas, task models, and user journeys, students took on the role of UX practitioner by asking the questions (e.g.,

What are the users' emotional needs? Who or what are they interacting with?), conducting the research (e.g., interviews with users and ethnographic studies), and creating the types of deliverables expected by such a professional [Caddick, 11]. With mixed groups of undergraduate and graduate students in the NDSU class, the latter were encouraged to lead their team as project managers, both to draw on their expertise and to model tasks such as coordinating tasks, meeting deadlines, and facilitating group decisions. The UVA class had graduate students from two majors (communication studies and computer science), so they were provided with notions from diverse disciplines, while engaging in collaboration where the computer science majors took the role as project managers. By exchanging documents, the paired groups between NDSU and UVA also acted as peer reviewers by providing feedback on drafts of the UX documents.

In the collaboration, the UX documents created by students served as project outcomes rather than guidance for future projects as the documents were not implemented in any projects after the courses ended. In the following sections we focus on personas, first as UX Strategy Tools and then as project outcomes. Personas offer opportunities to integrate empathy into the design process, call for rigorous research about the target, and necessitate collaboration between different stakeholders involved in the design process. Often, they are also a necessary precursor to other forms of UX documentation, such as task models. It is for these reasons that we have chosen to focus on personas as a project outcome for this TAPP collaboration.

4.2 Personas as UX Strategy Tools in International Collaboration

In this section, we will describe personas in relation to the broader goals of usability and UX. Initially coined by Alan Cooper in his 1999 text, *The Inmates are Running the Asylum*, personas are “not real people” but imaginary, “hypothetical archetypes of actual users” who “are defined with significant rigor and precision” [Cooper, 99, p. 2]. Applied to design, personas are “a fictional, yet realistic, description of a typical or target user of the product” that provide details on the user’s demographic information such as age, gender, and occupation as well as their behaviours, motivations, frustrations, and goals [Harley, 15]. As documentation typically produced by UX practitioners to be shared with the design team, project managers, and other stakeholders, personas “create a strong focus on users,” make “explicit the [team’s] assumptions about the target audience,” and can be used as a “medium of communication” [Pruitt, 02, p. 3], among other benefits. Rose and Tenenberg explore this last quality in more detail to outline the empirical function of personas (i.e., data from focus groups, interviews, surveys, and other qualitative and quantitative sources) that speak for the user, as well as the rhetorical function of personas (i.e., the integration of this information into the design process) that speak for those who create them [Rose, 18]. By understanding these functions, a UX practitioner can use personas as a “strategic rhetorical gambit” to gain “legitimacy within their organizational contexts” by voicing user needs and in so doing, demonstrate their knowledge of them (p. 171). Personas have also been used to enhance the design process by incorporating more empathy into product design [Miaskiewicz, 09], helping software engineers tailor conceptual designs to users’ personality traits [Anvari, 17], mediating disputes within

design teams [Massanari, 10], and facilitating design solutions for the kitchen [Kerr, 14], as well as for library facilities used by humanities scholars [Al-Shboul, 14].

Although Cooper's initial definition of personas states that they are designed with "rigor and precision," Grudin and Pruitt argue that "Cooper's claims are based on anecdote and on appeals to reason, not on data. He does not describe in detail how personas are constructed" [Grudin, 02, p. 146]. Such a point raises one concern about persona creation—that left to the UX practitioners' and/or designers' assumptions of their target audience, such documents risk stereotyping the users they advocate for [Turner, 11]. Another concern is just how often personas are referenced during product design. In an ethnographic case study of an American design firm, Friess notes that "personas were simply not included regularly in the linguistic discourse of decision-making" as their designers more often relied on their personal input and/or storytelling techniques to influence the decisions of other team members [Friess, 12, p. 1215]. When personas were directly mentioned, they were primarily used in role-playing scenarios in which the designers made decisions from the perspectives of particular personas (p. 1213). Best practices of creating personas, then, suggest that initial ideas about target users should not only be validated by empirical data, but also that UX practitioners should engage stakeholders such as developers, project managers, and others early on in this process [Caddick, 11]. Friess suggests that instituting the latter tactic might have made others in the design team that she observed feel more "empowered to use the personas as part of their decision-making process" [Friess, 12, p. 1216]. It was this collaborative spirit that we tried to model in the usability unit of this TAPP telecollaboration.

4.3 Personas as Project Outcomes within the TAPP Telecollaboration

Out of the five paired groups between NDSU and UVA, two produced personas for similar sites, i.e., LinkedIn or Netflix. In this section, we describe two personas created by one of these paired groups. The first, Figure 1, is a persona based on an imagined Finnish user of Netflix. The second, Figure 2, is a persona based on an imagined user

of Netflix in the US. Next, we describe the connections between personas and nationality and how this UX strategy tool can be used as a medium for communication.

Netflix Persona : Olli Virtanen

Photo: Micah Gray, Unsplash



Olli is a 25 year old IT-student with a bachelor's degree. He has extensive skills with computers and software. Olli speaks Finnish and English fluently. He lives together with his partner, who doesn't speak Finnish. Due to his low income he only subscribes to Netflix occasionally. If he's unable to find what he wants from Netflix he might be willing to

pirate it. He has a fast landline internet connection but his Netflix devices are quite old.

"The overall selection in Finnish Netflix is too small and there's hardly any Finnish language content. I love some of the Netflix exclusive content though. I wish I didn't have to subscribe for a whole month at a time."

Needs:

- Interesting content exclusive to Netflix.
- Time to binge watch series while he's subscribed.
- Compatibility with various odd devices (Linux PC, old laptop, Nokia Smartphone).
- Short delay between the US and Finnish release of content.

Wants:

- Search functions for Finnish content.
- More options for subscribing.
- Detailed user reviews of the content.
- Display of review website scores (e.g. IMDB).

Frustrations:

- Only one language option per account, he'd like one for each profile.
- The volume in Netflix is too low compared to other sites like Youtube.
- Audio and subtitles in Finnish don't always match.

Figure 1: Persona based on an imagined user of Netflix in Finland

As can be seen from Figure 1, students at UVA focused on Finnish audiences for the persona. As students gathered information that could be useful for creating personas, they gained a greater understanding of the need for multiple sources of information. In Figure 2, students at NDSU developed a persona around the demographic of American women aged 30-40 who are raising their children at home. By conducting interviews with women of this demographic and background, they were able to collect data to help them write the user quote (e.g., something the target user might say as represented by the persona) and the needs, wants, and frustrations of the persona.

Netflix Persona



Marsha

A 37-year-old house mom. Has three kids and a husband. Spends her day cleaning, running errands, and taking care of the youngest child.

"I watch Netflix during the day while the kids are at school and at night with the family. I use it in the living room and my bedroom. It helps me keep up with my soap operas."

Needs:

- More soap operas and kid-friendly shows
- An easier way to switch from bedroom TV to living room TV
- A better babysitter
- Better parent locks/ child modes

Ideal Features:

- More volume/subtitle settings for when I can't always pay direct attention to the show
- Easy TV switch when I enter and leave the room

Frustrations:

- Some of the thumbnails for movies can be gruesome or dark that I don't want my kids seeing when we're looking for something to watch as a family
- Some movies/shows get really quiet and loud at various parts, resulting in constant volume changes

Figure 2: Persona based on an imagined user of Netflix in the United States

As can be seen from Figure 1 and Figure 2, students created personas according to nationality, which is similar to that reported by Jensen et al. [Jensen, 17], where the interviewed UX designers in Danish IT companies created personas either according to nationality or to education, profession, etc. Jensen et al. state how the UX designers "find it important to illustrate cultural differences in the persona descriptions" even though they emphasize similarities among users across countries. This approach is in line with the traditional way of creating personas "to represent users from a single national culture at time during the design process" although Jensen et al. call for

narratives focusing on international users' similar practices and "less on perceived differences in national culture."

Through their projects, students learned that the artifacts they chose to create personas around intertwine communication and usability: every use of the chosen software applications or services can be seen as conversations started by the user [Redish, 12]. By creating personas, students learned to clarify users' needs and the barriers that they may encounter. Personas were regarded as more than UX tools: During the class, some students at UVA majoring in communication studies regarded personas as a medium for communication, which is also stated by Pruitt and Grudin [Pruitt, 03, p. 3].

4.4 Persona Project: Reflections and Next Steps

Since students in each class worked independently in groups before submitting their documents to their partners for peer review, a future iteration of this TAPP partnership can have groups not only select the same artifact for which to produce personas but also create these personas collaboratively. One benefit of this modification would be more active engagement between the groups via telecommunications platforms, like Skype or Google Hangouts. Although groups were encouraged to video-conference with one another during the autumn 2017 semester, most preferred verbal communication through email or Slack messages, which the nature of individually creating and exchanging documents supported. However, asking groups to conduct empirical research collectively to produce a set of shared personas would require more sustained dialogue between students. Another benefit to having groups create personas collaboratively around a shared artifact would be to invite students to enact more critically the practices of "thinking globally," which "reaches across cultures to find similarities" and "local thinking," which, in turn, "digs deeply into each culture to understand it and be able to design for it" [Quesenbery, 12, p. 13]. Although groups within the NDSU and UVA classes produced personas for a similar site like LinkedIn or Netflix, many only engaged in "local thinking" by focusing on their respective national audiences for the personas. Asking groups to create personas for both American and Finnish users prompts students to perform more "global thinking," which can reveal insights into cultural similarities and differences around the same site.

Another iteration of this TAPP partnership can extend beyond the two usability and UX classes and include a third class, namely of translation studies students—similar to other collaborations described in this article. For instance, in a collaboration between technical writing, usability, and translation courses (see [Maylath 13a, 13b]), personas created by the usability students can assist the translation students in their work translating documents such as instructions produced by the technical writing students. Suojanen, Tuominen, and Koskinen list several contributions that personas offer to translation practice [Suojanen, 15, p. 71], which include helping the translator to identify which textual features should be stressed at the macro- and micro-levels and to decide when one or multiple translations will suffice for the intended users, thus increasing understanding between stakeholders in a translation team and offering a method of assessing the translation [p. 71]. Such work can also invite conversations in the classroom about the relationships between translation, usability, and multilingual audiences [Gonzales, 15, 17, 18].

5 Conclusions

In this article we have reflected on a variety of partnerships carried out within the TAPP network and have analysed different types of outcomes produced by technical communication students, ranging from written and spoken texts to revisions and translations. We have given special emphasis to integrating UX in professional communication, thus further bridging the gap between university education and industry practices. We described personas—a well-known method and useful tools for UX work—as project outcomes and gave examples of two personas based on imagined users of Netflix in Finland and in the US. As was shown in the examples of personas, students chose the traditional way of creating personas and represented users from a single national culture. International collaboration, such as within the TAPP, could offer a fruitful new perspective for research on personas in a global context.

A multilateral project based on designing UX documentation has been one recent expansion within the TAPP network; remote usability testing offers another. Remote usability testing involves evaluators and users being separated in space and time and can be moderated (e.g., the evaluator interviews the user via a video call) or unmoderated (e.g., the user completes a series of tasks that are recorded for the evaluator to view later) [Ruiz, 20]. Both types of remote testing are reliant on telecollaboration to facilitate these studies. By engaging in this type of research, students can learn how to integrate telecollaboration tools like video-conferencing applications (e.g., Zoom, GoToMeeting, and Skype) and screencasting software (e.g., Screencast-O-Matic and CamStudio) into usability testing. Such testing also models recent industry practices within UX research as a result of the global pandemic due to COVID-19 [Ruiz, 20] [Moran, 20] [UXalliance, 20]. One challenge to remote usability testing is simultaneous translation that is required for moderated sessions when the client, evaluator, and/or user all speak a different language [UXalliance, 20]. However, this situation provides an opportunity for translation and usability students to work together to come up with potential solutions. For instance, an international collaboration within the TAPP network may start with unmoderated remote testing, with usability students producing the interview questions and task instructions and translation students translating these documents in a writing-testing-translation project.

Throughout this article, we have shown ways to apply existing practices to international collaboration and hence enhance students' perceptions of collaboration in both internet-based and traditional face-to-face learning contexts. The increasing projectization of organizations requires project management skills, a key demand on today's professionals. Exposing students to complex, multilateral projects improves their skills in all areas pertinent to project management practice.

6 Guidelines for Further Telecollaboration Projects

From the lessons learned over the years, on the basis of a variety of projects with different types of outcomes and collaborations, we can derive a series of guidelines, which can help instructors who want to implement further collaborations based on the TAPP:

1. Balance clear structure with openness. Working closely with the other instructors involved in the project is important to be able to explain the general stages, goals, and expectations of the project to the students at all sites. On the other hand, giving students the freedom to choose topics, documents, tools, and procedures increases their engagement in the project and helps them learn to negotiate with others.
2. Allow multimodal outputs. As digital media continue to supplement printed documents, students' projects are becoming increasingly multimodal, for example, teams may produce video tutorials (rather than written instructions) for visual projects (e.g., creating an origami figure).
3. Create spaces for students to reflect on their use of tools, communication, and language.
4. Emphasise experiential approaches to intercultural, professional communication.

The rapid development of the information and communication technology and changes in occupational structures and content of work in many countries have challenged higher education institutions to take innovative approaches to preparing students for the working world. A globally networked learning environment like the TAPP can increase students' engagement and social interactions in international settings and, hence, develop students' professional competences.

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References

- [Adler, 03] Adler, T. R., Scherer, R. F., & Black, J. A.: A strategic conceptualization of the IT outsourcing decision and the role of teams. *The Review of Business Information Systems*, 7(2), 83-98, 2003.
- [Al-Shboul, 14] Al-Shboul, M. K., & Abrizah, A.: Information needs: Developing personas of humanities scholars. *The Journal of Academic Librarianship*, 40, 500-509, 2014.
- [Anvari, 17] Anvari, F., Richards, D., Hitchens, M., Ali Babar, M., Thi Tran, H. M., & Busch, P.: An empirical investigation of the influence of persona with personality traits on conceptual design. *The Journal of Systems and Software*, 134, 324-339, 2017.
- [Appel, 06] Appel C., & Gilabert, R.: Finding common ground in LSP: A computer-mediated communication project. In Arnó, E., Soler, A., & Rueda, C. (Eds.), *Information Technology in Languages for Specific Purposes: Issues and prospects* (pp. 75-90). Springer, New York, 2006.
- [Arnó Macià, 17] Arnó Macià, E.: Learner autonomy and awareness through distance collaborative group work in English for academic purposes. In Breeze, R., & Sancho Guinda, C. (Eds.) *Essential Competencies for English-medium University Teaching* (pp. 183-200), Springer, Cham, Switzerland, 2017.

- [Arnó, 14] Arnó, E., Isohella, S., Maylath, B., Schell, T., Verzella, M., Minacori, P., Mousten, B., Musacchio, M.T., Palumbo, G., & Vandepitte, S.: Enhancing Students' Skills in Technical Writing and LSP Translation through Tele-collaboration Projects: Teaching Students in Seven Nations to Manage Complexity in Multilateral International Collaboration. In Budin, G., & Lušický, V. (Eds.) *Languages for Special Purposes in a Multilingual, Transcultural World*, Proceedings of the 19th European Symposium on Languages for Special Purposes, 2013 (pp. 249-259), Vienna, 2014.
- [Arnó-Macià, 19] Arnó-Macià, E., Vandepitte, S., Minacori, P., Musacchio, M.T., Hanson, J., & Maylath B.: A multilingual background for telecollaboration: practices and policies in European higher education. *European Journal of Language Policy*, 11(2), 235-225, 2019.
- [Brent, 11] Brent, D. Transfer, transformation, and rhetorical knowledge: Insights from transfer theory. *Journal of Business and Technical Communication*, 25(4), 396-420, 2011.
- [Caddick, 11] Caddick, R., & Cable, S.: *Communicating the user experience*. Wiley, Chichester, UK, 2011.
- [Chong, 16] Chong, F.: The pedagogy of usability: An analysis of technical communication textbooks, anthologies, and course syllabi and descriptions. *Technical Communication Quarterly*, 25(1), 12-28, 2016.
- [Cooper, 99] Cooper, A.: *The inmates are running the asylum*. Macmillan, Indianapolis, 1999.
- [Dannels, 00] Dannels, D. P.: Learning to be professional: Technical classroom discourse, practice, and professional identity construction. *Journal of Business and Technical Communication*, 14(5), 5-37, 2000.
- [Dunlap, 05] Dunlap, J. C.: Problem-based learning and self-efficacy: How a capstone course prepares students for a profession. *Educational Technology Research and Development*, 53(1), 65-83, 2005.
- [Estes-Brewer, 15] Estes-Brewer, P. & St. Amant, K.: Education and training for globally-distributed virtual teams: Preparing the workforce of the future. *Connexions. International Professional Communication Journal*, 3(1), 3-7, 2015.
- [Freedman, 94] Freedman, A., Adam, C., & Smart, G.: Wearing suits to class: Simulating genres and simulations as genres. *Written Communication*, 11, 399-405, 1994.
- [Friess, 12] Friess, E.: Personas and decision making in the design process: An ethnographic case study. CHI 2012, May 5-10, Austin, TX, 1209-1218, 2012.
- [Gonzales, 17] Gonzales, L.: Converging fields, expanding outcomes: Technical communication, translation, and design at a non-profit organization. *Technical Communication*, 64(2), 126-140, 2017.
- [Gonzales, 18] Gonzales, L.: *Sites of translation: What multilinguals can teach us about digital writing and rhetoric*. University of Michigan Press, Ann Arbor, MI, 2018.
- [Gonzales, 15] Gonzales, L., & Zantjer, R.: Translation as a user-localization practice. *Technical Communication*, 62(4), 271-284, 2015.
- [Grudin, 02] Grudin, J. & Pruitt, J.: *Personas, Participatory Design and Product Development: An Infrastructure for Engagement*. In *Proceedings from the Participatory Design Conference*, 144-161, 2002.

- [Guadamillas, 17] Guadamillas, M. V.: Building global graduates and developing transnational professional skills through a telecollaboration project in foreign language education. In Álvarez-Mayo, C., Gallagher-Brett, A., Michel, F. (Eds.) *Innovative Language Teaching and Learning at University: Enhancing Employability* (pp. 49-58). Research Publishing, Dublin, Voillans, France, 2017.
- [Guth, 10] Guth, S., & Helm, F. (Eds.): *Telecollaboration 2.0: Language, Literacies and Intercultural Learning in the 21st Century*. Peter Lang, Oxford, New York, 2010.
- [Hafner, 20] Hafner, C. & Pun, J.: Editorial: Introduction to this special issue: English for academic and professional purposes in the digital era. *RELC Journal*, 51(1), 3–13, 2020.
- [Hammer, 14] Hammer, S., & Maylath, B.: Real time and social media in trans-Atlantic writing/translation and translation/editing projects. In Limbu, M., & Gurung, B. (Eds.) *Emerging Pedagogies in the Networked Knowledge Society: Practices Integrating Social Media and Globalization* (pp. 144-161), IGI Global, Hershey, PA, 2014.
- [Harley, 15] Harley, A.: Personas make users memorable for product team members, 2015. Retrieved from: <https://www.nngroup.com/articles/persona/>
- [Helm, 18] Helm, F.: The long and winding road... *Journal of Virtual Exchange*, 1, 41-63, 2018. <https://doi.org/10.14705/rpnet.2018.jve.3>
- [Hoffman, 14] Hoffman, M. E., Anderson, P., & Gustafsson, M.: Workplace Scenarios to Integrate Communication Skills and Content: A Case Study. In *Proceedings of the 45th Annual ACM Technical Symposium on Computer Science Education* (pp. 349-354), ACM, New York, 2014.
- [Humbley, 05] Humbley, J., Maylath, B., Mousten, B., Vandepitte, S., & Veisblat, L.: Learning Localization through Trans-Atlantic Collaboration. In Hayhoe, G. (Ed.) *Proceedings of the IEEE International Professional Communication Conference, 10-13 July 2005, U of Limerick, Ireland* (pp. 578-595), IEEE. New York, 2005.
- [Isohella, 18] Isohella, S., (2018). Incorporating international collaboration and usability evaluation into a technical communication course. In Mousten, B., Vandepitte, S., Arnó, E., & Maylath, B. (Eds.), *Multilingual Writing and Pedagogical Cooperation in Virtual Learning Environments* (pp. 344-363). Hershey, PA: IGI Global.
- [Jensen, 17] Jensen, I., Hautopp, H., Nielsen, L., & Madsen, S.L.: Developing international personas: A new intercultural communication practice in globalized societies. *Journal of Intercultural Communication*, 43, 2017. Retrieved from <https://www.immi.se/intercultural/nr43/jensen.html>
- [Johnson, 98] Johnson, R. R.: *User-centered technology: A rhetorical theory for computers and other mundane artifacts*. SUNY Press, Albany, NY, 1998.
- [Johnson, 07] Johnson, R. R., Salvo, M. J., & Zoetewey, M. W.: User-centered technology in participatory culture: Two decades “Beyond a narrow conception of usability testing.” *IEEE Transactions on Professional Communication*, 50(4), 320-332, 2007.
- [Kerr, 14] Kerr, S. J., Tan, O., & Chua, J. C.: Cooking personas: Goal-directed design requirements in the kitchen. *International Journal of Human-Computer Studies*, 72, 255-274, 2014.
- [Kuteeva, 11] Kuteeva, M.: Wikis and academic writing: Changing the writer-reader relationship. *English for Specific Purposes*, 30, 44-57, 2011.
- [Lai, 11] Lai, C. & Li, G.: Technology and task-based language teaching: A critical review, *CALICO Journal*, 28, 498-521, 2011.

- [Leask, 15] Leask, B.: *Internationalizing the curriculum*. Routledge, London, 2015.
- [Lauer, 16] Lauer, C., & Brumberger, E.: Technical communication as user experience in a broadening industry landscape. *Technical Communication*, 63(3), 248-264, 2016.
- [Massanari, 10] Massanari, A. L.: Designing for imaginary friends: Information architecture, personas and the politics of user-centered design. *New Media & Society*, 12(3), 401-416, 2010.
- [Maylath, 13a] Maylath, B., King, T., & Arnó-Macià, E.: Linking engineering students in Spain and technical writing students in the US as co-authors: The challenge and outcomes of subject-matter experts and language specialists collaborating internationally. *connexions: International Professional Communication Journal*, 1(2), 150-185, 2013.
- [Maylath, 13b] Maylath, B., Vandepitte, S., Minacori, P., Isohella, S., Mousten, B., & Humbley, J.: Managing complexity: A technical communication/translation case study in multilateral international collaboration. *Technical Communication Quarterly*, 22, 67-84, 2013.
- [Miaskiewicz, 09] Miaskiewicz, T., Grant, S. J., & Kozar, K. A.: A Preliminary Examination of Using Personas to Enhance User-Centered Design. *Proceedings of the 15th Americas Conference on Information Systems*, San Francisco, 1-7, 2009.
- [Moran, 20] Moran, K.: COVID-19 has changed your users, 2020. Retrieved from <https://www.nngroup.com/articles/covid-changed-users/>
- [Mousten, 12] Mousten, B., Humbley, J., Maylath, B., & Vandepitte, S.: Communicating pragmatics about content and culture in virtually mediated educational environments. In St.Amant, K., & Kelsey, S. (Eds.) *Computer-Mediated Communication across Cultures: International Interactions in Online Environments* (pp. 312-327), IGI Global, Hershey, PA, 2012.
- [Mousten, 18] Mousten, B., Vandepitte, S., Arnó, E., Maylath, B.: Preface. In Mousten, B., Vandepitte, S., Arnó, E., & Maylath, B. (Eds.) *Multilingual Writing and Pedagogical Cooperation in Virtual Learning Environments* (pp. xv-xxi), IGI Global, Hershey, PA, 2018.
- [Mousten, 19] Mousten, B., & Riordan, D.: Professional communicators on track or led astray! Using quality standards in practice. In Maylath, B., & St.Amant K., (Eds.) *Translation and Localization* (pp. 158-179), Routledge, New York, London, 2019.
- [Norman, 88/13] Norman, D.: *The Design of Everyday Things*, Basic Books, New York, 1988/2013.
- [Norman, nd] Norman, D., & Nielsen, J.: *The Definition of User Experience (UX)* (n.d.). Retrieved from: <https://www.nngroup.com/articles/definition-user-experience/>
- [O'Dowd, 15] O'Dowd, R.: Supporting in-service language educators in learning to telecollaborate. *Language Learning and Technology*, 19(1), 64-83, 2015. <http://llt.msu.edu/issues/february2015/odowd.pdf>
- [O'Dowd, 18] O'Dowd, R.: From telecollaboration to virtual exchange: State-of-the-art and the role of UNICollaboration in moving forward. *Journal of Virtual Exchange*, 1, 1-23, 2018. <https://doi.org/10.14705/rpnet.2018.jve.1>
- [Pruitt, 03] Pruitt, J., & Grudin, J.: Personas: Practice and Theory. In *Proceedings from DUX 2003: Designing for User Experience Conference 2003* (pp. 1-15), 2003.
- [Quesenbery, 04] Quesenbery, W.: Balancing the 5Es: Usability. *Cutter IT Journal*, 17(2), 4-11, 2004.
- [Quesenbery, 12] Quesenbery, W., & Szuc, D.: *Global UX: Design and Research in a Connected World*, Morgan Kaufmann, Waltham, MA, 2012.

- [Redish, 12] Redish, J.: *Letting Go of the Words: Creating Web content That Works*. Morgan Kaufmann, Waltham, MA, 2012.
- [Redish, 11] Redish, J., & Barnum, C.: Overlap, influence, intertwining: The interplay of UX and technical communication. *Journal of Usability Studies*, 6(3), 90-101, 2011.
- [Reinders, 16] Reinders, H. & White, C.: 20 years of autonomy and technology: How far have we come and where to next? *Language Learning & Technology*, 20 (2), 143–154, 2016. <http://llt.msu.edu/issues/june2016/reinderswhite.pdf>
- [Resnik, 19] Resnik, P., & Schallmoser, C.: Enjoyment as a key to success? Links between e-tandem language learning and tertiary students' foreign language enjoyment. *Studies in Second Language Learning and Teaching*, IX(3), 541-564, 2019.
- [Rose, 18] Rose, E. J., & Tenenber, J.: Poor poor dumb mouths, and bid them speak for me: Theorizing the use of personas in practice. *Technical Communication Quarterly*, 27(2), 161-174, 2018.
- [Ruiz, 20] Ruiz, E. G.: Coronavirus: Now is the time to embrace remote user research, 2020. Retrieved from <https://uxdesign.cc/coronavirus-now-is-the-time-to-embrace-remote-user-research-e38941e35f1d>
- [Sadler, 16] Sadler, R., & Dooly, M.: Twelve years of telecollaboration: What we have learnt, *ELT Journal*, 70(4), 401-413, 2016.
- [Schneider, 05] Schneider, B., & Andre, J.: University preparation for workplace writing: An exploratory study of the perceptions of students in three disciplines. *Journal of Business Communication*, 32(2), 195-218, 2005.
- [Slavkov, 15] Slavkov, N.: Sociocultural theory, the L2 writing process, and Google Drive: Strange bedfellows? *TESL Canada Journal*, 32, 80-94, 2015.
- [Spinuzzi, 96] Spinuzzi, C.: Pseudotransactionality, activity, theory, and professional writing instruction. *Technical Communication Quarterly*, 5(3), 295-308, 1996.
- [Stärke-Meyerring, 08] Stärke-Meyerring, D., & Wilson, M. (Eds.): *Designing Globally Networked Learning Environments: Visionary Partnerships, Policies, and Pedagogies*. Sense, Rotterdam, 2008.
- [Suojanen, 15] Suojanen, T., Koskinen, K., & Tuominen, T.: *User-Centered Translation*. Routledge, New York, 2015.
- [Sullivan, 11] Sullivan, K. R., & Kedrowicz, A.: (Re)situating communication in the disciplines: Taking gender into account. *Communication Education*, 60(4), 389-405, 2011.
- [Sullivan, 89] Sullivan, P.: Beyond a narrow conception of usability testing. *IEEE Transactions on Professional Communication*, 32(4), 256-264, 1989.
- [Turner, 11] Turner, P., & Turner, S.: Is stereotyping inevitable when designing with personas? *Design studies*, 32(1), 30-44, 2011.
- [Tzoannopoulou, 18] Tzoannopoulou, M., & Maylath, B.: Virtual networks in English-for-specific-purposes education: A translation-reviewing/editing model. In Moustén, B., Vandepitte, S., Arnó, E., & Maylath, B. (Eds.), *Multilingual Writing and Pedagogical Cooperation in Virtual Learning Environments* (pp. 318-343). IGI Global, Hershey, PA, 2018.
- [UXalliance, 20] UXalliance.: Remote testing in a Covid-19 world, 2020. Retrieved from <https://uxalliance.medium.com/remote-testing-in-a-covid-19-world-58db9abc9e8a>

[Vandepitte, 16] Vandepitte, S., Maylath, B., Mousten, B., Isohella, S., & Minacori, P.: Multilateral collaboration between technical communicators and translators: A case study of new technologies and processes. *The Journal of Specialised Translation*, 26, 3-19, 2016.

[van Lier, 96] van Lier, L.: *Interaction in the Language Curriculum: Awareness, Autonomy and Authenticity*, Longman, London, 1996.

[Verzella, 18] Verzella, M.: Virtual exchange between cross-cultural teams: A sustainable path to the internationalization of college courses. *Transformative Dialogues: Teaching and Learning Journal*, 11(3), 1-13, 2018. https://kpu.ca/sites/default/files/Transformative%20Dialogues/TD.11.3_Verzella_Virtual_Exchange_between_Cross-Cultural_Teams.pdf

[Verzella, 21] Verzella, M., Arnó Macià, E., & Maylath, B.: Engineers taking a stance on technical communication: Peer review of oral presentations via the Trans-Atlantic & Pacific Project. *IEEE-Transactions on Professional Communication*, 64, (pp. in press), 2021.

[Walker, 09] Walker, U., & vom Brocke, C.: Integrating Content-based Language Learning and Intercultural Learning Online: An International eGroups Collaboration. In A. Brown (Ed.) *Proceedings of CLESOL 2008* (pp. 218-235), 2009. <http://hdl.handle.net/10179/1591>

[Wendlant, 08] Wendlandt, N. M., & Rochlen, A. B.: Addressing the college-to-work transition: Implications for university career counselors. *Journal of Career Development*, 35(2), 151-165, 2008.