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# Language Education in Digital Spaces: Perspectives on Autonomy and Interaction

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# Language Education in Digital Spaces: Perspectives on Autonomy and Interaction

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# Introduction


**Carolin Fuchs, Melinda Dooly, and Mirjam Hauck**

## 1 Autonomy and Technology: Potential Game-Changers in Language Education

The evolution of digital spaces and technologies is rapidly changing the landscape of education and consequently transforming the way in which language learning is both conceived and carried out. Within the realm of technology-mediated language instruction, the concept of autonomy has been increasingly foregrounded – and now even more so against the background of a worldwide pandemic, which forced much of educational practices into online spaces by Spring of 2020. But even before the current global situation, the promotion of technology in education had taken firm root in policies and practices. Since the early 1990s there has been a growing general consensus in both academic publications and mainstream media that technological innovation is not only inevitable, it is essential (Laidlaw et al., 2019) and that, moreover, technology can play an essential role in advancing learner autonomy (Pellegrino & Hilton, 2012).

Nonetheless, it must be acknowledged that merely introducing or coupling technologies with educational settings does not ensure effective and autonomous learning. There is no 'one-size-fits-all' technological solution and technological advances in education cannot be disarticulated from the underlying pedagogical theories and

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approaches when in use. This underscores the exigency for continued research on how technology supports (or fails to contribute) to autonomy in learning. The scope for further studies is evident not only in the recent surge of online teaching brought about by the world pandemic but also in the lively introduction and adoption of seemingly futuristic language learning scenarios such as robot-assisted language learning, mobile-assisted language learning, and language learning in virtual worlds or with augmented or extended reality.

These developments beg the question of the parameters of teacher and learner as they mediate learning through technology, not least of which is the issue of ownership of the learning process. The authors in this book have engaged with these thorny issues, at times drawing from early, seminal work on autonomous learning, much of it from mid-to-late last century and which was usually contextualized in predominantly face-to-face, low-technology environments. The writers have also expanded on these solid foundations to more recent work that endeavors to encompass increasingly complex technology-enhanced learning environments.

This complexity is directly related to the increasingly accepted understanding that language use is multidimensional, reciprocal and social, requiring some degree of both collaboration and autonomy (Council of Europe, 2018). In a move away from considering language learning as a process of acquiring four skills as separate but related areas, the Common European Framework of Reference for Languages (CEFRL) has endeavored to focus on the multi-layered ways in which we use language; focusing in particular on mediation, which "combines reception, production and interaction" and which has "a key position in the action-oriented approach" of language learning (Council of Europe, 2018, p. 33). Interdependent to the interactional component of language learning, the CEFRL aims to "bring a new, empowering vision of the learner […] as a 'social agent,' acting in the social world and exerting agency in the learning process" (Council of Europe, 2018, p. 25). The American Council on the Teaching of Foreign Languages (ACTFL) performance descriptors also mention that "language learning is complex" because "many factors impact" the process (ACTFL, 2015, p. 2) although, different from the CEFRL, the ACTFL (2015) retains the notion of "four skills (listening, speaking, reading, and writing)" as nexus for "interpersonal, interpretive, and presentational" communicative modes (p. 7). The Servico Internacional de Evaluación de la Lengua Española (International Assessment Service for the Spanish Language) or SIELE (2016) exam for Spanish language assesses domains of comprehension, expression and interaction across different modalities, albeit mainly text and oral. Different from the CEFRL, there is no mention of technology as a modality but the exam itself is completely online. Similarly, the standardized Chinese language levels test, (Hanyu Shuiping Kaoshi or HSK), has been revised (HSK, 2010) to include more focus on language comprehension (taking out more decontextualized grammar-focused portions of the exam).

These language performance assessments, in different contexts and for different languages, aim to provide "a roadmap for teaching and learning" (ACTFL, 2015, p. 3) and yet they also underscore two great challenges: describing and categorizing language learning levels or phases – which are contingent upon multiple

factors – and the lack of consensus on how and when to judge language 'performance' or use. The glaringly sparse focus on informal language learning, and subsequently learner autonomy, is evident in most of these exams and the different modalities in which communication is mediated is still mostly lacking.

As language education shifts toward a more nuanced, yet expansive assumption that "language learning should be directed toward enabling learners to act in real-life situations, expressing themselves and accomplishing tasks of different natures" (Council of Europe, 2018, p. 25), the contribution to autonomous language learning that technology, in particular communication technology, becomes manifest. While written pre-pandemic, the chapters in this book underscore the significant impact technological advances have had on the panorama of language education. In their contributions, the authors highlight seminal studies, many of them carried out in face-to-face settings, that have established relevant baselines for understanding autonomy for language learning. In particular, Dörnyei's (2005) work on learner autonomy and self-regulation, as well as Holec's (1981) discussion of autonomy in foreign language learning are considered to be milestones in this respect. Autonomy can broadly be understood as the "ability to take charge of one's own learning" (Holec, 1981, p. 3), which includes the ability to assess one's own learning needs, set goals, identify appropriate resources, and take action to learn. Similarly, some view self-directed learning as a prerequisite for self-access learning, where learners in self-instructed contexts need to make informed decisions on their own learning paths and resources. In his pioneering work, Benson (2001) foregrounds the notion that autonomy involves learners being able to reflectively engage in their own learning. Little's (2007) work is also mentioned as relevant to furthering our understanding of the role of learner autonomy in technology-enhanced language learning processes. Several of the authors cite the aforementioned studies as having helped establish key theoretical premises for more recent work on language education in digital spaces.

In addition to determining their learning objectives, contents, progression, method, as well as monitoring and evaluating their progress (Little, 1996), learners are increasingly required to navigate a wide range of different technology-mediated instructed, semi-instructed, or self-instructed contexts. These contexts vary, for instance, not only in terms of the degree to which teaching is involved, but they also allow for new kinds of virtual social interactions. These lines are often blurred, of course, as the pandemic has brought to a fore. Formal education, once considered to be principally in the confines of 'physical space' has been rapidly transformed to include hybrid or entirely digital environments, although the dynamics of power, control (e.g., judgment calls in form of assessment of behavior and performance) and interaction may still follow closely the teacher-fronted physical spaces that predominate formal learning environments. Inevitably, as these new settings, tools, and practices are reshaping the construct of learner autonomy, educators need to foster informed learner agency within and beyond the instructional context against the backdrop of increasingly complex, multimodal, and multicultural online environments.

There is a growing recognition of the important role learner autonomy can play in novel digitally-supported language learning processes such as telecollaboration/Virtual Exchange (VE), flipped classrooms, gaming, or self-access learning as the chapters in this book make clear. For decades now, technology has been acknowledged as stimulating different approaches to teaching and learning, shifting learning away from in-place, teacher-centered pedagogical paradigms to more learner-focused experiences that involve, for instance, geographically-distanced collaborative partnerships (e.g., telecollaboration/VE, e-tandem language learning, etc.) or self-access learning (e.g., use of open educational resources, language learning apps, etc.). Technology is linked to increased flexibility and learning choices in terms of language input and its delivery, and adaptable temporality and spatiality for learning. All of these qualities are inherently linked to learner autonomy: learners can more easily decide what, how, where and when they want to learn a language or languages, as may be the case (e.g., Gardner, 2011). As Reinders and White put it in 2016 (again, pre-pandemic): "we are currently entering a phase in educational practice and thinking where the use of technology is enabling a shift of focus away from the classroom—and indeed in some cases formal education—taking instead the learners' lives and their experiences as the central point for learning" (p. 143). The authors placed emphasis on "how learners design their own learning experiences and environments and the role technology plays in this design", calling for "a re-visioning of the role and shape of education" (Reinders & White, 2016, p. 143).

Early contributions on autonomy and technology have explored themes such as e-learning, web conferencing, web tutorials, multimedia applications, and online learning communities (Dolan, 2003); yet, the rise of social networking sites has given way to a plethora of new tools and modalities. This is reflected in the growing number of monothematic volumes and special issues dedicated to exploring the nexus between autonomy and technological contexts for language learning. For example, the chapters in Díaz Vera's (2012) edited volume explore mobile technologies (blogs, SMS) and mobile language learning (gaming) in a number of contexts (e.g., workplace). The main focus is on independent, outside-of-class second language learning, with the exception of Palfreyman's (2012) piece "[b]ringing the world into the institution: Mobile intercultural learning for staff and students," in which he ties mobile technologies back to the instructed setting of the classroom. Likewise, "language learning and teaching beyond the classroom," or "LBC" such as self-access learning includes a self-instructed pedagogical approach (Reinders & Benson, 2011, p. 1; see also Lai, 2017). There is a small, but growing area of study that looks at language learning apps and platforms where learners are entirely self-initiated, therefore both autonomous and not connected to (formal) classroom instruction. Zourou et al. (2017), for instance, found that the peer correction feature of the Busuu platform was considered an essential part of the language learning while the reward system was less appreciated by the users. Gaining insight into

learners' perspectives in these environments are not only essential for commercial ends (e.g., improvement of these language learning apps; see Alm's chapter "Apps for Informal Autonomous Language Learning: An Autoethnography", this volume) but can be helpful for individual learners in similar circumstances as well as transferred, in different ways, to formal language learning contexts.

Web 2.0 technology has undoubtedly provided language learners with many new interactional contexts for exercising autonomy. While some contend that this has given rise to "actual new forms of autonomy," others maintain that what we are witnessing may simply be "a case of 'old wine in new bottles'" (Lewis et al., 2017, p. 1). In an effort to reconcile old and new ways of thinking about the nature of autonomy, Little and Thorne (2017; in Cappellini et al., 2017) offer the following approach. The notion of learner autonomy "provides us with a framework within which we can think about language learning and teaching and then of course apply that thinking and adapt it to the needs of specific contexts" (Little & Thorne, 2017, in Cappellini et al., 2017, p. 15). Like Benson (2011a, b), they acknowledge the context-dependent aspect of investigations into (language) learner autonomy, i.e., the fact that autonomy manifests itself in different ways in different environments. Hence, as Cappellini et al. (2017) conclude "[l]earner autonomy, like learning itself, is contextual" (p. 3).

Along these lines, to our knowledge, there are few collections of studies that respond to a recent call for context-based research (Colpaert et al., 2017). Our volume seeks to do this by bringing together contributions on learner autonomy from a myriad of contexts to advance our understanding of what autonomous language learning looks like with digital tools, and how this understanding is shaped by and can shape different socio-institutional, curricular, and instructional support. Thus we present hybrid (or blended) language learning environments, studies that look at fully online interactions, multi-player game-based environments, or single-learner multiple app context.

Our book hopes to contribute to the existing body of research on autonomy and interaction in language education in diverse contexts (Chik et al., 2018) with a particular focus on digital spaces. As Reinders and White (2016) have pointed out, many issues are still underexplored, e.g., learners' evaluation of the affordances of technology-mediated environments, their engagement with such environments to develop learning experiences that meet their needs and goals as language learners, and the learners' ability to optimize their online learning experiences. To this end, the individual contributions in our book highlight practice-oriented, empirically-based research on technology-mediated learner autonomy and its pedagogical implications. They address how technology can support learner autonomy as process by leveraging the affordances available in social media, VE, self-access, or learning 'in the wild' (Hutchins, 1995).

## 2 Foregrounding Autonomy in Digital Spaces and Different Instructional Contexts

Expanding the work on autonomy and digital media from other researchers (e.g., Cappellini et al., 2017; Reinders & White, 2016), our chapters discuss the theoretical concepts of social semiotics and multimodality, self-access and flipped instruction, plurality and translanguaging, experiential, and task-based learning. The chapters' authors attempt to answer specifically how agency and motivation, learner involvement, reflection, and target language use, manifest themselves in digital language learning spaces. Several of the chapters explore learning beyond classroom contexts ('in the wild'; cf. Hutchins, 1995) via games, blogs, and innovative uses of apps, for instance. As many of the authors demonstrate, using digital social technologies for learning outside of the classroom is a practice that challenges learners to manage their own learning experiences, especially in fully self-instructed settings.

At the same time, this raises the question of how these settings might best prepare learners to optimize such experiences and what the impact of the teacher's role is, especially when the context requires a higher degree of autonomy from learners. This holds true in particular for semi-instructed settings in which learners interact with one another digitally over geographical distances and time zones, as is the case with telecollaborative or virtual exchanges (for an overview, see O'Dowd, 2018). VEs may be considered semi-instructed contexts that typically combine face-to-face and virtual instruction with phases during which learner teams fully self-organize to achieve a specific task or project goal.

To this end, findings in our volume stress the affordances of VE such as experiential learning, as laid out by Marjanovic, Dooly, and Sadler, or the use of video recordings for reflective practice and analysis as demonstrated by Lenkaitis. However, some of the chapters also focus on the challenges that participants – first and foremost the instructor – can face in these increasingly complex learning environments. For instance, Fuchs cautions that in VEs, the socio-institutional context in an exam-based learning culture shapes teacher autonomy with regard to curriculum and assessment, which can subsequently impact the students' autonomy and their engagement in experiential learning experiences. Despite being defined in many different (and, at times, conflicting) ways, the idea of autonomy is generally assumed to be a process rather than a finite, fixed state of being.

Autonomy is not just a matter of permitting choice in learning situations, or making pupils responsible for the activities they undertake, but of allowing and encouraging learners, through processes deliberately set up for the purpose, to begin to express who they are, what they think, and what they would like to do, in terms of work they initiate and define for themselves (Kenny, 1993, p. 440).

Moreover, as Little (2017) has pointed out, learner autonomy is principally understood as the end goal of learning, that is, for the learner to eventually be able to fully integrate knowledge within the self. This aim not only sets the theme of the chapters in this volume, it remains the goal of teaching and learning. It is our belief

that the contributions herein will advance teachers' and learners' understanding of how this process can be supported. How each of these chapters specifically address these innovative and exciting contexts for facilitating autonomy are explained briefly below.

## *2.1 Instructed Contexts*

### 2.1.1 Plurality and Translanguaging in Student Interaction

Hafner and Miller examine the ways in which online and offline spaces can afford opportunities for the development of students' autonomy as language learners and users. Drawing on Benson's (2011b) dimensions of LBC, the authors present empirical data from a group of four English language learners who collaborated on creating a digital video project as part of an English for Specific Purposes course at a university in Hong Kong. Their unit of analysis was comprised of instances of plurality and translanguaging in student interactions and their overall impact on group interactions. The authors found that in-class combined with out-of-class opportunities allowed for structured and unstructured engagement during which learners were either instructor-driven or self-reliant. They conclude that combining self and other directed learning resulted in different types of interactional affordances. For instance, the technological affordances prompted students to use their Facebook Messenger group to share knowledge and to create multiple identities and to express themselves in socially responsible ways.

### 2.1.2 Self-Regulated Learning Through Task-Based Learning

Lee in her chapter demonstrates how using a technology-enhanced flipped learning model in a semester-long intermediate language course can impact learners' communicative competence and self-regulated learning. In particular, she discusses how L2 Spanish students used various types of learning activities mediated by digital tools in pedagogically effective ways. Learners self-reported gains in their communicative language skills, and peer comments and instructor scaffolding afforded them a context and motivation to understand and learn course content through social engagement. Her findings also point to the importance of both synchronous and asynchronous digital tools to allow students to learn individually as well as collaboratively. Lee's results indicate that learning tasks and digital tools were main factors influencing students' self-management and motivation to regulate their own learning. However, the author cautions that careful task design needs to be coupled with appropriate digital tools, and that teacher interventions are essential to foster the individual and social processes of self-regulated learning.

## 2.2 Semi-Instructed Contexts

### 2.2.1 Motivational Drivers in Experiential Learning Through VE

Contributing to the growing body of research on telecollaboration in the Asia-Pacific contexts (e.g., Chun, 2014; Liaw & English, 2017; Park, 2014, Priego & Liaw, 2017), Fuchs analyses empirical data from a Hong Kong – U.S. case study, which aimed at promoting engagement and autonomy among undergraduate learners (e.g., Hafner & Miller, 2011, chapter "Learning, Working and Playing Online: University Students' Practices when Collaborating in Social Media" this volume; Lai et al., 2016). Fuchs situates her investigation in classroom-based case study research (Dooly & O'Dowd, 2012) that has as its goal not generalizability but the presentation of "information-rich cases" (Antoniadou & Dooly, 2017, p. 252). Hong Kong participants' experiences regarding collaborative work in their exam-based context yielded mixed results in that engagement with Hong Kong students was preferred over engagement with U.S. partners for a variety of reasons. Her in-depth exploration of motivational drivers arrives at the conclusion that while the telecollaboration has the potential to foster Hong Kong learners' ability to reflect and structure their own learning, tasks need to be more fully integrated into all assignments and assessments. To this end, the author discusses how experiential learning such as it happens in telecollaborative contexts, can be consolidated in a context where students expect to be prepared for a high-stakes exam.

### 2.2.2 Choice, Awareness, and Control in a Teacher Education VE

In their chapter, Hauck, Satar, and Kurek link learner autonomy to the concepts of social semiotics and multimodal literacy, illustrated through empirical data from two Polish-Spanish VE groups (student teachers of English as a foreign language in Poland and Spain), one which displayed higher and one which displayed lower autonomy. Indicators of autonomy included group members' modal choices in posts – including written language, emoticons, layout, and structure –, as well as participants' semiotic resources and tool choices (Canvas discussion board, Padlet, Prezi) to represent their individual identities and readiness for collaboration. These choices were considered indicative of the participants' ability to understand, interpret and execute the relationship and interaction between different formats of digital media and their modal affordances (multimodal literacy) and their informed use of a range of interacting representational resources in context (autonomy). The authors take an in-depth look at how the two groups' differing levels of multimodal literacy are indicative of learner autonomy with regard to participants' awareness and control over the modal affordances of the technological resources available to them. In order to develop their autonomy, they conclude, learners need to be offered contexts in which they can combine various semiotic modes and resources to address their intended purpose and audience.

### 2.2.3 Agency, Reflection, and Self-Direction in a Teacher Education VE

The chapters by (1) Marjanovic, Dooly, and Sadler, (2) Lenkaitis, and (3) Tolosa all focus on experiential modeling and reflection in teacher education, with Marjanovic et al. and Lenkaitis discussing VE data.

Marjanovic et al. present survey and interview responses from former teacher education students who participated in a program that both integrated and focused on telecollaboration for language education. The authors explore any potential correlation between the content of the course program with subsequent teacher autonomy in applying knowledge about telecollaboration in their own teaching practice. The course, which accounts for a 16-year sustained telecollaboration as an integral course component, is designed to promote learner autonomy with the expectation that this may be carried over to their professional lives as language educators. This premise was based on work by Little (2000) and Smith and Erdoğan (2008), who have argued that teachers' knowledge, attitudes and beliefs will affect their decision-making and level of autonomy. The results in the study demonstrates that 54% of the respondents who took the course had been involved in some sort of telecollaboration in their own teaching. In interviews, these former students (now teachers) demonstrated teacher agency, self-regulation, and self-direction in how they set up the learning environments for their own students through the use of telecollaboration, suggesting that there are potential benefits from the experiential modeling of telecollaboration in practice and explicit teaching of telecollaboration design principles.

In a similar vein, Lenkaitis in her chapter draws on Little's (2007) autonomy framework and presents data on learner involvement and reflection, and target language use from Teaching English to Speakers of Other Languages (TESOL) teacher candidates and English as a Foreign Language (EFL) learners in Colombia who reflected back on their synchronous Zoom exchanges. The reflective practice of watching their own synchronous interactions with language learners allowed the teacher candidates to engage with the discourse that took place. Likewise, EFL learners in their assessment of their interactions found that they were afforded the opportunity to engage in language practice with the teacher candidates to develop their skills. The author discusses participants' virtual exchange reflections in which the teacher candidates expressed gains in either the areas of 'language,' 'knowledge' or 'culture' and EFL learners' evaluation of their gains in skills, practice, proficiency, awareness, and confidence.

While not grounded in VE, Tolosa's case study is an important contribution to longitudinal research in pre-service language teacher education. Her results from a year-long study of two high-achieving pre-service student teachers provides evidence of growth through participants' engagement in structured cycles of reflection, embedded in a course that follows an experiential approach to learning to teach languages with technology. The author argues that structured and ongoing reflection on the integration of digital technologies into language teaching can be a catalyst for developing an autonomous approach because it allows student teachers to critically examine their own learning. Using I-statements in reflective texts as a unit of analysis (Fang & Warschauer, 2004; Gee, 2005; Ushioda, 2010) allowed the author to

systematically track changes within the participants and their growth in autonomy. Tolosa's findings highlight the importance of an experiential learning approach and its reflective cycles which allowed participants in her case to describe the learning and teaching processes they were involved in, to evaluate and analyze them, and to propose plans for future actions. This resulted in a richer, more complex and personal framework for the significance of learning and teaching, which ultimately allows for intentional and purposeful integration of technology into their language teaching praxis.

## *2.3 Self-Instructed Contexts*

### 2.3.1 Agency, Control, and Choice Through Games and Apps

Reinhardt and Han discuss 'learnful L2 gaming' from the perspective of learnfulness and gamefulness. Using a descriptive study that draws from surveys online and informal advice on gaming culled from three online forums from 2014–2016, the authors argue that gaming often goes unrecognized by L2 educators as a learning resource and even by gamers themselves (Reinhardt et al., 2014). They aim to shift perspectives about gaming as a productive L2 learning activity that can take place 'in the wild'. They suggest that this playfulness aligns with L2 pedagogical frameworks that promote situated learning through participation in communities of practice although the learners should display both a gameful and learnful disposition while maintaining a sense of agency and control over the entire experience – choice of games and how they will be played, for instance. Encouraging L2 learner-gamers to explore ways in which their practices may benefit their L2 progress while promoting their learner-player autonomy may be key. The authors discuss possible strategies that teachers and self-directed learners can employ to take full advantage of the affordances found in gaming.

Alm explores the suitability of mobile apps for language learning through autoethnographic research. She describes her year-long language learning experience, mediated through the use of apps, in order to experience their use from a learner's perspective and to increase her own awareness of learning opportunities contexts outside of formal education. The author documents the experience through a journaling app and then applies Schumann's (2001) five-dimensional stimulus appraisal model as a framework to analyze her learning trajectory. Alm focuses her study through the notion of *foraging* (following Schumann's link to the fundamental human impulse to learn) as an approach for understanding the emotional aspects of informal language learning with apps. She provides an engaging first-hand account of self-directed language learning which provides relevant insights into informal language learning environments for both teachers and learners who are interested in navigating their own learning opportunities. This chapter underscores how the use of language learning apps, in particular the use of multiple apps, can be beneficial but that the learners must be made aware of the apps' affordances and how these can

shape the learning experience. Alm highlights the intensified need for autonomy in app-based language learning, given that in this environment learners must make an array of learning choices, following their own assessment of their learning needs.

In the next section, we will present the different epistemological and analytical frameworks that authors have chosen to explore the notion of autonomy in their specific contexts.

## *2.4 Epistemological and Analytical Frameworks for Exploring Autonomy*

Just as the rapid development of technologies is changing and expanding the landscape of education, research interests and methods are also becoming much broader. This is probably the result of keeping up with the pace and nature of emerging digital spaces. For instance, in the Editorial for their Special Issue "Research Methods on Virtual Exchange: Frameworks and Challenges", Cappellini et al. (2020) have identified a pressing need for more exploration into bringing together different research traditions, methodologies, and approaches as they relate to VE.

In a quick overview of different epistemological and analytical frameworks the chapters draw from, the reader will see that the contributions cover a wide range of approaches. Qualitative data are presented from Geertz's (1973) notion of *thick descriptions,* applied by Hauck, Satar, and Kurek to analyze indicators of multimodal literacy and autonomy in virtual exchange from a semiotic, interpretive perspective. Data stemmed from three digital tools, Canvas, Padlet, and Prezi. Tolosa also takes an interpretivist qualitative approach focusing on an exploration of the problem and a detailed understanding of the phenomenon at hand (Creswell, 2012). Drawing from two sets of data comprised of reflective texts and interviews, the author examines the output using I-statement analysis (Fang & Warschauer, 2004; Gee, 2005; Ushioda, 2010). Hafner and Miller support their main data source (Facebook Messenger posts) with a multitude of instruments and sources such as interviews and project artifacts like scripts, storyboards, and video clips. Using thematic analysis (Braun & Clarke, 2006), the authors used a coding scheme developed in an earlier study of the same research site (Hafner & Miller, 2011). Situating her approach in classroom-based case study research (Dooly & O'Dowd, 2012), Fuchs triangulates questionnaires, Facebook posts, and task reflections which were analyzed through multiple rounds of coding (Glaser & Strauss, 1967), with the goal of presenting "information-rich cases" (Antoniadou & Dooly, 2017, p. 252).

Along similar lines of triangulation and in a mixed-methods approach, Marjanovic, Dooly, and Sadler use a web-based cross-platform program to analyze written and audio materials submitted by participants in order to categorize and compare the participants' descriptor profiles and the coded excerpts (written/audio answers) linked to open-ended responses. They then conducted a cross-comparison analysis of descriptors and codes to identify correlations between variables from

subjects' responses and exemplified salient categories regarding autonomy through specific case studies. Reinhardt and Han approach their qualitative analysis of three publicly accessible Web-based discussion boards devoted to the topic of using digital games for language learning by coding for 'games' and 'suggestions,' which were then categorized in a spreadsheet.

There are also examples of other types of qualitative research such as Design-Based Research (DBR) approach (Hung, 2017) which is becoming increasingly more common in technology-based learning investigation; ethnographic studies, which have long been a staple in face-to-face classroom research but which are increasingly more common for digital settings as well. Along these lines, Lee triangulates post-surveys, reflective essays and focus group interviews with student coursework in a DBR study. In her auto-ethnographic study, Alm uses the journaling app *Day One* to document her observations and reflections on her learning experiences, which she subsequently codes (Mackey & Gass, 2015). Using Schumann's (2001) five-dimensional stimulus appraisal model as an explanatory framework, allowed her to discuss her progression while using four different apps.

While qualitative data holds a bigger presence throughout the chapters, perhaps due to the nature of the learning contexts, quantitative data is also present. Lenkaitis uses IBM SPSS Statistics 25.0 to run paired sample t-tests on pre- and post-survey rating scale questions to compare means; qualitative data were coded in NVivo 12. The ratio of qualitative versus quantitative studies in our volume is interesting given that many of the past studies into learner autonomy in face-to-face learning environments are largely quantitative (cf. Dam & Legenhausen, 2012; Deci & Ryan, 1996).

This volume set out to advance our understanding of how new digital spaces can support autonomy against the backdrop of different contexts and instructional approaches (instructed, semi-instructed, self-instructed). Each of the contributions in this volume has provided a unique look at a specific context by outlining a relevant methodological approach as well as the potential of technology-mediated tools and tasks and their positive impact on learner interaction. It is hoped that our volume can spark further in-depth investigations into learner autonomy. Van Lier, in his 1996 book "Interaction in the Language Curriculum: Awareness, Autonomy, and Authenticity," reminds us that learning needs to come from the learner, that motivation, learner choice and responsibility, and articulated needs and goals, are all central features of autonomy, and that instruction may at best encourage and guide the learning. As we progress into a new millennium, technological advances will provide expanding options for language learning. In parallel, technological headway will bring new and unforeseen challenges for learners and teachers alike. Central to research on autonomy must be the acceptance of individual choice and this book endeavors to keep this value foremost in the chapters herein.

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# Learning, Working and Playing Online: University Students' Practices When Collaborating in Social Media


**Christoph A. Hafner and Lindsay Miller**

**Abstract** This chapter reports on a study which follows the activities of a group of four English language learners who collaboratively created a digital video project as part of an English for Specific Purposes course at a university in Hong Kong. We examine the ways in which the students used online and offline spaces and how these spaces opened up opportunities for the development of the students' autonomy as language learners and users. The students made extensive use of a Facebook group and Facebook Messenger, generating a large number of naturally occurring interactions in online spaces. These interactions are characterized by their hybrid nature, with the online space acting as a place for students simultaneously to learn, to work, to socialize and to play. The interactions are also plurilingual in nature, with frequent translanguaging in evidence. After examining the student interactions we consider how different individuals influence those interactions, for example by their choice of language, and their choice of task focus. Drawing on the data, a profile for each member of the group is created, highlighting the language practices of each student and how their individual practices have an effect on the group's language and learning practices.

**Keywords** Digital video · Collaboration · Online interaction · Social media · Language learning and technology · Project-based learning

## 1 Introduction

In the field of English language and literacy education, there has been considerable interest in the way that online spaces can provide contexts that are rich in opportunities to foster language learning, especially autonomous language learning. While this is a complex concept, for the purposes of this chapter we define autonomous

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language learning as a contextually bound capacity for self-directed learning, investment in learning, and the exercise of agency in learning. One strand of research has examined language practices in online affinity spaces, for example gaming practices in massively multiplayer online games (e.g., Thorne, 2008), YouTube commenting practices (e.g., Benson, 2017) or fan fiction writing, translating, and subtitling practices in online fan communities (e.g., Sauro, 2017). The online spaces associated with these practices bring together people with shared interests/passions in an informal context that they are highly invested in. These spaces tend to be independent of any formal educational context, so that the learning that occurs in them is highly autonomous and self-directed. A second strand of research examines the way that English language teachers can facilitate interactions in online spaces as part of telecollaboration or virtual exchange projects (O'Dowd, 2018; O'Dowd & Lewis, 2016). These involve geographically separate groups of students, usually with different first languages (L1s), working together in order to complete a project of some kind. The online spaces (often social networking sites) that make up such a virtual exchange are clearly linked to a formal, educational context, and also provide opportunities to exercise learner autonomy.

In this chapter, we describe one kind of online space that has received much less attention in the literature on language and literacy education. That is, the kind that can spring up as part of collaborative project work between students in the same geographical location. For example, groups of students may be tasked with the collaborative construction of a video documentary and then independently set up a range of communication channels to facilitate the project work. The resulting online spaces that students generate provide an out-of-class space, linked to a formal context, which has the potential to facilitate autonomous language learning.

In our previous work (Hafner & Miller, 2017), we have described the kinds of interactions that students can engage in and how these serve to both further develop project activities and promote independent language learning. Here, we extend on our existing work by examining in detail the way that a single group of learners use such an online space in their project communications, which consist primarily of interactions in Facebook Messenger. In particular, we are interested in: (1) the way that individuals can have an effect on language learning opportunities in the space by influencing the choice of language of the group; and (2) how the online space ultimately opens up opportunities for the development of students' autonomy as language learners and users. We begin by examining the concept of learner autonomy and how this might apply in the age of digital media. We then describe the study in detail, noting the roles that students adopt in their social media communications, their choice of language, and the various functions that different interactions serve. The analysis shows that the interactions are plurilingual in nature, with frequent translanguaging in evidence. In addition, they are characterized by their hybrid nature, with the online space acting as a place for students simultaneously to learn, to work, to socialize and to play.

## 2 Learner Autonomy in Digital Contexts

Taking control of learning, often referred to as learner autonomy, has been around for a long time. The eighteenth century philosopher, Rousseau, wrote about it as 'natural education'. By this, Rousseau was referring to the fact that children usually learn what interests them. However, he also went on to say that formal education often removes that interest or distorts what children are allowed to learn. A natural education, in Rousseau's view, meant setting problems for children to solve in their own environments, and in ways they found appropriate to themselves. Following on from these thoughts, educators, philosophers, and psychologists have continued to argue for a more independent, in some cases anti-establishment, mode of education which allows students to learn what they want and need to learn and in ways that are suitable to the students: problem-solution methods of in-class learning (Dewey, 1916); working collaboratively on projects (Kilpatrick, 1921); learning as being part of a social process (Freire, 1970); informal learning outside of classroom contexts (Illich, 1971); and expressing individual uniqueness (Rogers, 1983) (see Benson, 2011, for a fuller discussion).

Even though scholars have been discussing what learner autonomy is for hundreds of years, it remains "…a complex and still not well-understood concept as it changes depending on a host of factors: age, gender, first-language, educational background, motivation, desires, needs and wants" (Hafner & Miller, 2019, p. 97). Learner autonomy is not a steady entity of "easily describable behaviour" (Little, 1990, p. 7). And so a better way to approach this concept in language education is to realize that customized definitions of learner autonomy may more closely reflect the realities of different learning/teaching contexts. "[L]earner autonomy, like learning itself, is contextual", as Cappellini et al. (2017, p. 3) remind us.

By examining the ways in which our students exercised their learner autonomy in an English for science course (the course referred to in this chapter), we arrived at a definition of what being an autonomous learner means to students in that context:

> Our students are encouraged to exercise their capacity to become autonomous learners through investing time and effort to research a topic that interests them, work collaboratively with other learners, and learn beyond the classroom. They link their structured classroom learning with their individual agency to take control of their learning in a variety of ways in out-of-class learning spaces. In order to become autonomous learners our students need authenticity of text, audience, and purpose (Hafner & Miller, 2019, p. 105).

This customized definition, taking into account the nuances of a particular context, represents a new step in understanding the concept of learner autonomy. However, the general ideas proposed in the past, and then defined by Holec (1979) and Little (1991) as learners having the capacity to take control of their learning in the language education context, still survive. Learners have not changed much in exercising their abilities/capacities to take responsibility for their learning. What has changed is pedagogy: that is, we need to customize course design to enhance aspects of how students can take control, and nowadays that control often extends

to working within a technological learning environment, including a range of online spaces.

Several attempts have been made to design principles of how learner autonomy may operate. Benson (2013) refers to the impact the internet has had on language learning outside of the classroom and the control learners now have over their own learning and states that nowadays "…autonomous learning is more likely to be self-initiated and carried out without the intervention, or even knowledge, of language teachers" (p. 840). In such a learning environment, learning becomes independent, and learners need to consider the social aspects of interaction with others while seeking out learning opportunities. In order for students to benefit from a learning beyond the classroom environment we need to consider four key dimensions: (1) location (in-class or out-of-class), (2) formality (structured or unstructured for the learner), (3) pedagogy (instruction vs self-learning), and (4) locus of control (self or other directed) (Benson, 2011). Chik (2014) adds a fifth dimension to Benson's (2011) four, which she calls the learner 'trajectory'. That is, learners have a past and a future when interacting through digital media and most activities cannot be seen as one-off. As such, we need to frame their use of digital media for learning, and therefore also their autonomy, within their personal trajectory.

While using Benson (2011) and Chik's (2014) principles of autonomous language learning with technology beyond the classroom, Lai (2017, p. 25) suggests that we consider how learners develop three areas of learner autonomy:

- autonomy as language learning – the advantages of the interactive, social, authentic aspects of technology;
- autonomy as a language learner – the benefits derived from making use of a wide range of online learning opportunities in a safe learning environment; and
- autonomy as a person – the creative use of language to create multiple identities for self-expression and social responsibility.

Researchers have often observed autonomous language learning in what Benson and Chik (2010) refer to as 'globalized online spaces', where individuals from diverse linguistic and cultural backgrounds engage with one another on topics that they are passionate about. Examples of such globalized online spaces include YouTube, massively multiplayer online games like World of Warcraft, and various kinds of fan communities, where they engage in practices of fan fiction writing as well as the dubbing and translation of games, pop songs, anime and manga comics. The individuals that participate in these spaces are engaged in practices that they are passionate about with a transnational group of culturally and linguistically diverse individuals. Such individuals are highly self-directed and the online spaces that they participate in are rich in terms of possibilities for autonomous language learning. Existing research demonstrates that participation in globalized online spaces can be beneficial to language learning in the 'digital wilds' (Sauro & Zourou, 2019, p. 1; Thorne et al., 2015, p. 216). Participation is an affirming experience, which legitimates a wide range of multilingual and multimodal communicative practices, as well as supporting language development.

As an example, consider the practice of writing fan fiction and sharing it with an online community like fanfiction.net. Here, writing fan fiction is the fan practice of appropriating an existing fictional world and developing and sharing new storylines, creating a new Harry Potter story for example. This practice often opens up opportunities for autonomous learning, as fan fiction writers receive feedback, both on the content and linguistic form of their writing. While clear relationships of cause and effect are impossible to establish, with the passage of time such fan fiction writers demonstrate improvements in their writing: in one case study, Black (2007) cites null subjects, comma splices, singular/plural errors, subject/verb agreement, and use of definite and indefinite articles among observed improvements in linguistic accuracy over time. Similar opportunities for autonomous learning are noted in studies of other fan practices, like video game translation, that show how interactions between fans lead to careful discussion of language issues and the collaborative improvement of target language texts (Vazquez-Calvo et al., 2019). Similarly, gamers have been observed performing language learning mentoring roles in online forums, pointing one another to the best games for autonomous language learning (Chik, 2014). In the online game itself, Thorne (2008) has documented an interaction between an American and a Ukrainian gamer that took the form of a self-directed informal language exchange. The two participants taught one another English and Russian respectively by negotiating meaning and providing scaffolding in their interaction.

Research also shows that interaction in online spaces allows learners to develop identities as competent, plurilingual users of the second language. For example, Black's (2007) study of the fan fiction writer Tanaka Nanoko showed how her use of multilingual resources (combining mandarin Chinese with English) won her praise and admiration from her audience. Such plurilingual practices are accepted and legitimated by other members of the community, in contrast to the traditional classroom context, which tends to see communication in a restrictive way, limited to use of the standard language only. Learners may feel empowered to develop their language abilities as a result of participation in online spaces, and such language development and increase in confidence can transfer to the school setting (Lam, 2000).

A number of studies have considered in detail the forms of expression that learners use in the online space (e.g., Lam, 2004, 2009; Schreiber, 2015). These emphasize the gap between use of language online and use of language in formal education. Online, individuals adopt a much wider range of semiotic resources, drawn from multiple languages and multiple modes. This has led scholars to call for a re-evaluation of the target language for language teaching purposes, a re-evaluation that acknowledges the many innovative uses of language found in digital contexts. As Lam (2009) states, we have had to rethink our notions of language and literacy development due to "…the changing scopes of space and time, modes of representation, symbolic materials, and ways of using language associated with networked electronic media" (p. 171).

The highly self-directed nature of language learning in these out-of-class contexts leads to the question of whether this kind of self-directed learning might also be fostered through the use of social media networks as part of the formal language learning experience. In order to do so, however, it would seem to be desirable to find meaningful and authentic experiences for students to engage in. The power of the online spaces described above seems to derive, at least in part, from the meaningful engagement of individuals with others from diverse backgrounds. The telecollaboration approach (O'Dowd, 2018; O'Dowd & Lewis, 2016), which engages geographically separated students from different cultural backgrounds in the collaborative completion of a project, seeks to use technology to provide a meaningful context for learners by bringing them together with expert speakers of the target language.

Sometimes, students are reluctant to engage in the formally constructed communication channels on such intercultural projects however. Liaw and English (2013), documenting a telecollaborative project between French and Taiwanese students, show how interaction on the 'official' instructor-provided telecollaboration website was limited when compared to a Facebook page that students had independently set up in order to support an upcoming exchange trip between the two groups of students. As well as greater engagement (number of posts and interactions), the researchers also noted a marked difference in the quality of the language used, with students' 'unofficial' posts to the Facebook group less standardized, more multilingual and more multimodal. That is, students deployed a much wider range of semiotic resources when engaged in a context that they had themselves set up. The study suggests that teachers who want to foster engaged interactions from their students may have to allow them the freedom to set up their own informal channels, where innovative, multimodal translanguaging practices are likely to be the norm.

In this study, we are also concerned with a space that was set up by students themselves. However, unlike Liaw and English's (2013) study, the students involved were not engaged in telecollaboration but were all studying at the same university in Hong Kong. Given the highly engaged and self-directed nature of much of the language learning in the 'digital wilds' it is interesting to consider to what extent the interactions observed here afford independent language learning opportunities as well as how such opportunities are co-constructed and influenced by different members of the group.

## 3 The Study: Background and Context

The study described here reports on the out-of-class social media interactions of a group of four students completing a digital video project as part of a course in English for science at a university in Hong Kong. The study forms part of a larger research project, which has been extensively reported elsewhere (Hafner & Miller, 2019). The English for science course in question is a compulsory course designed to meet the written and spoken communication needs of a wide range of students

completing a BSc at our university. At the time of writing, target disciplines for the course include Applied Biology, Applied Chemistry, Applied Physics, Environmental Science and Management, Computing Mathematics, Architecture, Surveying, Biomedical Sciences and Veterinary Medicine. Given this range, the course can be seen as taking a wide-angled approach to English for academic purposes, which nevertheless focuses on disciplinary discourses (i.e., of 'science' broadly conceived), an approach that we refer to as 'English in the disciplines'. The course itself is organized around an English for science project, in which students carry out a simple scientific study, on a topic that would be amenable to both popular and specialist audiences. This study is then reported first as a digital video scientific documentary, designed for a popular audience and shared publicly through YouTube (students work in teams); second as a scientific report designed for a specialist audience (students work individually). For the purposes of this chapter, we focus on the collaborative processes that students engage in as they complete the digital video scientific documentary.

As they go about the various stages of the digital video project, i.e., (1) reading/data collection, (2) scripting/storyboarding, (3) performing/recording, (4) editing, (5) sharing, students independently establish a range of computer mediated communication channels, to facilitate their groupwork. There is no formal requirement to do so, yet students invariably take the initiative to make use of Facebook groups, WhatsApp groups, Facebook Messenger groups, email, and file sharing services like Dropbox and Google Drive. Our existing work has examined students' out-of-class project interactions in social media in order to understand students' strategic language choices (Hafner et al., 2015) and students' collaborative learning experiences (Hafner & Miller, 2017). However, we have yet to understand how individual students (within particular groups) can influence such out-of-class project interactions, for example, by their choice of language, their choice of task focus, and the roles that they adopt within the collaborative group. By examining in depth one group of four students, we aim to answer the following research questions:

- RQ1: How do students use online spaces in their project communication?
  - What roles do they adopt in project activities?
  - What language choices do they make?
  - How do they accommodate the language choices of others?
- RQ2: How do these online spaces open up opportunities for the development of the students' autonomy as language learners and users?

## *3.1 Participants and Data Sources*

As mentioned above, this study focuses on the out-of-class social media interactions of a single group of four students completing the digital video project on the English for science course. This group was observed by a paid bi-lingual (English-Cantonese)

student researcher who helped collect project artifacts, while at the same time sometimes participating in the online interactions with the group members. The data reported on here is part of a larger study of co-operative learning in out-of-class spaces, which included a total of 12 student groups. The group was selected for in-depth analysis in this chapter because it was the most productive group in terms of the sheer number of social media interactions, with significantly more messages than the other groups. To support their project process, the group established a Facebook group (over 100 messages) and communicated through Facebook Messenger (over 2000 messages). It is important to note that the students established these social media channels on their own initiative and were not required to do so by the teacher or as part of the course they were taking. For the purposes of this chapter, we focus our analysis on the Facebook Messenger posts[1]. In addition to collecting these social media messages, other project artifacts like scripts, storyboards, and video clips were collected. The students in the group were interviewed in two focus group sessions, in order to provide an important 'emic' perspective of the digitally mediated project activity. The interviews focused on students' perceptions of their collaborative experiences on the project, their use of language in social media, and video production. These interviews were conducted in English and transcribed for analysis. Finally, some information about the participants was collected through a background information questionnaire.

The group consisted of three women (referred to by the pseudonyms Rafaela, Anne, and Minnie, all 18–19 years of age) and one man (Zhang, 19 years of age). All were in their first year of university, of Hong Kong Chinese ethnicity, and had Cantonese as their L1. In self-rating their own English proficiency, Zhang and Minnie appeared a bit less confident than Rafaela and Anne. In their school English examinations (the Hong Kong Diploma of Secondary Education), Zhang and Minnie also reported performing slightly less well than Rafaela and Anne. Even before this group started work on the project, they were friends, all being members of a university dance club. They all perceived the project process as an enjoyable one, especially the filming, which Anne described as being 'a small reunion' and 'like having a picnic'. The most challenging aspect of the project that they reported was the video editing (done collaboratively by Zhang and Rafaela). Although different members of the team played different roles (see Fig. 1), all members of the group were perceived as important in coming up with the final product: Zhang commented of his team mates that 'without them we can do nothing'.

[1] By way of aside, an interesting issue arises as to whether one ought to consider Facebook Messenger a synchronous or asynchronous tool. In our view, such a classification depends not only on the affordances of the tool, but also on how the tool is being used and other contextual factors, like the content of the message. Users may sometimes employ a messaging app like Facebook Messenger in a synchronous fashion by responding immediately and sometimes in a more asynchronous fashion, by allowing considerable time to elapse before responding.

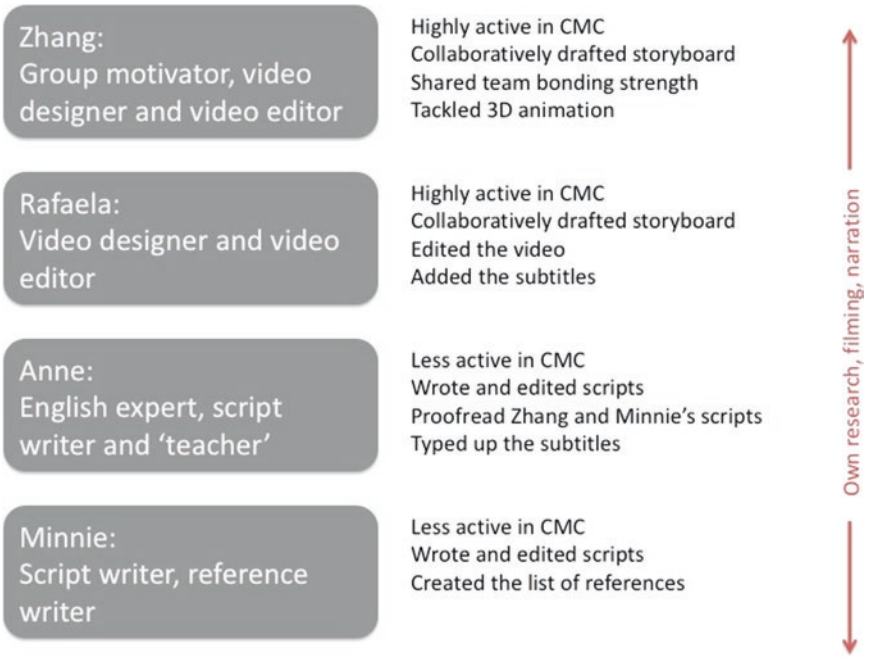


**Fig. 1** Students' roles and activities

## *3.2 Analytical Methods*

The aim of the analysis was to determine how students, in the out-of-class online environment, adopted different roles, made different language choices, and accommodated the language choice of other students in different ways. A mixed-method approach to the analysis was adopted, where the dominant paradigm was qualitative in orientation. The main data sources were the focus group interviews and the social media interactions. A thematic analysis (Braun & Clarke, 2006) was performed using a coding scheme developed in an earlier study of the same research site (Hafner & Miller, 2011). This analysis of interviews allowed us to access students' perceptions of the collaborative learning process, and the roles that they played in that process. Social media interactions were coded using both inductive and deductive approaches. Inductively, the interactions were coded in order to identify common types of interactions, emerging from the data. Deductively, each message was coded in order to identify the speaker, the language choice, and information about accommodation of language choice. Language choice could be English, Chinese, mostly English, mostly Chinese, multimedia (e.g., the entire message consisted of a hyperlink or image), or other (e.g., the entire message consisted of punctuation or an emoticon). Accommodation of language choice was considered where speakers chose to either follow or not follow a switch in language choice initiated by their

interlocutors. This analysis of language choice and accommodation gave rise to quantitative, descriptive statistics, broken down by individual speaker.

## 4 Findings

In order to address the research questions above, we report findings on roles observed, language choices, and activities students engaged in.

### *4.1 Roles Adopted*

Students' accounts of the project process in interviews along with their observed interactions in social media give us an idea of the kinds of roles that they adopted in the digital video project process. The students reported that all had been involved in doing their own research (i.e., finding and evaluating information), filming, and narrating a portion of the video. Beyond these commonalities, students in the group also took up more specialized roles and activities, according to their interests and abilities, as summarized in Fig. 1.

Acting as the group motivator, video designer and video editor, Zhang was highly active in computer mediated communication (CMC), was involved in the collaborative drafting of the storyboard and tackled the 3D animation task for the group. At an early stage of the project he shared a file with teammates called 'team bonding strength' which listed their mutual free time in an effort to co-ordinate times for meetings. Also highly active in CMC, Rafaela collaboratively drafted the storyboard, edited the video and added subtitles. Because of their overlapping post-production roles, Rafaela and Zhang were frequently engaged in interaction in CMC, while Anne and Minnie were less active. Anne was recognized as the group's 'English expert' and 'teacher'. According to Zhang, Anne is 'more profession on English' and 'she take the role of a teacher' (focus group interview). She was involved in writing and editing scripts, proofreading Zhang and Minnie's scripts (both of whom were less confident about their English) and typing up subtitles for the video. Finally, Minnie played the role of script writer and reference writer, creating the list of references for the video.

### *4.2 Language Choice and Accommodation*

The CMC conversations are characterized by a high frequency of translanguaging, that is, the combination of multiple linguistic resources from a variety of English and Chinese codes. It is interesting to consider the extent to which the interactions provided opportunities for practicing the second language (L2). Table 1 shows the

**Table 1** Individuals' language choice

| | Zhang | Rafaela | Anne | Minnie | Totals |
|---|---|---|---|---|---|
| English | 595 (48%) | 558 (74%) | 101 (66%) | 25 (28%) | 1279 (57%) |
| Mostly English | 58 (5%) | 79 (10%) | 12 (8%) | 5 (6%) | 154 (7%) |
| Chinese | 289 (23%) | 42 (6%) | 14 (9%) | 13 (15%) | 358 (16%) |
| Mostly Chinese | 198 (16%) | 16 (2%) | 9 (6%) | 33 (37%) | 256 (11%) |
| Multimedia | 42 (3%) | 4 (1%) | 9 (6%) | 7 (8%) | 62 (3%) |
| Other | 70 (6%) | 59 (8%) | 8 (5%) | 6 (7%) | 143 (6%) |
| Totals | 1252 (100%) | 758 (100%) | 153 (100%) | 89 (100%) | 2252 (100%) |

Notes: Mostly English messages include brief switches to Chinese; Mostly Chinese messages include brief switches to English; Multimedia messages consist entirely of images, links, electronic files or other multimedia; Other messages consist entirely of punctuation or emoticons; Data reported do not include messages sent by the student researcher

**Table 2** Individuals' accommodation of code switches

| | Zhang | Rafaela | Anne | Minnie | Totals |
|---|---|---|---|---|---|
| Not accommodating a switch to Chinese | 7 (7%) | 60 (65%) | 12 (50%) | 0 (0%) | 79 (34%) |
| Accommodating a switch to Chinese | 10 (10%) | 13 (14%) | 2 (8%) | 3 (27%) | 28 (12%) |
| Not accommodating a switch to English | 36 (35%) | 1 (1%) | 2 (8%) | 2 (18%) | 41 (18%) |
| Accommodating a switch to English | 50 (49%) | 18 (20%) | 8 (33%) | 6 (55%) | 82 (36%) |
| Totals | 103 (100%) | 92 (100%) | 24 (100%) | 11 (100%) | 230 (100%) |

Note: Data reported do not include messages sent by the student researcher

language choice adopted by different members of the group, including the number of messages and percentage of messages for each individual's choice.

The results here show that, for this group, the dominant language choice was either English or mostly English (total of 64% of all messages). Table 1 also shows that this choice is not evenly shared by all students however. Both Zhang and Minnie, who were less confident in their English skills than the other two, used a comparatively high proportion of Chinese or mostly Chinese messages: 39% of all messages sent by Zhang and 52% of all messages sent by Minnie. The question arises as to how the language choices of individuals in the group might have an effect on the choices of their peers.

Table 2 reports the observed accommodation of code switches initiated by other members of the group. Whenever a group member switches the code other members of the group must choose to either accommodate (i.e., follow) the new language choice or not. For example, when a group member switches from English to Chinese, others may follow this choice by also switching to Chinese, thereby accommodating their teammate, or not follow the new choice and continue the conversation in English, thereby not accommodating. Table 2 tallies the number of times that, after

a code switch in the conversation (either to English or Chinese), different members of the group were observed to either accommodate the choice or not.

Table 2 shows that, overall, the most frequent response was to accommodate a switch to English (82 instances or 36%), followed by not accommodating a switch to Chinese (79 or 34%), not accommodating a switch to English (41 or 18%) and accommodating a switch to Chinese (28 or 12%). Considering individual participants, Rafaela and Anne tended to avoid accommodating switches from English to Chinese far more frequently than they accommodated such switches. That is to say, when their interlocutors sought to switch the code, they would tend to resist and continue the conversation in English. By comparison, Zhang and Minnie more frequently accommodated switches to Chinese than not. This difference in terms of behavior matches the students' own self-perception of their English ability. Here, the more confident students (Rafaela and Anne) tended to both choose English more frequently than Chinese (Table 1) and, at the same time, resist attempts to switch the conversation from English to Chinese.

It is also interesting to consider Zhang's behavior: he used a relatively high proportion of Chinese or mostly Chinese messages (Table 1, total 39%) and was frequently faced with his interlocutors (usually Rafaela) switching the conversation into English. In these circumstances, more often than not he accommodated such a switch. Nevertheless, at times he also resisted such switches to English. The transcript contains a number of passages in which Rafaela consistently adopts English and Zhang responds to her consistently in Chinese, each student refusing to accommodate the language choice of the other, so that one side of the conversation is in English and the other in Chinese. In spite of such exchanges, it appears that Rafaela's choice of language and her general tendency not to accommodate use of Chinese pushed Zhang to respond in English, thereby increasing use of the L2. Extract 1 provides an example of such an interaction (translations of the Chinese text are provided in brackets).

**Extract 1: Rafaela Switches to English (Facebook Messenger, Feb 21)**

1:05 am Zhang
各位好同學好同事 (My good classmates and colleagues)
有無人能夠提供手提電腦// (Can anyone of you provide me with a laptop?)
上課前先前往 AC2 借手提電腦, 並且【差電】? (Go to borrow one at AC2 before lesson and charge it?)
明天是我們討論的時間啊 (Tomorrow we will have our discussion)

1:06 am Rafaela
I will bring

1:07 am Zhang
thx so much

1:14 am Zhang
hey
dnt forget to dl and put my video into your comp = =
at least we can choose and delete

In the extract, after Zhang initiates the conversation in Chinese, Rafaela responds by choosing English, a choice that Zhang then accommodates.

### *4.3 Getting Things Done Online: Activities Observed*

The students' interactions in their project group were not limited to task-focused activities like requesting that groupmates bring a laptop to their meetings (Extract 1). In this section, we illustrate some of the activities that were observed as students used the social media space to 'get things done'. As we will see, these activities may relate directly to aspects of the project work, they may include playful, social interactions, and they may offer opportunities for peer teaching and learning.

Throughout the course of the project work, the team used CMC interactions in order to manage the group and manage the task. In the social media interactions, we often see Zhang taking on a leading role here, as evidenced by Extracts 2–4. This leading role is consistent with observations in the student researcher's field notes of observations in class, confirming that 'Zhang is the leader of the group. He basically dominated the discussion' (student researcher field notes).

**Extract 2: Zhang Shares a Table of Mutual Free Time (Facebook Messenger, Jan 17)**

9:56 pm Zhang
唔係病毒, 自己睇睇 (It's not virus. Just open and read it)
我們四人的緣分計算.pdf (The calculation of affinity of the four of us.pdf) [file name]

**Extract 3: Zhang Discusses the Timeline (Facebook Messenger, Jan 17)**

9:03 pm Zhang
[…] we should COMPLETE our FLOW (STORY BOARD) b4 Tutorial 3 otherwise, BC TIMES COMES

**Extract 4: Zhang Reminds the Team of Their Roles (Facebook Messenger, Feb 9)**

3:28 pm Zhang
A small reminder
Minnie responsible for elementary
Zhang. Responsible for science
Rafaela is art and symbolism
Anne is history

In Extract 2, early in the project process, Zhang compiles a table that he humorously calls (in Chinese) 'The calculation of affinity of the four of us' and shares the table as a pdf file through Facebook Messenger. This file, based on the timetables of teammates, illustrates the mutually free time slots that could be used as times for teammates to meet. He jokes that the file is 'not a virus'. In this way, the group

tackle one of the challenges of such project work: the difficulty that students sometimes have making time to physically meet and work collaboratively. In Extract 3, also early in the process, Zhang suggests that the group's storyboard (visual and textual plan for the video) should be finished before tutorial three to avoid a 'busy time'. This kind of planning enabled the group to make early progress on the video project. In Extract 4, Zhang reminds the team of their research and writing roles, at the same time setting up some expectations for action, providing a source of motivation. We see here how different members of the group accepted responsibility for different aspects of the topic.

Later on in the project process, we also see Rafaela making use of CMC to manage the group/task, as she organizes a meeting to do some filming.

**Extract 5: Rafaela Organizes a Meeting (Facebook Messenger, March 7)**

10:07 am Rafaela
Rmb later have to meet up in the classroom for recording

10:48 am Minnie
k

12:36 pm Rafaela
Maybe meet at 3?
The usual classroom

12:36 pm Minnie
okok

12:37 pm Anne
ok

In addition to managing the group/task in this way, students often use the CMC messages as a space where they can playfully interact. For example, Extracts 6 and 7 show how the students joke with one another. In Extract 6, Zhang explains that he is unable to attend a lesson as he must attend a Court of Law in order to perform jury duty. Rafaela's playful response is to suggest that Zhang has perhaps been 'suspected' of committing a crime. In Extract 7, later in the project process as Zhang and Rafaela are engaged in collaboratively editing the final video, Zhang teases Rafaela and suggests that she needs her boyfriend to provide technical support 'to play with sounds'.

**Extract 6: Rafaela Teases Zhang About His Jury Duty (Facebook Group, Mar 4)**

Zhang
My GREAT APOLOGY
I receive a letter,
Mar-21 has to go to court …
May be I will be late for that day's lesson …
Pls help Zhang to pick stuff up:'(
March 4 at 4:39 pm

Rafaela Court???
March 4 at 4:41 pm

Rafaela Jury????
March 4 at 4:41 pm

Rafaela Or u are being suspected???
March 4 at 4:42 pm

Zhang:
juror ar = =
Since F.4 no more being suspected = =
March 4 at 4:43

**Extract 7: Zhang Teases Rafaela About Her Boyfriend (Facebook Messenger, Mar 14)**

4:05 am Zhang
…
U dont know how to play with sounds?
bf le, bf 在哪 (Where is your boyfriend?)

4:05 am Rafaela
lol
slept

4:06 am Zhang
wake him by a far kiss!

It is within this social context that the students set about researching their topic and constructing the texts (e.g., scripts) that they will need for their video documentary. The CMC exchanges facilitate this in two main ways. First, they allow teammates to share findings of internet research and drafts of scripts, as in Extract 8, where Minnie posts her script to the Facebook group. Second, they provide a space for the exchange of ideas and for collaborative drafting and feedback. For example, in Extract 9, Rafaela and Anne respond to Zhang's request for feedback on a proposed script with some suggestions, an interaction that offers an opportunity for peer teaching and learning.

**Extract 8: Minnie Shares a Script (Facebook Group, Mar 12)**

Minnie uploaded a file.
minnie_s script.docx [file name]
March 12 at 1:07 pm

**Extract 9: Rafaela and Anne Give Feedback on Zhang's Script (Facebook Messenger, Mar 12)**

4:31 pm Zhang
I need grammatical checker!
Script:

After having a breif Idea about the 起源 (origin) of the cathedral
Shouldn't We take a look on the 整體佈局 (overall structure) of the Church?

4:34 pm Rafaela
Brief
Origin
erm
A bit weird
Just say Let's look at

4:36 pm Anne
orientation of this building in a macroscopic way
??
整體佈局 (Overall structure)

4:37 pm Zhang
.....
I need full sentence
I speak no ENG = =

To summarize up to this point then, the interactions observed in this group: (1) facilitated the team working on the project, by allowing them to manage the group and collaboratively work on aspects of the multimodal composing task; (2) allowed them to engage in playful social interactions, joking with each other about the project; and (3) provided a basis for potential peer teaching and learning. It is interesting to note the way that different kinds of work and play could overlap in the CMC interactions. While one can identify instances of work and instances of play, these distinctions tended to blur and overlap. As a somewhat extended example, consider Extract 10, near the end of the project process.

**Extract 10: Zhang, Rafaela and Anne Mix It all up (Facebook Messenger, Mar 14)**

2:04 am Zhang
[…]
help think of conclusion ppls ==

2:05 am Rafaela
ok
ask themmm
><

2:05 am Zhang
sure is asking them = =
I know Rafaela is waiting for Minnie's recording = =
[…]

2:21 am Anne
say why the building can stand for so long

because of its historical value
its cultural significance..
being one of the 5 cathedrals in Hong Kong but it's the oldest
and its structural architectures..
ok?

2:39 am Rafaela
NEW POPE!!!!!!!!!!!!
SUPER FAST WHITE SMOKE
I AM WATCHING LIVE

2:39 am Zhang
???
為我想問呢 (Hey, I want to ask…)

2:39 am Rafaela
[Posted a link to an English language video – a live event about the new Pope]
?

2:39 am Zhang
點樣較快段片但係把聲音唔變高音 (How to do the setting so that the clip can be played faster without turning the voice into higher pitch)

2:39 am Rafaela
i think impossible
lol

Extract 10 begins with Zhang requesting help in generating ideas for a conclusion, a request that Rafaela responds to by imploring him to appeal to her teammates ('ask themmm'). At this point, Anne assists by contributing some ideas to the conversation. The very next turn sees Rafaela excitedly blurt out that a new Pope has been elected, an event that she is watching online. She shares a link to a YouTube live event about the new Pope but not before Zhang responds in confusion ('???') and requests help with a technical issue. In the space of 35 min, this online conversation in the early hours of the morning turns from collaborative work on the video script to a kind of social sharing to collaborative work on the technical aspects of video editing. Later in this hybrid interaction, Rafaela will clarify the events she is sharing and happily update the group when the Pope's name (Francis I) has been announced.

## 5 Discussion and Conclusion

As mentioned earlier, research into students' uses of online spaces for learning is continuing to draw attention. In particular, researchers are interested in how students learn in computer mediated spaces without teacher intervention or support, a practice described as language learning 'in the digital wilds' (Sauro & Zourou,

2019). Alternatively, we also see examples in the literature of how teachers may be closely involved in helping their students use the internet for classroom-based learning (e.g., Alzahrani & Wright, 2016; Hanna & de Nooy, 2003). And there are some research examples of a hybrid learning context where students are encouraged by tutors to interact with both official (teacher controlled) and unofficial (student controlled) online sites when completing a project (Liaw & English, 2013). Unlike the students in Liaw and English's (2013) study, who were engaged in a telecollaboration project and at a considerable geographical distance, the students involved in the present study were carrying out project-based learning at the same university and were able to interact with one another face to face. Nevertheless, they chose to use digital media tools as a way to facilitate the project process.

The study described in this chapter thus attempts to fill another research space by investigating the interactions between a group of students who voluntarily set up their own digitally mediated autonomous learning space as part of a structured learning context, i.e., the project work on the English for science course. The online space was designed by the students, using the tools and technologies that they themselves found appropriate to communication needs arising from the project task. The findings show that the students interacted in the space in a variety of ways, using it as a place to learn from one another, work on their project, socialize and playfully interact. We can therefore see this as a kind of hybrid online space: somewhere between a formal educational space, where learning is the primary goal, and an informal online affinity space, where passionate interests and playful socializing dominate. In their interactions, students shuttle between different activities with out-of-class learning experiences embedded in a playful, social context. This observation is in line with other studies of social media use in educational contexts, which suggest that students learning in social media blend social interactions with interactions for learning. For instance, Liaw and English (2013) note that when their French and Taiwanese students made use of Facebook to communicate, this venue "…provided an environment for learner-centred socialization and valuable opportunities for target-language practice" (p. 174).

It is important to note that, as well as being playful and social, the online space also provided a context where students could work on their team projects and seek out opportunities to learn from peers. While the students in the group studied shared the same L1 linguistic background unlike students in online groups in telecollaborative partnerships, three out of four of them nevertheless chose the L2 (English or 'mainly English') for their CMC communication in a majority of messages. At times (e.g., Extract 9: Rafaela and Anne give feedback), there were signs of peers providing one another corrective feedback on their writing, in an attempt to generate texts (i.e., scripts) that would be suitable for formal educational purposes. The fact that such interactions are often embedded in other less formal and less standard interactions (e.g., Extract 10: Zhang, Rafaela and Anne mix it all up) shows that when students take control of learning in such spaces, they do it on their own terms, frequently making use of innovative language forms, while at the same time attempting to generate standard English texts for their classroom-based projects. Teachers who wish to see their students benefit from actively engaging in self-generated

online spaces will need to expect them to engage in highly innovative textual practices that challenge the norms and standards of traditional classrooms.

In their online interactions, our students mixed L1 and L2, with the conversations taking on a highly plurilingual character that nevertheless afforded frequent opportunities to practice the L2 with peers. Lam (2004) points to the empowering benefits immigrant youth to the USA have when they interact via social media with other L2 users. Her study shows that the Chinese participant made extensive use of translanguaging strategies in a multilayered fashion and developed the ability to engage with multiple digital interfaces, both verbal and visual. Lam (2004) states that "[t]he connectivity and cross-linked associations between different textual forms and online communities that are promoted by networked technologies have meant that reading and writing in these environments often involves making meaning across a variety of social, cultural, semiotic and information sources" (p. 380). Supporting this view of the affordances of CMC for developing students' plurilingual abilities, the present study highlights the ways that individuals interact with regard to their choice of language in the hybrid online space. Here, Rafaela and Anne, who self-rated their English proficiency relatively highly, played a role in creating language practice opportunities (for themselves and for other group members) both by selecting the L2 as a choice of language and by, at times, resisting code switches from L2 to L1. The mix of more and less confident students found in this project group likely promotes use of the L2, with less confident students sometimes 'stretching' or 'pushing' themselves to match language choices nominated by the more confident ones. For collaborative learning purposes, diverse groups (in terms of language ability) may lead to more potential learning opportunities.

It is important to note that this hybrid online space and related opportunities for autonomous learning and interaction arose in the context of a formal, designed and structured learning environment, informed by the pedagogical approach of project-based learning. As our definition of learner autonomy suggests (see above) students in our context needed to become aware of the links between their structured classroom learning and how to take control of their learning in their out-of-class learning spaces. Our study also tells us something about the collaborative nature of autonomous language learning and the importance of interdependence among autonomous language learners. Autonomy does not only mean independence as self-directed learning can involve plentiful interaction with others. The work on language learning in the digital wilds demonstrates the importance of interdependence by showing how autonomous learning opportunities involve sustained interactions among participants (e.g., Black, 2007; Thorne, 2008; Vazquez-Calvo et al., 2019).

In conclusion, we believe that our case study illustrates how the principles of integrating language learning with technology, as suggested by Benson (2011), Chik (2014) and Lai (2017), can be realized. While students worked on their collaborative digital video project there was a cross-over between in-class and out-of-class activities (location), the project was framed within a structure for students to follow, but also allowed them to gather information in the unstructured environment (formality), the students sometimes relied on in-class instruction from the tutor, and at other times learned by themselves (pedagogy), there was a combination of self

and other directed learning (locus of control), and the students were familiar with Facebook Messenger and had used it previously to interact with each other (trajectory). In addition to this, we can also see from the case study that the students' use of Facebook Messenger to interact with each other about their project resulted in interactions that were not only focused on knowledge sharing but also social in nature and always authentic (autonomy as language learning); that the students had opportunities to learn from each other in what must have been considered a safe learning environment (autonomy as a language learner); and they made use of their Facebook Messenger group to create multiple identities, some based on their work on the project, others due to their friendships, and were able to express themselves in socially responsible ways (autonomy as a person).

To judge by their extensive participation in self-generated social media platforms, our students had an engaging learning experience when taking part in this out-of-class digital language learning project. However, we strongly suggest that when practitioners wish to integrate out-of-class learning via CMC they consider the pedagogical structures that need to be in place so as to guide their students toward taking on more autonomy for their learning. A clear pedagogical approach to using CMC in and out of class will help students to see the relationships between: (1) a controlled structure, for example a clearly structured project-based learning experience with well-defined checkpoints on progress; (2) shared power, with teachers providing learners with opportunities to direct their own learning; and (3) developed agency that flows from this balance as a result. Such an approach is likely to foster an authentic selection of CMC tools and lead to highly authentic interactions in the CMC context, allowing learners to make use of CMC environments for learning, working and playing online.

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# Exploring Self-Regulated Learning Through Flipped Instruction with Digital Technologies: An Intermediate Spanish Course


**Lina Lee**

**Abstract** The chapter reports on a study that explored the affordances and challenges of the flipped classroom model for self-regulated learning, involving the implementation of a four-skill integration approach and the use of various digital tools. Twenty-two intermediate Spanish language students from a large public university in the Northeast of the United States participated in the study over the course of one semester. Students carried out a variety of homework assignments, including interviews with native speakers using self-access learning modules in Canvas to prepare them for in-class activities. Data from post-surveys, reflective essays and focus-group interviews along with the student coursework were collected and analyzed. The findings revealed that most students demonstrated the capacity to take charge of their own learning using prior knowledge and self-regulation skills to learn course content independently prior to class. In addition, they showed a positive attitude toward the flipped model because it gave them agency over their learning and engaged them in interaction with their peers and the instructor. The study suggests that well-designed tasks are vital, and that instructor scaffolding is needed to guide students to learn autonomously. The study contributes a new model of flipped instruction that facilitated the development of intermediate language students' interpretive, interpersonal and presentational skills in a meaningful way to promote autonomous learning.

**Keywords** Flipped instruction · Learner autonomy · Self-regulated learning · Task design · Web 2.0 tools · Teacher scaffolding

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## 1 Introduction

Learner autonomy is widely recognized as a key element of language learning and has received a great deal of attention from L2 practitioners and researchers over the years (for an overview see Little et al., 2017). Different instructional approaches and strategies (e.g., student-centered approach, self-access learning) have been used to promote autonomous learning in foreign language education (e.g., Benson, 2011; Hamilton, 2013). According to Holec (1981), autonomy refers to "the ability to take charge of one's own learning" (p. 3). Autonomous learners are capable of working independently and in collaboration with others. In the field of computer-assisted language learning (CALL), efforts have been made to understand how autonomous learning can be best promoted to support L2 development (e.g., Cappellini et al., 2017; Reinders & White, 2016; Schwienhorst, 2008). Along with accessibility and flexibility, major advantages of CALL include individualized instruction, increased collaboration, and autonomous learning among others (e.g., Lai, 2017; Lee, 2016; Rosell-Aguilar, 2018; Smith & Craig, 2013). Given limited face-to-face contact hours, large class size, and the lack of opportunities to use L2 beyond the classroom, flipped learning as a blended approach has gained popularity in L2 instruction to enhance learner performance (e.g., Alhamami & Khan, 2019; Lee & Wallace, 2018; Wang & Qi, 2018). In flipped classrooms, students first learn instructional content using Internet-based materials and resources outside of class, and then apply their learning by engaging in interactive classroom activities (Bergmann & Sams, 2012). Flipped learning follows a learner-centered approach that involves students in active knowledge construction, as opposed to passively receiving information from the instructor (Hung, 2015). Students, however, need to use self-regulation skills and strategies to learn content effectively in order to achieve a high level of performance (Talbert, 2017).

L2 researchers have examined the effect of using technology to flip the learning process (e.g., Lee, 2017; Sadler & Dooly, 2016; Stockwell, 2010). Most studies have been conducted by comparing the flipped classroom approach to traditional instruction in STEM education (e.g., Chen, 2016; Goodwin & Miller, 2013; Lai & Hwang, 2016), and English as a second language (ESL) and English as a foreign language (EFL) learning contexts (e.g., Hsieh et al., 2017; Hung, 2017; Sung, 2015). Positive results have been reported in the literature, such as improved performance, better preparation for in-class activities, increased autonomy and intrinsic motivation (e.g., Hung, 2015; Yang et al., 2018). Major challenges of implementing flipped classrooms have also been identified as follows: intensive workload, learners' readiness and technical problems (Hao, 2016; Herreid & Schiller, 2013; Wang, 2016). As the literature review will illustrate, research into flipped language learning has produced mixed and inconclusive findings. It remains unclear how the flipped learning approach, mediated by digital technologies, increases students' capacity to engage in self-regulated learning. Thus, this study attempts to bring new insights into how a flipped language classroom affords students the opportunity to develop their communicative language skills in a self-directed manner. To this effect, a

technology-enhanced flipped learning model was integrated into an intermediate Spanish class to foster student ability and motivation to learn independently and collaboratively. In particular, task types, digital tools, peer interaction and teacher scaffolding were examined to address the affordances and challenges of flipped instruction for autonomous learning.

In the following sections, I will give a review of literature on learner autonomy and self-regulated learning in technology-enhanced flipped classrooms followed by a detailed description of the methodology of the study. In the methodology section, I will describe the context of the study, course design and implementation along with the various digital tools used. Next, I will explain the data collection and analysis procedure, and report and discuss major findings. Finally, I will conclude the chapter by foregrounding important pedagogical implications and some directions for future research.

## 2 Review of the Literature

### *2.1 Conceptual Framework: Learner Autonomy, Self-Regulated Learning*

The concept of learner autonomy has gained momentum and has become a 'buzz' word in language learning (Little, 2007). Different concepts are associated with learner autonomy, such as self-directed learning, learner independence and self-regulation. The literature suggests that both autonomy and self-regulation share some common key features, such as control by the self, self-monitoring, metacognition and motivation (e.g., Murray, 2014). According to Dörnyei (2005), autonomy is closely related to self-regulation defined as "the degree to which individuals are active participants in their own learning" (p. 191). During the learning process, "learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features in the environment" (Pintrich, 2000, p. 453). Thus, self-regulated learners manifest distinctive characteristics, and are more inclined to set reasonable goals, take responsibility of their learning, maintain motivation, and use cognitive and metacognitive skills to carry out learning tasks (Zimmerman & Schunk, 2011).

Models promoting self-regulated learning exist and each emphasizes different aspects of autonomous learning. For example, similar to Zimmerman's (1998) three cyclical stages of self-regulation, Pintrich (2000) proposed a four-phase model based on a socio-cognitive perspective of learning: (1) cognition (setting and modifying goals), (2) motivation (reasons for doing homework; self-efficacy), (3) behavior (time and effort for task completion) and (4) context (self-reflection and self-evaluation). These phases are not necessarily structured in a linear way and can occur simultaneously. Learners may or may not go through all four-phase of

self-regulation during task engagement (Schunk, 2005). Murray (2014), however, argues that there seems to be a focus placed on the individual learner, such as characteristics, knowledge and skills without taking into account social dimension of self-regulated learning. The social dimension of self-regulated learning aligns with Vygotsky's (1978) sociocultural perspective, which underscores the important role of social interaction in allowing learners to collaborate and assist each other or receive scaffolding from experts (e.g., advanced learner, teacher) in performing a shared task. Collaborative interaction results in the emergence of a zone of proximal development (ZPD) – the distance between what learners can achieve by themselves and what they can achieve with assistance from others (see Lee, 2008 for more detail). As explained by Kohonen (2010), "[t]he development in the zone thus proceeds from other-regulation to self-regulation, towards increased autonomy" (p. 6). In other words, independence is developed from the stage of other-regulation (assistance from others) to self-regulation (acting for oneself) involving a shift of control from expert to learner (Hadwin & Oshige, 2011; Little, 2007).

In sum, self-regulated learning manifests itself as a multidimensional process that goes beyond cognitive, metacognitive, motivational and behavioral aspects. Both underlying individual (personal capacity, knowledge, skills) and social (interaction, collaboration with others) processes influence how students engage in autonomous learning.

## *2.2 Self-Regulated Learning in Technology-Enhanced Flipped Classrooms*

Technology-enhanced flipped classrooms speak to the student-centered learning theory in educational psychology (Bishop & Verleger, 2013) as well as Vygotsky's (1978) sociocultural theory. These theories underline the importance of being active in one's own learning process and of learning through interaction with others. Both approaches are put into practice in flipped learning where students are expected to work both independently and collaboratively with others during the learning process (Talbert, 2017; Yilmaz & Baydas, 2017). Technology-mediated flipped instruction affords students the opportunity to learn at their own pace due to the uninterrupted availability and accessibility of online materials and resources. Learners can decide when, where and how much to learn without time and space limitations. Moreover, the global increase in social media empowers participants to take an active role in collaborating with each other outside the classroom. However, learners may not take advantage of flexible access to online learning materials and the opportunity for self-regulated learning due to poor time management and academic procrastination (Herreid & Schiller, 2013). To ensure success in flipped learning, teachers have

the responsibility to create a learning context conducive to autonomous learning allowing students to be fully involved and in charge of their learning.

A wide variety of digital technologies, including learning management systems (Canvas, Google Classroom), social media (Facebook, Twitter) and mobile messaging apps (WhatsApp, WeChat) have been used to facilitate flipped learning. For example, Hung (2015) implemented WebQuest in ESL flipped lessons to help students develop their language proficiency. As a result, English language learners achieved higher final grades in comparison to those who did not use flipped lessons. In a recent study by Yang et al. (2018), various types of technologies (e.g., Sakai, Camtasia, WeChat) were integrated into the flipped classroom to build students' language skills. The findings showed that students performed better in speaking than the students in the traditional class. Students also expressed satisfaction with flipped learning because it gave them more time to practice language skills. Another study by Shyr and Chen (2018) revealed that the technology-enhanced flipped learning system Flip2Learn provided students with scaffolded support for self-regulated learning. It especially enhanced the performance of the students with lower prior knowledge. Finally, Zainuddin and Perera (2019) in their most recent study using data collected from various sources (e.g., posttests, interviews) reported that the flipped classroom promoted better peer interaction and self-regulated learning skills, as well as an enhancement of students' intrinsic motivation.

However, other studies revealed that the flipped instruction did not appear to promote learner autonomy. For example, Lai and Hwang (2016) concluded that the flipped approach did not seem to have a significant impact on the learning because students exhibited a lack of ability to regulate their own learning outside the classroom. Likewise, Chen, Wang, and Chen (2014) found that students with less self-regulation skills had difficulty using flipped instruction and felt behind in-class activities because they failed to watch the required videos before class. Wang (2016) reported that students found doing homework stressful and time consuming. As a result, they reacted negatively to the flipped classroom. Therefore, to help learners adapt to the flipped learning model, the instructor should train students to use self-regulation skills and strategies, and provide them with out-of-class motivational support (Lai & Hwang, 2016; Sun et al., 2017).

Although studies on self-regulated learning in technology-enhanced flipped instruction are emerging, they have mostly focused on comparing the flipped classroom to a traditional setting. An alternative approach is to explore how the use of flipped instruction combined with appropriate technology provides opportunities for students to develop their language skills through individual and social processes of self-regulated learning. Therefore, the central purpose of this study was to investigate how the intermediate Spanish students engaged in autonomous learning using Lee's (2016) four-skill integrated approach in conjunction with various types of digital technology, including synchronous (e.g., Zoom) and asynchronous (e.g., Blogger) computer-mediated communication (CMC) tools.

### 2.3 Research Questions

The research questions guiding the study were three-fold:

- How do students view the technology-enhanced flipped instruction in relation to their autonomy as learners?
- What factors affecting how students regulate their own learning have emerged from the use of flipped instruction?
- To what extent can peer interaction and teacher scaffolding support students to learn individually and collaboratively through flipped learning?

## 3 Methodology

### 3.1 Context of the Study

The study was set up using one section of the Intermediate Spanish II course at a medium-sized public university in the Northeast of the United States. Due to the limited class time (3 h per week) and the lack of exposure to authentic language use outside the classroom, the course was re-designed on Canvas[1] to provide students with self-access learning materials that allowed them to learn on their own prior to class. Class time was devoted to interactive activities, such as discussions, group work or student-led presentations. The course aimed to move language learning from passive knowledge absorption to active language production. Different modules using a variety of activities regarding real-life situations and cultural topics were created in Canvas (see "Course Design and Structure" section for details). It was hoped that the learner-centered approach would engage students actively in the learning process. It was also hoped that the self-access learning modules hosted on Canvas would motivate students in carrying out learning activities independently and in collaboration with their peers.

### 3.2 Participants

A total of 22 undergraduate students from various academic majors with an age range from 19–21 participated in the study (Table 1). They enrolled in one section of a second semester intermediate Spanish course (Intermediate II) over a 14-week period.

[1] Canvas is an open source learning management system (LMS) adopted by the researcher's institution. LMS is an interactive platform for managing enrollments, sharing documents, submitting assignments, and assigning grades in one easy place.

**Table 1** Demographic information of participants

| Variables | N = 22 (100%) |
|---|---|
| **Age** | 19–21 (100%) |
| **Gender** | |
| Male | 5 (23%) |
| Female | 17 (77%) |
| **Class Standing** | |
| Freshmen | 14 (64%) |
| Sophomores | 3 (14%) |
| Juniors | 3 (14%) |
| Seniors | 2 (8%) |
| **Academic Field** | |
| Spanish majors | 2 (8%) |
| Spanish minors | 16 (74%) |
| Other majors (English, History, Communication) | 3 (14%) |
| Non-degree | 1 (4%) |

Three students from other majors enrolled in the course in order to fulfill the institutional language requirement[2]. The majority of participants (n = 19) had studied several years of Spanish in high school and had taken the first semester of intermediate Spanish (Intermediate I) before enrolling in Intermediate Spanish II. They were able to carry out short and simple conversations about familiar and everyday topics using previously acquired vocabulary and grammatical structures. Since most students (n = 16) intended to pursue a minor in Spanish and were interested in becoming fluent in Spanish, they were considered motivated learners. In terms of computer knowledge and skills, the majority were comfortable with digital technology, including social media. The students were familiar with Canvas used at the researcher's institution.

## *3.3 Course Design and Structure*

The activities were informed by Lee's (2016) four-skill integrated approach for the development of the three modes of communication: (1) interpretive, (2) interpersonal and (3) presentational. Table 2 illustrates how the four language skills were integrated into learning activities in conjunction with certain digital tools to engage students in the learning process and develop their language skills (Table 2).

For example, students listened and read authentic materials (interpretive skills), and then wrote blog entries (200–250 words per entry) to reflect on the content. To

[2] It should be noted that students at the college of liberal and arts at the researcher's institution are required to complete the Intermediate I or II to fulfill the foreign language requirement.

**Table 2** Four-skill integrated learning activities and digital tools

| Modules/ topics | Learning activities | Focus and skills | Digital tools |
|---|---|---|---|
| To listen: Radio Teatro (A murder mystery) | Listen to Episode #7 "Dos cabezas sirven más que una" about the conversation between Juan Carlos and the hotel bartender. Complete the worksheet and post your comments and questions in your blog. | Narration in the past; interpretive and presentational skills (writing) | *Blogger* |
| To read: Lotería de Navidad (Christmas Lottery) | Using the links posted in Canvas, read one of the articles about "El Gordo" – Spanish Christmas lottery. Make a brief recording to tell us how you usually spend your Christmas holiday, and then using the guided questions to share your observations about Spanish Christmas lottery. | Culture about the Christmas celebration in Spain; interpretive and presentational skills (speaking) | *SpeakPipe/ Vocaroo* |
| To watch: Curanderos y Parteras (Healers and Midwives) | To learn about traditional medical practices in Mexico, watch one of YouTube videos regarding the 'curanderos' (healers) or 'parteras' (midwives) posted in Canvas. Carry out a conversation with your partner to talk about healthy eating, and then share your thoughts about the video you watched at the end of your recording. | Mexican traditional culture; indigenous practices; local healers; interpretive and interpersonal skills | *Google Hangouts/ Zoom* |

develop their oral proficiency, they made brief recordings (1–2 min per recording) using real-life situations such as my last summer (presentational skills). They uploaded the recorded audio files to their blogs to share them with their peers. Finally, they commented on each other's written and oral work (interpersonal skills).

As displayed in Fig. 1, different modules, such as *A escuchar* (to listen), *A escribir* (to write) and *A ver* (to view) were created in Canvas.

Each module aimed to develop one of the three modes of communication. For example, the module *A leer* (to read) (see Fig. 2) allowed students to develop interpretive skills by reading a variety of texts.

Since students had the opportunity to learn lesson content before class, teacher presentations on associated vocabulary and grammar were not needed. Instead, class time was used for students to participate in-class activities and ask questions about homework. Table 3 shows how the flipped classroom model was used for pre-, in- and post-class activities.

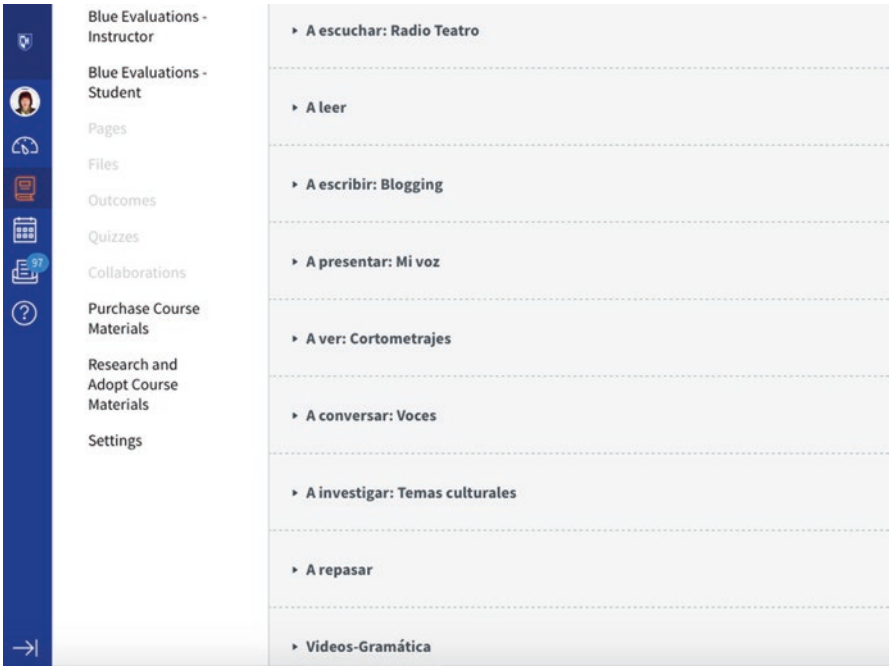


**Fig. 1** Screenshot of learning modules


**Fig. 2** Screenshot of Reading Assignments

**Table 3** Flipped learning approach: pre-, in- and post-class activities

| Pre-class activities | In-class activities | After-class activities |
|---|---|---|
| Watching video clips; PowerPoint presentations | Taking quizzes; reviewing vocabulary and grammar | Making revisions of written homework |
| Taking notes; completing online exercises and/or worksheets | Asking and answering homework questions | Re-watching instructional videos and presentations when necessary |
| Writing blog entries; making oral recordings | Participating in small group activities and class discussions | Completing post-task activities |
| Sharing and commenting in Blogger | Giving oral presentations | Writing self-reflective essays |

## 4 Data Collection and Analysis

Data from multiple sources were collected to address the three research questions: (1) post-intervention surveys, (2) self-reflective blogs, (3) online learning tasks (e.g., blogs, oral recordings, peer interaction) and (4) focus-group interviews. The instructor obtained permission from the students to use the data for the study.

### *4.1 Post Survey*

The post survey consisted of 10 statements (see Tables 4 and 5) that elicited responses addressing different aspects of autonomous language learning: (1) the effectiveness of the flipped instruction, (2) the practicality of tasks and tools, (3) the usefulness of peer feedback and teacher scaffolding. The survey was completed by 85% of the students (n = 19) in SurveyMonkey and used a 5-point Likert scale ranging from Strongly Disagree to Strongly Agree. Students indicated their level of satisfaction by ranking the questions from 1 to 5 (5 being the highest score). Statements 1–6 were used to answer the first and second research question concerning learners' viewpoints of using the flipped model, task design and digital tools for self-regulated learning, whereas statements 7–10 were utilized to answer the third research question with regard to the impact of peer interaction and teacher scaffolding on learner autonomy.

### *4.2 Self-Reflective Blogs*

At the end of the course, students wrote a reflective blog as their final assignment with their observations on the use of flipped learning tasks for the development of their language skills and cultural knowledge. All students (n = 22) wrote their reflective entries using the following items as guidance:

**Table 4** Students' reactions to the flipped classroom for self-regulated learning

| Statement of the post survey | Mean | SD |
|---|---|---|
| 1. I found the flipped classroom engaging and effective in developing my language skills. | 4.14 | 0.53 |
| 2. I was able to learn on my own by using teacher-produced and selected materials, including audio and video clips. | 4.06 | 0.63 |
| 3. Doing homework assignments before class prepared me for in-class activities. | 4.01 | 0.44 |
| 4. Topics and learning tasks were interesting and kept me motivated throughout the course. | 4.14 | 0.37 |
| 5. I benefited from using real-world tasks to make voice recordings and blog entries. | 4.39 | 0.55 |
| 6. I made good use of digital tools to complete online assignments before class. | 4.19 | 0.71 |

**Table 5** Peer interaction and instructor scaffolding for self-regulated learning

| | | |
|---|---|---|
| 7. Reading my peers' blogs and listening to their podcasts enabled me to interact and collaborate with my classmates in a meaningful way. | 3.34 | 0.35 |
| 8. Peer comments allowed me to reflect further about the chosen topics. | 3.16 | 0.49 |
| 9. The instructor provided sufficient guidance and support throughout the course. | 4.25 | 0.67 |
| 10. I found instructor feedback effective and beneficial. | 4.11 | 0.58 |

- Describe your overall experience of using the flipped instruction.
- In your view, what are the benefits and challenges of doing online homework prior to class?
- Comment on the learning modules and learning tasks for the development of the four communicative skills and cultural knowledge. Did you find topics and assignments appealing? Why or why not?
- Share your views about peer comments and teacher feedback. Did you find them useful and beneficial?
- Write any comments you would like to make about the flipped instruction.

## *4.3 Focus-Group Interviews*

At the end of the course, the instructor also conducted focus-group interviews to gather additional input from the students on the effectiveness of the flipped instruction model in relation to learner autonomy. Students were also asked to make suggestions for improvements. Each group consisted of 5–6 students. Each interview lasted approximately 30 min and was recorded for data analysis.

The data from reflective blogs and focus-group interviews were used to address all three research questions. Content analysis was applied to the reflective blogs and

focus-group interviews to identify factors that challenged students and afforded them the opportunity to engage in flipped learning. The blogs were read and analyzed using an open coding procedure to identify recurring themes (e.g., behavior, knowledge, skills, attitudes) that emerged in the entries. Responses on similar topics were grouped together and incorporated into the survey results to report the findings. Qualitative data from student-generated blog posts and voice recordings (see Table 2) provided additional evidence to illustrate and support the findings.

## 5 Results and Discussion

In the following section, I will present and discuss the findings in alignment with each research question. I will highlight significant findings along with students' blog and interview comments.

### *5.1 Research Question #1: Student Reactions to the Flipped Model for Self-Regulated Learning*

Table 4 reports student reactions to the use of flipped instruction and its effect on self-regulated learning. The high rating of Statement 1 (Mean = 4.14) indicates that overall, students found the technology-enhanced flipped learning effective for the development of their communicative language skills.

During the interview, the majority of the students expressed satisfaction with the flipped learning model. They repeatedly commented on how much they liked the way the class was set up allowing them to learn flipped lessons independently (Statement 2). The following comments exemplify students' sentiments:

> The whole class was well organized. I enjoyed using learning modules in Canvas. All assignments were posted ahead of time, which gave me more control of my own learning. I was able to make my own decisions on when and how to complete my homework before class.
>
> I liked the idea of spending time learning and reviewing vocabulary and grammar outside of class. Tutorial videos along with worksheets were very helpful and instructions were easy to follow. Also class time was used efficiently for group discussions and speaking practice.

These comments show that the students found online modules useful because of easy access to course content for self-paced learning. They managed their time wisely and made the best use of online materials to complete the assigned homework. A similar finding was reported in the study of Hung (2015) indicating that students were in favor of flipped learning through watching videos, listening to podcasts and reading materials selected by the instructor prior to class. 80% of the students in this study found flipped lessons effective and engaging (Statement 3). One student shared the following observation during the interview:

> I must admit that it was a lot of work, but I enjoyed most of the online assignments. They allowed me to first learn about the new material that was subsequently explored in the classroom. Grammar tutorials were very helpful for me to review advanced structures, such as the subjunctive and si-clauses. I felt better prepared and more comfortable asking questions and contributing to discussions in class.

This is in line with previous finding stating that students benefited from using flipped instruction, as they were able to do pre-class work and come to class ready to participate (Milman, 2012).

A few students complained about the amount of the work due before each class though. One student expressed her disapproval of using flipped instruction during the interview:

> I was overwhelmed by the amount of online assignments due before class. I'm a slow learner and I ended up spending a lot of time listening to episodes and watching short films because I also had trouble understanding part of the homework. I don't think it's a good idea to ask students to do homework before the lesson is taught.

Some students (n = 4) preferred the traditional teacher-led approach. As such, they did not take advantage of the technology-enhanced flipped learning modules created by the instructor. One student described his frustrating experience of flipped learning in the reflective blog as follows:

> Doing homework before the lesson is taught doesn't work for me. I don't seem to be able to push myself to learn on my own. I think the teacher should explain the new material in class first. I must admit that I didn't put much time into weekly homework, as this class wasn't my priority.

His assessment indicates a lack of the ability to self-regulate compounded by the fact that he was not very committed to the class in the first place. The self-directed nature of flipped instruction presents challenges for students who are not ready for an autonomous approach, which corroborates findings by Hao (2016). Furthermore, it is possible that learning styles and preferences may influence readiness for student-centered learning as some learners are used to and therefore expect a teacher-led instruction (Lee, 2014; Yang et al., 2018; Wang, 2016). Hence, there seems to be a need for learner preparation for the flipped classroom through training in self-directed learning.

## *5.2 Research Question #2: Factors Affecting Students' Self-Regulated Learning*

The study shows that topics, learning tasks and digital tools were main factors that influenced students' self-management and motivation to regulate their own learning. When asked to give their views of topics and tasks, the majority of students (83%) found them appealing and stimulating (Statement 4). A number of students agreed that the use of four-skill-integrated approach along with authentic materials was effective for developing their communicative language skills and motivated

them to engage in learning activities. One student explained how she gained listening comprehension skills by using podcast episodes and watching short films:

> I enjoyed listening to podcast episodes about the murder mystery that caught my attention and kept my curiosity. Although I wasn't able to understand everything at the beginning, after listening to a few episodes, I got used to hearing the native-speaker accents from Chile and Argentina. I was able to follow the storyline. The story was so interesting that it motivated me to work harder to improve my listening comprehension. Listening to authentic recordings is a great way to boost your listening skills. I highly recommend it to any language student.

This comment demonstrates that listening to native-speaker podcasts exposed students to authentic input, including linguistic and cultural sources in a natural manner, which has been found to be crucial for expanding L2 learners' listening comprehension (Rosell-Aguilar, 2015). Importantly, authentic learning materials (e.g., podcasts, short films) affected the learners' motivation positively and thus their willingness to make an effort to improve their language skills as the above comment shows. In this way, self-motivation supports affective autonomous learning addressed by other researchers (e.g., Yang et al., 2018).

As to the development of presentational skills, nearly 90% of the students agreed that real-world tasks for blog writing and voice recording assignments were relevant and compelling (Statement 5). During the interview, students maintained that learning activities that related to their personal interests and experiences enabled them to use the target language to express ideas in a meaningful way. For instance, one student wrote a blog entry about one of her fondest childhood memories using the imperfect, whereas another student used the present and the subjunctive to express her view of illegal immigrants in the U.S. in his blog:

> *Tengo muchos buenos recuerdos de mi niñez. Cuando era niña, me gustaba *ir en bici con mi mejor amiga, Jessie a *la parque cerca de mi casa. Había un río al lado de *la parque. Jugábamos con *los otros niños y a veces nadábamos en el río. Era muy divertido…* [* = linguistic error]
>
> (I have many good memories about my childhood. When I was a child, I liked to ride a bicycle with my best friend, Jessie to the park near my house. There was a river by the park. We used to play with other kids and sometimes we swam in the river. It was a lot of fun…)

> *La inmigración ilegal es *una problema muy *seria en los Estados Unidos. Muchos indocumentados son mexicanos y ellos intentan *a cruzar la frontera con la ayuda de coyote pero *hay peligroso y muchos mueren… En mi opinión, no creo que la construcción del muro de Trump sea una buena idea. Espero que podamos buscar *una otra solución para ayudar a los inmigrantes ilegales.*
>
> (The illegal immigration is a serious problem for the United States. Many undocumented are Mexican and they try to cross the border with the help of a human smuggler but it's dangerous and many die… In my opinion, I don't believe that the construction of the Trump wall is a good idea. I hope that we can find other solution to help illegal immigrants.)

These quotations show students' ability to manage and express their ideas using certain grammar points while practicing their communicative language skills. The comments gathered from the reflective blogs attest to the students' approval of the use of real-life topics and to their use of self-regulated strategies to carry out writing tasks. One student wrote:

> Topics allowed me to recycle vocabulary and verb tenses. I learned how to use the imperfect to describe my childhood and the subjunctive to give advice. Before writing, I organized my thoughts and prepared an outline. I usually read each entry a couple of times before publishing it. Writing in-class compositions became easier for me after using weekly blogs.

The finding suggests that effective tasks foster learners' ability to plan, organize and monitor their own writing as a key self-regulated construct for the success of flipped learning (Hwang et al., 2015).

With respect to digital tools, more than 80% of the students were comfortable with both synchronous (video conferencing) and asynchronous (voice recording) application that supported their learning and helped them develop L2 skills (Statement 6). Most students (n = 17) found real-time interaction extremely beneficial to build their interpersonal communication skills. One student expressed her view of using video chats in this way:

> I've never used Zoom before. I think it's a great way to practice speaking. It's easy to set up a video conferencing and invite people to join. I absolutely loved the fact that I could interact with my classmates in a real time and save recorded video chats for feedback and comments. I liked Zoom better because of screen sharing and high sound quality. Also I think using ID numbers is an excellent way to organize group meetings.

In addition, students acknowledged that SpeakPipe was a useful tool for them to practice speaking skills without having to create an account, as this student observes:

> I chose SpeakPipe over Vocaroo because of its user-friendly interface and good voice quality. I didn't have to create an account and was able to use my smartphone to record voice messages. It allowed me to practice my pronunciation and speaking several times before publishing them online. I know my Spanish has improved as a result of using SpeakPipe. I can speak Spanish with less hesitation now.

A closer look at the data reveals that more than 50% of the students (n = 13) chose SpeakPipe over Vocaroo for voice recordings and 77% of the students (n = 17) preferred Zoom to Google Hangouts for video chats. This suggests that having options for digital tools helps students develop autonomy because they are responsible for making the decision as to what tool to use and how to use it to do pre-class assignments. This echoes finding from previous studies (Lee, 2017) reporting that giving students the freedom to choose digital tools seems to have kept the participants motivated and engaged. Various formats (e.g., text, audio, video) also helped students choose in accordance their own needs and preferences.

### 5.3 Research Question #3: Impact of Peer Interaction and Instructor Scaffolding on Learner Autonomy

As shown in Table 5, peer comments and instructor scaffolding gave students a context and motivation to understand and learn course content through social engagement.

More than 50% of the students enjoyed the interaction with their peers by commenting on each other's blog posts and voice recordings (Statement 7). Students exchanged and shared their thoughts with their peers, and valued the feedback received from them. One student said:

> I really liked how making blog comments allowed me to share and exchange ideas with my classmates. Some of the comments made me think more about the topic. Also I think interacting with peers online helped us establish interpersonal skills that facilitated face-to-face discussions in class.

Furthermore, this finding points to the important role of real-time social interaction through which students co-constructed knowledge with native speakers via *Zoom* as illustrated in the following exchange from one of the video recording assignments:

> Student: *Hola! Soy Jim. ¿Cómo está?* (Hi! I'm Jim. How are you?)
> Native Speaker (NS): *Pura vida. Me llamo Carlos. Soy de Costa Rica.*
> (Hi! My name is Carlos. I'm from Costa Rica.)
> Student: *Quiero estudiar en Costa Rica. Me gustaría hacer*lo unas preguntas sobre su país. ¿Qué tiempo hace?* [*linguistic error]
> (I want to study in Costa Rica. I would like to ask your some questions about your country. What is the weather like?)
> NS: *Tenemos dos temporadas; la época con más lluvia y menos lluvia pero no hace mucho frío como aquí. ¿En qué mes va a estar?*
> (We have two seasons; the period with more rain and less rain but it is not very cold like here. In what month are you going to be there?)
> Student: **La programa empieza en mayo y termina en julio. Pasaré dos meses en Costa Rica.*
> (The program starts in May and finishes in July. I'll spend two months in Costa Rica.)
> NS: *Es la temporada lluviosa. Por lo general, llueve por la tarde o noche. Llévese un paraguas por si acaso que lo necesita. ¿Va a estudiar allí?*
> (It's the rainy session. In general, it rains in the afternoon o at night. Bring an umbrella with you just in case you need it. Are you going to study there?)
> Student: *Tomaré dos clases en el Instituto San Joaquín de Flores y viviré con una familia. También viajaré *para *otros partes de Costa Rica.*
> (I'll take two classes at the Institute San Joaquín de Flores and I'll live with a family. I'll also travel to other parts of Costa Rica.)
> NS: *¡Qué dicha! Tendrá una maravillosa experiencia de vivir con una familia tica.*
> (How lucky! You will have a wonderful experience living with a Costa Rican family.)
> Student: *¿dicha? ¿tica? No entiendo las palabras. Estoy muy *emocional *para el viaje.*
> (dicha? tica? I don't understand the words. I'm very excited about the trip.)
> NS: *'tica' viene de 'tico'. Los ticos se refieren a los costarricenses …*
> ('tica' comes from 'tico' Los ticos refer to people from Costa Rica.)
> Student*: Ay, son palabras ticas.* (Ah, they are Costa Rican words.)

Despite the fact that the student made linguistic errors, the exchange allowed her to use linguistic and pragmatic skills to carry out the collaborative task. She demonstrated her sociolinguistic competence by addressing the NS appropriately using

formal *usted* (you) to address someone whom she had not previously met. Significantly, the authentic exchange mediated by Zoom helped the student learn colloquial expressions and take actively part in the social interaction. This testifies to the relevance of the social dimension of self-regulated learning advocated by Murray (2014).

Without the instructor's presence in blog discussions though, some students failed to read and to comment on their peers' blogs in a timely fashion. During the interview, they admitted that they procrastinated when doing homework and felt responsible for not giving prompt feedback to their classmates. Consequently, nearly 40% of the students did not find peer comments effective to foster self-reflection (Statement 8). Students remarked that while they enjoyed social engagement and collaboration with their peers via blogging, they did not find the comments they received informative. They pointed out that some of the comments were somewhat repetitious. Other students expressed their frustration because they felt rushed to read and respond to blog commentaries. One student explained: "I did not receive much feedback and a few comments I received were sent right before the due date. I didn't find feedback useful." This indicates that students encountered challenges in terms of providing feedback in a timely manner, which is probably due to their lack of ability to initiate and engage in the learning situation (Huang & Benson, 2013). As argued by Lee (2018), the effectiveness of peer feedback depends on how much initiative the learner takes during task execution, such as regularly checking and making peer comments without having to rely on the instructor's reminders. It is possible that some students may need more direction from the instructor as to how to work productively with others outside the classroom. In addition, policies and procedures for online participation should be clearly established to ensure active and collaborative interaction in computer-mediated learning environments, such as flipped classrooms.

In terms of linguistic scaffolding from the instructor, a brief review of the results shows that 85% of the students applauded the active role of the instructor in guiding and assisting them through the learning process (Statement 9). They praised the comprehensive feedback received from the instructor. One linguistically weak student wrote the following in her reflective blog:

> The instructor was always ready to help and answer questions. She provided prompt feedback with clear explanations, which helped me better understand the learning materials. Her linguistic feedback also pushed me to pay attention to my pronunciation and grammar errors.

This corroborates the results of Lee's (2008) CMC study showing that expert scaffolding fosters the understanding of linguistic features by activating learners' ZPD. Thus, teacher assistance plays an essential role in guiding and engaging students in carrying out independent and collaborative online tasks.

More than 80% of the students agreed that linguistic scaffolding provided by the instructor was beneficial (Statement 10). As a result, they gained a better understanding of certain grammar points and vocabulary, such as the use of the subjunctive and bespoke lexical items (e.g., *pedir* (to ask for something) vs. *preguntar* (to

ask a question); darse cuenta (to realize) vs. realizar (to carry out)). The following excerpt illustrates how much the student valued the instructor's corrective feedback:

> I appreciate the feedback from the instructor. In most cases, I was able to make error correction on my blog. I found the explanations precise and easily understandable. I had trouble using several verbs correctly, such as dejar vs. salir (to leave) and moverse vs. mudarse (to move). Making error corrections helped me improve my writing for in-class compositions. I also gained confidence in my writing abilities.

This is consistent with findings from Lee's (2016) CMC study showing that effective expert scaffolding with regard to focus on form enables students to build form-meaning connections by paying attention to linguistic forms.

### *5.4 Limitations and Suggestions for Future Studies*

The findings of this study have shed light on our understanding of the effect of using the technology-enhanced flipped learning model on L2 communicative competence development and self-regulated learning. However, course design and content chosen by one single instructor cannot be representative of the multitude of online flipped learning settings available.

The study involved only learners in one intermediate course that was mainly composed of Spanish majors and minors. Further investigations should include language learners from a variety of levels to determine whether their language proficiency influences how they individually and collaboratively work in the technology-enhanced flipped learning context. The study also examined solely learner perspectives of flipped instruction. It would be worthwhile to explore teachers' responses to the use of flipped practices for L2 instruction in relation to autonomous learning. Furthermore, a future study focusing on the comparison of pre- and post-survey results would contribute to a clearer understanding of the process of flipped instruction and its effects on self-regulated learning. Finally, more detailed explorations of the quality and nature of instructor scaffolding, including its impact on language accuracy would further the understanding of the role of teacher feedback to support L2 flipped instruction.

## 6 Pedagogical Implications and Conclusion

Despite the challenges reported, the technology-enhanced flipped learning model showed how students used various types of learning activities mediated by digital tools in ways that are pedagogically effective. The findings are noteworthy and point to important implications for flipped instruction to promote self-regulated learning. Firstly, tasks that linguistically and cognitively require learners in different ways and to different degrees to self-regulate their learning are pivotal for implementing successful flipped classrooms. Secondly, social interaction through teacher

intervention is essential for students to develop L2 knowledge and to gain independence through advancing their ZPD proposed by Vygotsky (1978) and should be an integral part of flipped instruction. Linguistic scaffolding provided by the instructor is indispensable in order to ensure language accuracy and avoid fossilization. Thirdly, to promote deeper reflection, the instructor needs to guide students through the peer commenting process and offer them strategies for reflective engagement to prompt in-depth and thoughtful responses. Finally, the technology-enhanced flipped instruction offers students a personal and social outlet where they can use their self-regulation skills and strategies to work individually and collaboratively with others to build their language competence.

While a one-semester study of the implementation of flipped learning in an intermediate language course is limited in scope and depth, the designed course implementing the technology-enhanced flipped instruction was successful from the student perspective and provided valuable insight into how learning tasks mediated by digital tools fostered autonomous learning in a meaningful way. Students showed favorable attitudes toward the flipped approach, as opposed to the sole use of the traditional teacher-led classroom. Most of the students acknowledged that they would not have gained such in-deep linguistic knowledge and cultural understanding without the component of out-of-class online learning. The study also suggests that it is important to include both synchronous and asynchronous CMC tools to the flipped classroom to allow students to learn individually (blog writing, voice recording) and interact collaboratively with their peers (video chat). In conclusion, carefully designed tasks, appropriate digital tools and teacher intervention are essential to promote individual and social processes of self-regulated learning. With ever-growing mobile technology, L2 educators should make every effort to integrate authentic interaction options into their classroom curriculum to create social presence and foster a sense of community among students. Importantly, teachers need to be willing to invest time and energy to create and develop flipped learning materials that meet individual learner needs and styles.

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# Supporting Autonomy in an Exam-Based Context: Results from a Hong Kong-U.S. Telecollaboration


**Carolin Fuchs**

**Abstract** This study contributes to the growing body of research on telecollaboration in Asia-Pacific contexts. Grounded in experiential learning, the goal of this Hong Kong – U.S. project is to promote autonomy in undergraduate education in the Hong Kong context. Participants include 55 undergraduate English majors at a public research university in Hong Kong who engage via social media with 19 undergraduate professional writing students at a private research institution in the U.S. The author explores Hong Kong learners' autonomy as reflected in their prior experiences and expectations, task engagement in online interactions, and their reflections on motivation regarding team collaboration and satisfaction with final project outcomes. Data triangulation entails a pre-questionnaire, Facebook posts, task reflections, and a post-questionnaire. Findings indicate that most students had prior experience with Facebook which resulted in positive feedback; yet, some students also saw the technical limitations when communicating within a larger group. Moreover, experience regarding teamwork was mixed – as were results from the Hong Kong and Hong Kong-U.S. collaborations. The author discusses motivational reasons and if and how the telecollaboration aided Hong Kong learners' ability to reflect and structure their own learning in light of curricular assignment and assessment requirements.

**Keywords** Telecollaboration · Virtual exchange · Online · Social media · Experiential learning · Learner autonomy

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## 1 Introduction

Learner autonomy in the context of technology-mediated language learning has been on the research agenda for quite some time, as Reinders and White (2016) have noted in their recent review of 20 years of autonomy and technology in "Language Learning & Technology". Recently, a notable shift has occurred toward a focus on the social and interactional aspects afforded by digital media tools. For instance, the edited CALICO volume "Learner Autonomy and Web 2.0" (Cappellini et al., 2017) stresses the potential of video, text chat, or blogging on autonomy. Similarly, research on massive open online courses or MOOCs has established that "profound dialogue" among participants is needed to reduce the distance between participants in online environments (Shearer et al., 2014, p. 483).

In this study[1], autonomy is broadly defined as the ability to take charge of one's learning (Holec, 1981) and can include proactivity and self-reflection (Little, n.d.), as well as taking control (Benson, 2011), and initiative and responsibility not just for one's learning but also for one's actions toward others and the environment (van Lier, 1996, 2008). In addition, Littlewood (1999), in his exploration of autonomy in the East Asian context, has distinguished between pro-active autonomy (which entails individuality, self-direction, and the co-creation of direction setting) and reactive autonomy, which he defines as "the kind of autonomy which does not create its own directions but, once a direction has been initiated, enables learners to organize their resources autonomously in order to reach their goal" (p. 75). In order to do this effectively, learners need to display a wide array of metacognitive, cognitive, social, and affective strategies (e.g., Oxford, 1990). At the same time, instructors need to create learning environments that maximize such language learning strategies. As Rebecca Oxford (1990) has pointed out, "[l]earners need to be supported if we want them "to begin to *want* greater responsibility for their own learning". This is closely linked to participants setting their own goals or expectations for any given learning experience.

Because it is grounded in social and technology-mediated practice (Murray, 2014) and experiential in nature (e.g., Kolb, 1984), telecollaboration has the potential to foster learner autonomy. Telecollaborative language study in its traditional definition started with a focus on the development of students' foreign language and intercultural competence by connecting classes with one another (Belz, 2003). But the past few years have seen an emergence of different models and constellations ranging from multi-site to interdisciplinary exchanges (for a state-of-the-art overview, see O'Dowd, 2018). What these projects all share is a multi-layered set of interactional complexities that requires a certain degree of self-direction from learners to succeed. By the same token, participating in telecollaboration can aid learners in becoming more self-directed with their learning.

[1] This project was part of a larger study and funded by a Teaching Development Grant from City University of Hong Kong. An earlier version of this paper was presented at AAAL 2018 in Chicago (please see also Fuchs, 2020, published under a CC BY license).

While different from collaboration, where participants work together to achieve a mutual goal, research on cooperative learning, where participants work together to help each other achieve their own goals, has found a positive effect on student achievement, higher-order thinking, attitudes, motivation, self-esteem, and interpersonal skills; yet, learner variables such as attitude and motivation are dynamic, not static (Dooly, 2018; Waninge et al., 2014). While much has been written about the complexity of the term 'motivation,' Dörnyei (2001) draws on two dimensions, namely 'direction' and 'magnitude' or (intensity) to explain in more general terms why people decide to do something, how hard they do something, and how long they do something.

Moreover, small group size and dynamics can be decisive factors (see overview in Dörnyei, 1997), and autonomous learning within a group requires opportunities for critical self-reflection in relation to the learning and ongoing group reflection (Dooly & Sadler, 2013). As Park (2014) has argued, there is a need to reposition any inevitable miscommunication as learning resources that allow students' reflective practice to "talk about their talk" after the exchange is over (p. 199).

In addition to social interaction and learner variables (motivation, self-direction, self-reflection), external factors such as curricular and task alignment in telecollaboration can afford or constrain learner autonomy. As Lewis and O'Dowd (2016) have noted, in order for telecollaborations to be effective, there is a need to be recognized as integrated internationalization practices – not implemented in an add-on, disjointed way. Likewise, Little (2016) also stressed the necessary alignment of telecollaboration into the wider learning context (including activities and assessment). Such alignments become more critical in a context such as Hong Kong, which is typically referred to as an "examination culture" (Lee, 2008, p. 80). Nonetheless, as others have argued, contextual differences should be embraced, not avoided:

> It is very important to understand that these contextually-shaped tensions are not to be viewed as "problems" that need to be eradicated in order to facilitate smoothly functioning partnerships. There are a number of points to emphasize. First, structural differences frequently constitute precisely those rich points that we want our students to explore in telecollaboration (Belz & Müller-Hartmann, 2003, p. 84).

In the next section, the author discusses prior studies that have explored social interaction and learner variables (motivation, self-direction, self-reflection) against the backdrop of curricular contexts and task alignment.

## 2 Prior Research

Autonomy in the sense of self-directed and self-access learning beyond the classroom has already been researched in the Hong Kong context for some time now (e.g., Gardner & Miller, 1999; Lai, 2017). Carless (2002) was among the first to introduce assessment for learning and learning-oriented assessment to help learners identify their strengths and weaknesses, and to document and evaluate their learning process and progress. Others have argued that targeting learners' willingness and

required knowledge and skill set to engage in self-directed use of technology for language learning is key for (online) learner training to be effective (Lai et al., 2016). According to Lai et al. (2016), this means helping learners understand the pedagogical rationale for technology use, the matching of technology for achieving learning goals and processes, and the strategies involved. Hafner and Miller (2011; see also this volume) found that students in an "English for Sciences" undergraduate course in Hong Kong were invested when exploring the multimodal affordances of different technology tools (YouTube, Edublogs). The authors concluded that this was due to engaging them meaningfully in twenty-first century tasks that involved utilizing multimodal texts, media, meaningful online environments, and sharing videos on the Internet.

The importance of articulating expectations and meaningful engagement can become amplified in telecollaboration due to the multi-layered set of interactional complexities that requires a certain degree of self-direction from learners to succeed. Sadler and Dooly (2016) have emphasized in their lessons of 12 years of telecollaboration, "a very clear set of expectations" is crucial for the success of telecollaborative tasks (p. 407). This was demonstrated in a Spanish-U.S. telecollaboration for advanced and high-intermediate language learners in which Gimeno (2018) found three major expectations that her learners had. These included improving foreign language skills, experiencing real life interaction with native speakers of the target language, and meeting new people; most of which were confirmed by students' post-project questionnaire responses. Likewise, in the Antwerp Facebook project, Peeters and Ludwig (2017) found that active dialogue between tutors and students in a blended EFL course was important to develop learner autonomy. The EFL learners used both affective and social strategies in collaborating on the organization and implementation of learning processes and products, as well as on their reflections and modifications for future planning.

Since there has been increasing interest in terms of telecollaboration in the Asian context (see edited volume by Chun, 2014), the alignment of curricula and tasks takes on prominence in Eastern contexts, where assessments traditionally include tests and exams (e.g., Jiang, 2013) that are at odds with the nature of tasks in telecollaboration. In an exchange between German learners in Hong Kong and tutors of German as a Foreign Language in Germany, Chaudhuri (2011) identified that task and curriculum alignment between the contexts were critical elements for achieving the intended learning outcomes in the e-exchange. Another early telecollaboration study involving English as second language learners in Hong Kong and in the U.S. found that Hong Kong learners enjoyed the telecollaboration; yet, Hong Kong students questioned whether it helped them improve their exam-related skills such as grammar usage and discrete language functions (Greenfield, 2003).

Dooly (2011) has cautioned that carefully designed (telecollaborative) tasks or activities require "off- and online co-construction of knowledge" in order to not only provide opportunities for target language practice, but to also facilitate the integration of "language use as the means for shared knowledge-building, thus further enhancing purposeful communication" (p. 69). For instance, Abruquah et al. (2016) found that while students initially objected to the additional workload of telecollaboration, they "enjoyed the program, describing it as special and unique

because of the international teamwork, unconventional tasks and methods" (p.110). Similarly, in a four-way telecollaboration study involving students in Germany, Poland, the UK, and the U.S., Fuchs et al. (2012) found that moving student teachers through a specific task sequence helped them become more autonomous as indicated in their increased confidence in implementing new technology tools in their own classroom. A recent teletandem project between France and Australia that connected 16 pairs of students via Skype revealed that students exercised their autonomy through reflective collective bilingual learning blogs (Nogueira de Moraes Garcia et al., 2017). Nogueira de Moraes Garcia et al. (2017) found that learners' social interactions and relations were obvious in their negotiating the time or tasks of the exchange and compared the function of the tandem partner to that of a "travelling companion" (p. 83).

In addition to meaningful task engagement, the level of personal interaction can impact students' motivation in telecollaboration. For example, in a Taiwan--U.S. study, positive project outcomes were attributed partially to "Taiwanese participants' ability to interact with their U.S. partners on individual and personal bases" (Liaw & Bunn-Le Master, 2010, p. 37). Similarly, in a Japanese-Indonesian exchange, the authors found that Facebook discussions can facilitate greater language and intercultural awareness (Bray & Iswanti, 2013). Exchanging emails has shown to have an overall motivating impact on learning English for groups in Japan, Taiwan, and the UAE, although irregular correspondence from partners was considered demotivating (Bourques, 2006). In addition, a Japanese-Australian study found that the email threads of messages were often incoherent, and students did not always reply to requests for information posted by overseas counterparts (Tanaka-Ellis, 2011). Likewise, a recent study by Nicolaou and Sevilla-Pavón (2016) found that their participants' feelings toward the exchange presented fluctuations – either in a positive or negative direction – due to "low commitment and responsiveness levels" (p. 116) or due to communication breakdowns during the course of the exchange.

The present study aims to contribute to research focusing on motivational, self-directed, and self-reflective aspects of autonomy in telecollaboration. To this end, the author investigated Hong Kong students' participation in the telecollaboration as well as their perspectives and perceptions of the collaboration and joint products in light of their prior experiences and expectations. While learner autonomy is not easily measurable due to its developmental and multi-dimensional nature, it can manifest itself in indicators such as expectations, task engagement and self-reflection on motivation. The author explores the following questions:

- What are Hong Kong learners' prior experiences and expectations regarding telecollaboration?
- How do Hong Kong teams participate in and reflect on telecollaborative tasks?
- How motivated are Hong Kong learners regarding Hong Kong and U.S. team collaborations? How satisfied are Hong Kong learners with their Hong Kong team's final project outcome?
- What are the most beneficial and challenging aspects according to Hong Kong participants' perspectives?

## 3 Methodology

This study adopts a classroom-based case-study approach (see edited volume by Dooly & O'Dowd, 2012) that has as its goal not generalizability but the presentation of "information-rich cases" (Antoniadou & Dooly, 2017, p. 252). The author's role in this telecollaboration was that of *participant observer* in her function as co-designer of the course (with her colleague in the U.S.) and instructor in the Hong Kong context.

The study further shares the insider-outsider perspectives of an ethnographic approach (e.g., van Lier, 1988; see also Antoniadou & Dooly, 2017). The researcher attempted to bridge the gap between the actions that she observed ("*Aussenperspektive*," Grotjahn, 2003, p. 497; italics in original) and the intentions and actions as they were perceived by the participants in the study ("*Innenperspektive*," p. 497; italics in original). Thus, learner perceptions of their telecollaborative experiences were thus an integral part of the analysis. Likewise, Reinders and White (2016) have argued for including participant perspectives regarding the affordances of technology-mediated environments and their learning experiences. To this end, questionnaire responses and task participation reflections were analyzed.

In the following, the author provides a detailed description of participants, institutional context, project tasks and timeline, and data collection and analysis procedures.

### *3.1 Participants*

Participants included a total of 74 participants (out of which 49 Hong Kong learners had consented): 55 Hong Kong students in an intercultural communication (IC) core course at a public research university in Hong Kong telecollaborated with 19 undergraduate students enrolled in a 300-level *professional writing* elective at a private research university on the East Coast in the U.S.

As can be seen in Table 1, the author first grouped her 55 Hong Kong into 13 teams consisting of three to five members (A1-E13). The U.S. instructor then paired three to four of her students to form a total of five teams (A-E). Online interactions took place through a private Facebook group set up by the author, and each of the five telecollaborative teams had their own sub-page.

### *3.2 Hong Kong Course Context*

The course in Hong Kong is a core undergraduate course with two sections, one of which was taught by another instructor and not part of the telecollaboration. The parameters of the program-intended learning outcomes are based on the university's

**Table 1** Hong Kong and U.S. teams

| Hong Kong – U.S. teams |  |  |
|---|---|---|
| A | 4 (A1) | 4 |
| 12 students | 4 (A2) | |
| B | 5 (B3) | 4 |
| 13 students | 4 (B4) | |
| | 4 (C5) | 4 |
| C | 4 (C6) | |
| 17 students | 5 (C7) | |
| | 5 (D8) | 4 |
| D | 4 (D9) | |
| 18 students | 5 (D10) | |
| | 4 (E11) | 3 |
| E | 3 (E12) | |
| 14 students | 4 (E13) | |

discovery-rich curriculum, which focuses on critical thinking, self-directed learning, effective oral communication skills, effective teamwork, and the attitude or the ability to accomplish discovery or innovation. The Hong Kong course is based on a required course textbook (Scollon et al., 2012). The course-intended learning outcomes include explaining IC from a discourse analytic perspective. To this end, students analyze actual communicative events and situations, compare the communication practices of people from different discourse groups, and learn to communicate more effectively with members of different cultures. Assessments include the following:

- Class participation (10%)
- Presentation: Ethnographic research project (20%)
- Paper: Ethnographic research project (20%)
- Peer Review: Ethnographic research project (10%)
- Final Exam: 2 hours, closed book, paper-based (40%)

In addition to the final exam (40%), the main course deliverable is the ethnographic research project paper and presentation (accounting for the same % of the grade). In this project, student teams address an issue of IC on social media such as Facebook, and which could focus on topics such as social practice (e.g., photo tagging), miscommunication (e.g., meanings of the "Like" function), or the relationship between participants (e.g., interaction with close vs. distant Facebook friends). The telecollaboration was woven into the ethnographic research project through three telecollaborative tasks (see Sect. 3.3 below), which was part of Hong Kong learners' overall class participation at 10%.

### 3.3 Telecollaborative Tasks and Timeline

While it would have been desirable to implement a fully-fledged telecollaborative framework (e.g., Furstenberg et al., 2001), this was not possible due to limitations regarding the parameters laid out above. They will be addressed in the *Discussion* section below in more detail. Tasks in this project were cumulative and included an information exchange on Facebook about participants' institutional and educational contexts, followed by comparing and analyzing participants' business and corporate culture (e.g., O'Dowd & Ware, 2009). The content of these online Facebook exchanges centered around parallel readings on different discourses such as business and corporate cultures and ideologies in the U.S., Mainland China, and Hong Kong because the U.S. course was a business writing course. Finally, as part of their ethnographic research project, Hong Kong teams were encouraged to analyze their own data produced through the Facebook interactions with their U.S. partners. Figure 1 below shows the timeline of the telecollaboration.

Task 1 required students to post and comment on each other's introductory profiles on Facebook, with voluntary team videos. After reviewing their overseas partners' bios, students chose two people with whom they thought they had commonalities. Afterwards, they were instructed to write a minimum of two questions to different partners to inquire about something they wanted to know more about. It was hoped that the introductory task in the present study would foster participant connection (Liaw & English, 2017). In Task 2, telecollaborative teams explored personal experiences, institutional and educational systems, business discourse and corporate ideologies in the U.S., China, and Hong Kong. Each student was required to post a minimum of two questions on each topic prompt provided by the instructor. Students inquired about their partner team's institution's ideologies or boundaries and business-related discourse questions related to collectivist and individualistic cultures in business (e.g., corporate ideologies). For Task 3, Hong Kong students reflected on their work by answering the following Facebook prompt questions: What are the top three take-aways from the online exchanges? What were the most intriguing things and why? Finally, Hong Kong teams prepared their ethnographic project paper and presentation. In doing so, Hong Kong teams could

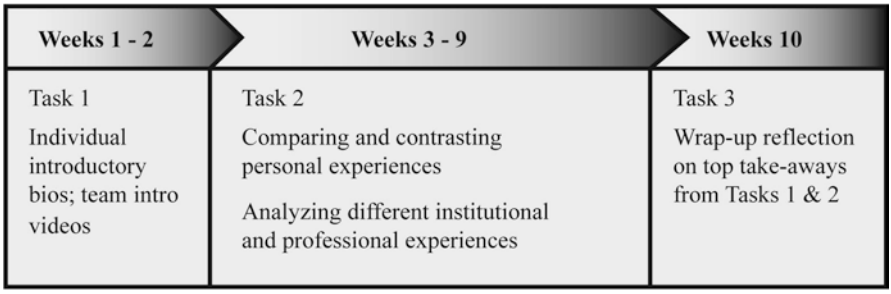


**Fig. 1** Project timeline and telecollaboration tasks

choose Facebook exchanges with U.S. partners or interactions in other social networking communities. The self-selected topics of those eight teams that chose as a focus their interactions with U.S. partners included *intercultural miscommunication between Hong Kong Ss & U.S.* (B3) or *Similarities/differences between Hong Kong and U.S. students' use of politeness strategies on Facebook group chat* (E13). The five remaining teams chose topics unrelated to the Hong Kong-U.S. exchange.

### *3.4 Data Collection and Analysis*

Data instrument triangulation included a pre-questionnaire, Facebook posts, a post-questionnaire, and task reflections on Facebook. The purpose of the pre-questionnaire was twofold, i.e., to elicit information about students' prior experiences and expectations for the telecollaboration as well as to raise awareness as to the pedagogical rationale for technology use (Facebook for interactional and research purposes). The goal of the post-project questionnaire and task reflections on Facebook was to understand Hong Kong participants' perspectives and perceptions of their team processes and products. Both questionnaires were administered via Qualtrics, and questions consisted of four-point Likert items (to get a tendency), and open-ended questions. The Likert items generated descriptive quantitative results, and the open-ended questions were coded by three raters using MAXQDA, a qualitative analysis software. Triangulating quantitative and qualitative data from telecollaboration "allow a deeper understanding of what learners do and think, and they have the advantage of growing out of the teaching itself, the pedagogic activities or tasks, allowing deep insights into the pedagogic process" (Müller-Hartmann, 2016, p. 34). *In vivo* codes (Glaser & Strauss, 1967) such as "The [U.S.] students made few response and not willing to answer our final questions" and "Americans answer so few questions there" and "Need to ask questions to the US students but the interaction is limited" were grouped in the category *little interaction.*

In the next section, the teams' prior experiences and expectations, Facebook interactions, and their perceptions of processes and products will be explored. All data are verbatim, names are pseudonyms.

## 4 Results

### *4.1 Prior Experience with Tools and Teamwork Experience and Expectations*

In order to answer Research Question 1 (What are Hong Kong learners' prior experiences and expectations regarding telecollaboration?), the author presents data from the pre-questionnaire. With regard to the most frequently used social media

tools that Hong Kong participants (N = 30) reported having used to communicate with people from different cultures, Facebook ranked first (32%) before Instagram (19%), Skype (18%), and other tools (31%). All participants – except one student – had experience with using Facebook.[2] About one third of Hong Kong participants reported using Facebook to communicate with people from other countries.

In terms of how Hong Kong students had experienced prior teamwork, the following was found.

According to Table 2, most of the Hong Kong respondents (31 out of 49) rated their prior teamwork experience as "satisfying" (eleven) or "neutral" (eight). Yet, it is unclear how much experience they have had and with whom. In addition, no student reported prior experience with telecollaboration.

Lastly, in terms of what students expected regarding the telecollaboration in general, fifteen students mentioned "cultural exchange" and five "work[ing] closely and efficiently with team members."

## *4.2 Tasks Posts and Reflection*

With regard to Research Question 2 (How do Hong Kong teams participate in and reflect on telecollaborative tasks?), Table 3 below shows the mean average number of posts in relation to each team's participant numbers, including responses to the

**Table 2** Perception of prior teamwork experience

| # | Answer | % | Count |
|---|---|---|---|
| 1 | B. Satisfying | 35.48% | 11 |
| 2 | C. Neutral | 25.81% | 8 |
| 3 | A. Motivating | 16.13% | 5 |
| 4 | D. Frustrating | 12.90% | 4 |
| 5 | E. Annoying | 9.68% | 3 |
| | Total | 100% | 31 |

**Table 3** Average number of posts per team

| Team | Average number of posts by Hong Kong members | Average number of posts by Hong Kong and U.S. members |
|---|---|---|
| E | 12 | 8.8 |
| B | 11 | 7.8 |
| C | 10 | 7.7 |
| A | 10 | 6.7 |
| D | 5 | 3.9 |

[2] One student (Kingston, D10) chose not to use social media but still participated in the online exchanges and posted his Facebook reflection through one of his teammates.

instructor task prompts and replies to U.S. partners' posts. The required number of posts in response to instructor prompts on Facebook were 14 for all three tasks combined (Task 1: 1, Task 2: 12, Task 3: 1).

As can be seen above, the overall number of Hong Kong students' posts was higher when counted separately but lower when taken together with U.S. students. While still below the minimum of 14 posts for all three tasks, Teams E and B generated the highest number of posts, while Team D was rather low. Teams C and A were not much lower than B; yet, U.S. students in Team A were less responsive. One explanation could be the eight teams (A1, B3, B4, C5, C6, E11, E12, E13) who demonstrated co-creation of direction setting when deciding to use their exchanges with U.S. partners for the final ethnographic project. In contrast, one sub-team of Team A (A1) and none of the D teams used their U.S. exchanges as a basis for their final project.

Figures 2 and 3 below show examples from B4, one of the Hong Kong teams that interacted with U.S. participants. For example, in response to the Task 1 prompt, students shared biographical information about themselves (including languages and hobbies) and introduced their respective institutions and fields of study.

In Fig. 2, Claire (B4) asked her U.S. partner Ka a general, open-ended question about his knowledge of Hong Kong to which she received a reply 18 days later. In response to the Task 2 prompt, students compared and contrasted their institutional and educational as well as their professional contexts.

In Fig. 3, Hong Kong partner Eva (B4) inquired from her U.S. partner Kb about teaching methods and approaches in the U.S. context, to which she received a reply 12 days later.

In response to the Task 3 prompt, students answered to the following prompt on Facebook, which served as a wrap-up reflection regarding Tasks 1 and 2: *What are the top three take-aways from the exchanges for you? What were the most intriguing things for you and why?* Out of the 13 Hong Kong students who posted their reflection on Facebook, eight students commented on the telecollaboration as a main

**Fig. 2** Claire, GTB4 (1)


**Fig. 3** Eva, GTB4 (2)


**Fig. 4** Harry GTD9, Final Facebook Reflection

take-away. Some students mentioned that they were satisfied with their final product because it gave them the ability to come up with an interesting topic analysis, to undergo an intercultural exchange, and to answer their initial research questions in their final projects. Fig. 4 shows Harry's (D9) final wrap-up reflection. While Harry was part of a team that did not use their U.S. exchange for the final project, he commented that he could "understand the differences between [his] Eastern culture and their Western culture" and that the exchange was a "meaningful task" because it was different from his regular course work. Moreover, he stressed that the three project take-aways included applying turn-taking in online communication, asking others questions about their interests, and using Facebook for data collection.


**Fig. 5** GeraldGTC6, Final Facebook Reflection

**Table 4** Motivation regarding team collaborations

| | Very motivated | Somewhat motivated | Somewhat unmotivated | Very unmotivated |
|---|---|---|---|---|
| Hong Kong intra-team collaboration (N = 31) | 6.45% | 61.29% | 25.81% | 6.45% |
| Hong Kong – U.S. team collaboration (N = 28) | 7.14% | 32.14% | 50% | 10.71% |

Gerald (C6) in Fig. 5, on the other hand, was part of a team that used the U.S team interactions. He emphasized that he enjoyed "chatting with NY buddies in this group" and using Facebook for "intercultural communication." He further commented on his hope to have "more interactions" because his team's analysis focused on the Facebook interactions with their U.S. partners.

Finally, in line with a call for self-reflection (Little, n.d.), participants were asked to look back on their telecollaborative interactions and final project outcomes.

## *4.3 Self-Reflection Regarding Team Collaborations and Project Outcomes*

Table 4 above shows results for Research Question 3 based on post-questionnaire responses (How motivated are Hong Kong learners regarding Hong Kong and U.S. team collaborations?).

The majority of Hong Kong students who replied to the post-questionnaire answered "somewhat motivated" (61.29%) with regard to their Hong Kong intra-team collaborations. In contrast, half of the Hong Kong students felt "somewhat unmotivated" (50%) with regard to their telecollaborative U.S. collaboration. Additionally, Table 5 below shows answers to the research question: How satisfied are Hong Kong learners regarding their Hong Kong team's final project outcome?

**Table 5** Perception of final project outcome

| | Very satisfied | Somewhat satisfied | Somewhat dissatisfied | Very dissatisfied |
|---|---|---|---|---|
| Hong Kong teams' final project outcomes (N = 31) | 9.68% | 61.29% | 19.35% | 9.68% |

**Table 6** Positive and negative aspects of course

| | |
|---|---|
| Positive aspects listed by Hong Kong students (N = 26) | Opportunity for native speaker (NS) communication to gain IC skills (how to engage in the interaction); insights into American culture and differences (put oneself into their shoes); enhance language ability, authentic data to be analyzed in final project; put IC theories into practice |
| Negative aspects listed by Hong Kong students (N = 28) | Miscommunication due to different culture (commenting)/education; majors; U.S. students less motivated to ask questions; communication less interactive, meaningful, in-depth (formulaic answers); different time zones (delays/no replies); due dates stressful; limitations of Facebook (settings not suitable social networking site for data); unmotivated to post; gender imbalance |

Similar to the Hong Kong intra-team collaboration, the majority of Hong Kong students felt "somewhat satisfied" regarding their final project outcome, regardless of whether they had used their U.S. exchanges for analysis or not.

## *4.4 Beneficial and Challenging Aspects of Course*

With regard to Research Question 4 (What are the most beneficial and challenging aspects according to Hong Kong participants' perspectives?), Table 6 presents the categories that summarize the Hong Kong students' responses to the open-ended questions in the post-questionnaire.

Some students saw the main benefits in the interaction with U.S. students as well as the analysis of authentic data, while others thought the interaction with U.S. students were demotivating due to miscommunication and limited interaction.

Table 7 below shows the overall benefits with regard to learning about team collaboration through the project, Hong Kong team intra-team collaborations, U.S. telecollaboration, overall project learning, overall course learning, and working with Facebook.

A number of students appreciated the team and project work, and as was the case with the positive aspects (Table 6), they listed IC and using Facebook for research and communication. Other beneficial aspects regarding the U.S. team interactions included task orientation, interesting response, curiosity of the different culture and the confidence of own culture, and Facebook notifications.

Table 8 below shows the overall challenges with regard to learning about team collaboration through the project, Hong Kong team intra-team collaborations, U.S. telecollaboration, overall project learning, overall course learning, and working with Facebook.

**Table 7** Overall benefits

| | |
|---|---|
| Overall learning about team collaboration through project | IC strategies, communication in teamwork, project management with teammates (early planning of the project, composing report), digital literacies (start a conversation on social networking tools, language learning), technology competence (gain and exchange information) |
| Hong Kong team collaboration | Intercultural communication, course requirements, clear and appropriate time track and guideline, interesting topic, highly motivated teammates, first-hand research with authentic data, social networking tools as learning tools |
| U.S. team collaboration | Task oriented, interesting response, curiosity of the different culture and the confidence of own culture, Facebook notification |
| Overall project learning | The introduction of social medias in intercultural communications and learning provides students with authentic venue and audience, which also stimulate in-class discussion |
| Overall course learning | Theories of IC (face/ discourse systems), apply these theories to the analysis of actual communicative events and situations (learning environments in Hong Kong and U.S.), compare communication practices of people of different cultural groups |
| Working with Facebook | Keep track of the progress, convenient and equal access, communicate across time and space, easy-to-use (notification, clear layout), preference of responding |

**Table 8** Overall challenges

| | |
|---|---|
| Overall team collaboration challenge | Failed to learn gender difference in language use, little about US culture and ideologies |
| Hong Kong team collaboration | Ineffective communication, time constraints, discouraging classroom environment, unclear learning objectives, overseas peers with little enthusiasm to respond and follow up posts, the restricted range of topics to discuss and formulaic response |
| U.S. team collaboration | Delayed or no response from U.S. students, little interaction (merely a form of questionnaire rather than real communication), weird form of question and answer (feeling stressful to put forward questions and make responses), no interest in the project itself |
| Overall project challenge | Both local [Hong Kong students] and peers from [the U.S.] kind of passive, making the online discussions kind of superficial<br>Limited amount of data available, the authentic of the data, low assessment marks, fail to follow instructions (lack guide in report writing), lack of professional knowledge support (little research materials for the topic) |
| Working with Facebook | Unfulfilled functions (scroll down to catch up with conversations, long comments make it hard to trace back, constant wifi connection, privacy problems), geographic limitations, technical problem (no Facebook account, not familiar with the setting), asynchronous communication (delayed or no response, timezone), indirect communication (couldn't figure out gestures, facial expressions), mainly text-based interaction |

Some frequently mentioned challenges included little information about the U.S. culture, ineffective, limited, and passive communication, as well as a general disinterest in the topic overall. Challenges regarding Facebook as the main tool for interaction ranged from technical problems to different time zones.

## 5 Discussion

### *5.1 Prior Experience and Expectations*

Findings indicate that most students had prior experience with Facebook which resulted in positive feedback ("easy-to-use") and they also appreciated having been able to use Facebook as a research tool; yet, some students also saw the technical limitations when communicating within a larger group on the site. While almost everyone was familiar with Facebook, only a little over a third used it to communicate with family. This may be due to the fact that the primary means of communication for local Hong Kong students is WhatsApp (see Fuchs, 2019). Another drawback might have been that some students did not consider Facebook as a suitable social networking tool for the project (Table 6). This is in contrast with Lamy and Goodfellow's (2010) research, in which they pointed out that Facebook is among one of the "signature practices of social web environments" due to the appeal the tool has for students (p. 17).

In terms of one of their initial expectation to have a cultural exchange, this goal seems to have been met according to positive aspects such as opportunity for NS communication to gain IC skills (Table 6). One of their initial expectations was to work closely and efficiently with team members, results were mixed when comparing Hong Kong students' self-reported motivation to work with Hong Kong versus U.S. teams. Hong Kong students could meet in class face-to-face, which may have contributed to the higher motivation to work with their Hong Kong rather than telecollaborative teams and which may explain the benefits communication in teamwork, project management with teammates (early planning of the project, composing report).

Moreover, out of the 31 Hong Kong students who rated their prior experience regarding teamwork, only 16% of students found it motivating in the past. However, Hong Kong students' prior experience may have been limited to local (face-to-face) teamwork since no one indicated they had telecollaboration experience. One reason could have been due owed to the prevailing instructional format in Hong Kong. Additionally, the complex nature of collaborating across time zones and different media could explain the expressed frustration with delayed or no responses, question-and-answer type interactions, lack of interest in the project, or no motivation to elicit project-relevant information from their U.S. partners beyond task requirements.

## *5.2 Participation in Telecollaborative Tasks*

With regard to posts for Tasks 1 and 2, Hong Kong students did not fulfill the mandatory 14 posts. As was shown in Table 6., some participants thought there was a lack of motivation due to what participants perceived as a "formulaic" question-and-answer format of the posts. While the post format was not prescribed by the author, the only requirement was for students to post a minimum of two questions for U.S. partners. The fact that few students fulfilled or went beyond this minimum requirement could be interpreted as a lack of motivation or possibly thoughtful participation (cf. Kurek & Hauck, 2014).

A lack of proactivity and in-depth engagement in their online interactions may have also been owed to formulaic answers and resulted in reduced social presence or "disembodiment" (Palloff & Pratt, 1999, p. 37). In this virtual exchange, students had to take initiative if they wanted to go beyond the minimum number of information-seeking posts per week in order to optimize their telecollaborative partner's role as cultural informants. Those who displayed a more pro-active and self-directed approach took ownership of the direction of their interactions as illustrated in Claire's and Eva's posts to U.S. partners. While Claire's question could be interpreted as somewhat unspecific and open-ended, it prompted a reply by her U.S. partner. For example, Eva discussed the passiveness of learners in the Hong Kong context (Fig. 3). However, there may have not been enough time or space for students to reflect on their collaboration (cf. Park, 2014).

For Task 3, out of the 49 Hong Kong students who had consented, only 13 posted their reflection on Facebook. Those 13 students who posted their reflections on Facebook were generally positive. For instance, Harry found the telecollaboration useful because it was different from his other undergraduate work in his 4 years at the university at the time of the project. Gerald's response is an example of positive interdependence of conducting the ethnographic research project with the help of U.S. students. His team C6 had decided to analyze their own Facebook interactions ("Similarities/differences between organizational cultures in Hong Kong and U.S. smaller/larger companies *(Best Buy)*") and thus depended on their U.S. counterparts for input.

The fact that these posts were part of the participation grade may have not served as an external motivator due to its low stakes (only 10% of the overall participation grade). For Hong Kong students, cooperative goal interdependence (Johnson & Johnson, 1990) with U.S. learners was limited to Tasks 1 and 2 (which were graded as part of class participation), in that Hong Kong had to elicit specific information from their U.S. partners. Task 3, on the other hand, consisted of an individual reflection post, which did not require any goal interdependence. The final ethnographic research project was collaborative only for Hong Kong teams because this project was a Hong Kong course requirement; yet, those Hong Kong teams who chose to use their Facebook interactions with U.S. students for analysis also depended on their U.S. partners' answers to succeed.

While some U.S. students seemed generally more responsive than others, replies were rarely immediate (e.g., Ka and Kb from Team B), which becomes obvious in the 18- and 12-day time lapse in Figs. 2 and 3. Another reason for the low response rate may have been due to the asymmetry in participant numbers (i.e., 55 Hong Kong students versus 19 U.S. students, which resulted in pairing 8–12 Hong Kong students with 3–4 U.S. students per team), or to students not interested in the project. Interacting on individual and personal levels was difficult in the present study due to socio-institutional constraints such as the large number of Hong Kong participants (cf. Liaw & Bunn-Le Master, 2010). In comparison, in a study with a similar number of students (59 learners of English in Japan) worked with three partner schools in Taiwan, Korea, and the United Arab Emirates (Bourques, 2006). The imbalance in numbers is in line with Nicolaou and Sevilla-Pavón (2016); in contrast, in Hafner and Miller's (2011) study, courses were smaller with twenty students per section, and with the collaborative digital video project as the main assessment.

### *5.3 Motivation to Telecollaborate*

Although more than half (61.29%) were "somewhat motivated" regarding Hong Kong intra-team collaborations, only about a third of Hong Kong students felt the same way about their telecollaborative work with U.S. partners. The motivating factors listed are in line with post-questionnaire responses, in which Hong Kong participants listed opportunities for NS communication to gain IC skills, insights into American culture and differences, and putting IC theories into practice as the main benefits. This also reflects expectations for the telecollaborative exchanges with U.S. partners that Hong Kong participants had articulated at the outset (cultural exchanges, more active interactions), as well as Gerald's (C6) reflection that the telecollaboration was top three course benefit (see Abruquah et al., 2016).

In contrast, those Hong Kong students who responded "very unmotivated" (10.71%) did not find the project or the collaboration useful. Furthermore, students felt unmotivated toward their communication with U.S. partners when they did not receive a response from (or only had little interaction with) their American partners. These results are not unexpected due to the complex and complicated nature of working cross-institutionally (see Belz & Müller-Hartmann, 2003), especially with regard to different learning cultures (i.e., the examination culture in Hong Kong), and time zones[3]. Bourques (2006) reported similar results from one of her groups who felt discouraged from the activity after five or 6 weeks when they did not receive regular correspondence from their partners (see also Tanaka-Ellis, 2011). Moreover, in this study, a lack of response may have prevented more Hong Kong

[3]The time difference was 13 h between January and March, at which point the U.S. switched to EDT. This consequently reduced the time difference to 12 h for the remainder of the term.

teams to use their Facebook interactions with U.S. partners for their final project. Since tasks in the present study could only be marginally related to the final exam, which constituted 40% of the overall grade, students may have not been entirely sure about the fit of the telecollaboration into the overall course.

### *5.4 Satisfaction with Final Projects*

With regard to students' perceptions of their final project outcome, the majority of Hong Kong participants were somewhat satisfied. Respondents stated that they were dissatisfied due to limited data provided by the U.S. students. Yet, the qualitative data demonstrates that some students found the telecollaboration project useful in the sense that it was different from their regular tasks and that it contributed to their learning (Harry, D9).

It has been established that telecollaboration needs to be an integral part of the curriculum. Moreover, autonomy as a sociocultural process situates assignments and assessments in the larger context in that they should tap into the learner's ability to reflect and structure their own (deep) learning. In the present study, institutional parameters such as participant numbers, final exam, course streamlining, and alignment of content and tasks across institutions were not favorable to more proactivity because there was limited time. Additionally, the short notice of the exchange made it difficult to create and communicate to students a set of fully collaborative tasks (see O'Dowd & Ware, 2009) that might have resulted in more contributions as each side would have depended on their partner's contributions (positive interdependence).

The large participant number in Hong Kong was a main challenge in contrast to the smaller number in the U.S., which evidently lead to an imbalance; yet, it was not possible to match the U.S. number with an equal number of Hong Kong students due to a need to streamline contents and assignments in the Hong Kong course for all participants. By the same token, a high-stakes final exam, which accounted for 40% of the grade, was set to be conducted in the Hong Kong course. Because the exam needed to be aligned with the contents of another section of the same course, it could not directly be related to the telecollaboration. Similarly, Belz (2004) has argued that changing the nature of assessments (or communication practices) on either end to ensure smoother project collaboration would mean changing the reality of one context in order to meet needs and expectations on the other end. In contrast, she has suggested stressing these divergences and discrepancies. This begs the question of how to consolidate experiential learning in a context where students expect to be prepared for a high-stakes exam. Tolerance of ambiguity might be low regarding engaging in a time-consuming telecollaboration that may only marginally connect to the course assessments. This is also along the lines of Belz and Müller-Hartmann (2003), who found in their German-American telecollaboration project that institutional constraints (different grading policies, academic calendars, project deadlines course goals, task structures and contents) affected students'

collaboration negatively. Yet, the authors argued for exploring rather than smoothing over "rich points" (p. 73). Harry's comment on being able to better understand eastern and western differences could have been a starting point for exploring such rich points because he did not specify what he meant exactly.

### *5.5 Limitations*

Data analysis only included the 49 Hong Kong students who consented. After the original telecollaboration with an institution in New Zealand had to be canceled due to under-enrollment in the New Zealand course, the author partnered with the school in the U.S. only shortly before the start of the spring term. The U.S. institution could thus not be included in the ethics protocol.

With regard to data collection instruments, the pre- and post-questionnaire were self-reported participant data. It should also be noted that Task 3 Reflection posts on Facebook were accessible to everyone in the course (though not publicly viewable). This means that everyone in the project could read their peers' reflections, which may have impacted what and how much students chose to share in their reflections. Regardless, few students completed this task. Finally, in terms of posts per team member, only the actual posts were counted but not the words per post. This means that short and long posts were not differentiated.

## 6 Concluding Remarks

Participant feedback illustrates that the experiential nature of telecollaboration has the potential to promote students' initiative to engage with partners and to use such interaction for analysis. However, it cannot be assumed that all students will be proactive and self-directed to do this as this requires a great deal of collaboration and coordination with telecollaborative partners. Instead, students may prefer to work locally with their Hong Kong team partners with whom they can also clarify face-to-face. Yet, clear participation expectations should also be laid out and communicated from the beginning.

This underlines the need to integrate telecollaborative tasks more fully into all assignments and assessments, as well as the final exam. For explicitly relating the telecollaboration's relevance to the course objectives, exchanges need to be built in throughout the assessments, i.e., into the final exam as well. One way of aligning the telecollaboration better with the course requirements (see Lewis & O'Dowd, 2016) could be to ask students to write short analytical essays on their interactions as well as evaluate on the final ethnographic project product. In order to build on the facets of autonomy displayed through teams' analyses of their own Facebook interactions, tasks prompts would need to be designed so as to engage learners beyond the required number of posts and to avoid a question-answer type exchange. Lastly, in

addition to posting a general telecollaboration reflection on Facebook at the end, students could track their contributions to each task on a regular basis as well as self-evaluate, peer-evaluate and share their ratings with the rest of their team. The self-reflective nature of the task may be more explicit for students if it is interwoven throughout the telecollaboration.

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# Where Multimodal Literacy Meets Online Language Learner Autonomy: "Digital Resources Give Us Wings"


**Mirjam Hauck, Müge Satar, and Malgorzata Kurek**

**Abstract** The growing popularity of multimodal resources in technology-mediated learning and teaching practices has brought to the fore the issue of learners' competencies in interpreting, employing and interacting with various semiotic resources, of which language is just one (Kress, van Leeuwen, Multimodal discourse: the modes and media of contemporary communication. Arnold, London, 2001). This is best captured by the concept of multimodal literacy, understood as participants' awareness of the affordances of available modes to enable 'transformative engagement' (Bezemer, Kress, Multimodality, learning and communication: a social semiotic frame. Routledge, London, 2016) with a wide range of meaning making resources/sign making systems. In this chapter we explore the meaning-making processes of learners participating in virtual exchange (VE) and using the available multimodal resources for the presentation of self. The core constructs that provide the background to our study come from the field of social semiotics. In line with Kress (Multimodality. A social semiotic approach to contemporary Communication. Routledge, London, 2010), we conceptualise online language learners and teachers who display semiotic awareness as autonomous sign makers representing their ideas through multiple modalities. As we argue, learners who are aware of semiotic resources of different modes and are capable of engaging with them in an informed, transformative way, exercise enhanced levels of autonomy. Throughout the chapter we demonstrate that a task-based approach to multimodal literacy development in VE setting can foster learners' autonomy in how they engage with available semiotic resources.

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## 1 Introduction

Multimodality has been acknowledged as a defining characteristic of technology-mediated learning and teaching of languages and cultures (Chapelle, 2009; Kern, 2015). This contribution reports on a task-based approach to developing online language learners' multimodal literacy in a VE context. Multimodal literacy has been gaining importance alongside an ongoing shift in linguistics from a focus on language towards a wider focus on semiosis (Blommaert & Rampton, 2011), and has been described as the ability to understand, interpret (Pegrum, 2009) and, as we put forward, to execute the relationship and interaction between different formats of digital media. We focus on how learners employ the meaning potential of digital media that is their modal or semiotic affordances (Jewitt et al., 2016). VE has been shown to provide the ideal set-up for fostering multimodal literacy development (Fuchs et al., 2012; Hauck, 2010a, b).

With Lamy (2012) we start from the premise that "learning is affected by the resources that are available to learners and their use" (p. 110) and argue that multimodally literate learners can exercise enhanced levels of autonomy understood – in line with Palfreyman (2006) – as the "informed use of a range of interacting resources in context" (p. 82). Such autonomy, we propose, manifests itself in the way online language learners interpret and engage with available modes and their affordances to project themselves into virtual environments and to create online identities. Reflective task-based practice to this effect, we suggest, increases their awareness of the semiotic resources at their disposition and of their potential impact on meaning making (Bezemer & Jewitt, 2010). It also allows them to explore the modal affordances of tools and applications through 'transformative engagement' with meaning making (Bezemer & Kress, 2016). We demonstrate how one group of VE participants engage in the transformative meaning-making processes (i.e. transformation and transduction) for the purpose of self-representation. We observe transformation as learners engage with intra-modal semiotic change (e.g. as they identify an apt metaphor – digital wings – to describe their fondness of travelling and online collaboration) followed by inter-modal semiotic change (e.g. as they identify an apt image to represent the metaphor). In this process, our participants signal their awareness of the semiotic resources and affordances of different modes (written language and image).

The study reported in this chapter provides evidence that a task-based approach to multimodal literacy development in a VE setting where students used language and other semiotic resources to communicate their selves in order to create an identity, express their meanings and collaborate with others – can foster their autonomy. Such autonomy, we hold, will be reflected in their informed use of the semiotic resources available to them online – their enhanced 'semiotic budget' (Hauck &

Satar, 2018). To illustrate our argument, we present data from one VE focus group in which Polish and Spanish students of English as a foreign language worked on tasks designed to enhance their multimodal literacy. As we show, their multimodal practices reflect various levels of *transformative engagement* and, with that, also varying levels of autonomy. In our attempt to identify how their autonomy is manifested, we use qualitative data from their interactions on a discussion board and a Padlet wall, and the multimodal artefacts they created. In particular, we seek to find evidence in their multimodal outputs that is indicative of their emerging autonomy in the aforementioned sense. In the next section, we introduce the core constructs that underpin this chapter: social semiotics as a form of inquiry that helps us understand the relevance of modes and meaning making in multimodal environments such as the ones used in technology-mediated language learning and teaching, e.g. VE; and autonomy and the way it has been conceptualised in language learning. This is followed by the explanation of our methodological approach and a presentation and discussion of our main findings.

## 2 Background to the Study

### *2.1 Social Semiotics and Multimodal Literacy*

Social semiotics nurtures the idea of meaning making in social contexts – for example VE – through a variety of sign-making systems, of which language is one (Kress & van Leeuwen, 2001; Scollon & Scollon, 2003). There are three characteristics of signs (Bezemer & Kress, 2016). First, all signs are *motivated* and represent the sign-maker's, i.e. rhetor's interests. Second, each semiotic mode (as explained below) has distinct meaning potentials, i.e. modal affordances,[1] and the environment determines available modes for meaning expression. Third, sign-makers choose modes available in the environment as they deem apt to express their intended meaning within a socio-cultural landscape.

Within social semiotics, a "mode is a socially organized set of semiotic resources" (Jewitt et al., 2016, p. 71), which can "appear in combination – in ensembles: of image, writing and layout, for instance" (Bezemer & Kress, 2016, p. 7); and multimodality refers to "the use of several semiotic modes in the design of a semiotic product or event, together with the particular way in which these modes are combined – they may for instance reinforce each other […], fulfil complementary roles […] or be hierarchically ordered" (Kress & van Leeuwen, 2001, p. 20). For Kress and van Leeuwen (2001), meaning is made "in multiple articulations" (p. 4); and in contrast to a traditional view of language as the product of form and function, they see meaning as expressed through "semiotic resources" (p. 112) i.e. "in any and every sign, at every level, and in any mode" (p. 4). In line with Kress (2010), we

[1] See Sect. 4.1 for the modal affordances of the digital media employed in this study.

conceptualise online language learners and teachers as autonomous sign makers representing their ideas and the self in social interaction such as a VE, for example, not only through linguistic resources but also through multiple modalities (Meskill, 1999).

Researchers in technology-mediated language learning and teaching see multimodality as a defining characteristic of the field (e.g. Chapelle, 2009; Kern, 2015), as it "makes sensory information accessible in diverse semiotic modes and offers the opportunity to produce, comprehend and exchange information simultaneously through different channels" (Guichon & Cohen, 2016, p. 510). Hence, language learners and instructors need to be aware of the interrelationship between meaning making and language learning online, and need to be able to navigate this interrelationship with multimodal competence. The latter has been defined by Kress (2003) as the ability to express ideas across a wide range of representational systems or modes including "words, spoken or written; image, still and moving; musical… 3D models" (p. 21), and involves the informed use of "several semiotic modes in the design of a semiotic product or event, together with the particular way in which these modes are combined" (Kress & van Leeuwen, 2001, p. 20).

Hauck and Satar (2018) explored a subset of digital literacies, namely participatory literacy as reflected in multimodal competence, and its relevance for social presence in online language learning and teaching contexts using Bezemer and Kress's (2016) social semiotic framework. Through a case study, the authors demonstrate how one learner (a teacher trainee) successfully positions herself, shows awareness of modal affordances in the environment, challenges the tutors, and creates a multimodal poster that represents her online participation patterns. However, their contrastive case manifests that participants vary in their multimodal competence, and thus have varying levels of semiotic budget, which impacts on how effectively they present themselves and participate in online communities.

On the other hand, Pegrum (2009) has framed multimodal literacy as the ability to understand and interpret and – as we would add – also execute the relationship and interaction between different formats of digital media and their modal affordances. Chanier and Lamy (2017), drawing on Lamy (2012), explain the relevance of multimodal literacy in relation to computer-mediated language learning: "learning is affected by the resources that are available to learners and their use. Therefore, the design of learning activities […] needs to take into account the materiality of the modes available to learners and how they are used to create meaning multimodally" (p. 429). As such, language learners act within the affordances and restrictions determined by the design of the learning environments because design shapes "all environments of communication and through that […] social relations" (Kress, 2010, p. 137). Therefore, whilst our attention is directed towards autonomous sign-making practices of VE participants, we acknowledge that their practices are implicitly shaped by the design choices of the tutors through their decisions for tasks and tools for the exchange.

An important aspect to note here is the diverse approaches to the assessment of multimodal literacy in language learning and teaching. In 2003, Jewitt proposed that assessment methods for multimodal meaning-making need to incorporate

multimodal texts and rubrics that involve multimodal design elements. More than a decade later, Yi et al. (2017) proposed that we still know little about assessment of multimodal literacy. Similar to Jewitt (2003), they called for the development of rubrics designed to assess multimodal products but also their design processes. More recently, in their critical review, Tan et al. (2020) reported various methods and assessment criteria for multimodal literacy employed around the world in various empirical studies. The authors also proposed that involving the learners in setting assessment criteria would enable them to develop "meta-semiotic awareness" (p. 110). In this chapter, while our aim is not to assess multimodal literacy per se, we investigate the concept of assessment as it emerged in our data during the online collaborative design process of digital products. We draw on Bezemer and Kress's (2016) terminology for assessment and explore peer-assessment from an emic perspective wherein the signs and criteria for assessment are identified by the participants themselves which become indicators of their semiotic awareness.

## *2.2 Autonomy and Multimodal Literacy*

Over the last 50 years, there have been two schools of thinking about autonomy in language learning. The first one is mainly associated with Holec (1981) and his view of autonomy as "the ability to take charge of one's learning", and as a skill "to be acquired by 'natural' means or in a systematic, deliberate way" (p. 3). In online language learning and teaching contexts, this ability – some researchers have maintained – is dependent to a significant degree on learner awareness and control of the learning context, more specifically the available modes and their affordances, and should therefore be fostered through a task-based approach, or, as Holec puts it, be acquired in a systematic, deliberate way (Hampel & Hauck, 2006). Holec (1981) also believes in the absolute freedom of the learner to take all decisions concerning their learning – the what, when, how, in what order and by what means – and to work with "a reality which he himself constructs and dominates" (p. 21). In online spaces in particular, the 'by what means' is pre-determined by the representational resources available for making meaning and communicating which, in turn, has a direct impact on the degree to which learners can construct and dominate their learning reality. Thus their agency in terms of their learning reality is closely interrelated with their familiarity with the specific affordances of a learning environment.

The second school emphasises social interaction and has to some extent overtaken the first (see Benson, 2011; Murray, 2014). Little (1996) drawing on Vygotsky (1978) considers collaborative learning through social interaction as essential for the reflective and analytical capacity, which are central to autonomy. Benson (2001) sees Little's (1996) understanding as complementary to Holec's (1981) as it adds "a vital psychological dimension, that is often absent in definitions of autonomy" (p. 49). Benson (2001) himself prefers the concept of exercising 'control' over learning rather than taking 'charge', a notion that chimes with our understanding of autonomy, i.e. control over modes and meaning making in online spaces through

semiotically informed use of the available resources which also requires analytical capacity.

Little (2001) points out that "the pursuit of autonomy in formal language learning environments must entail explicit conscious processes, otherwise we leave its development to chance" (p. 34). Similarly, Hampel and Hauck (2006) make the case for learner (and tutor) preparation informed by multimodal pedagogy (Stein, 2004) for language learning and teaching in technology-mediated environments. "In multimodal online learning spaces", they argued, "the degree of multimodal communicative competence and the degree of learner control are likely to be interdependent" (Hampel & Hauck, 2006, p. 11). It is therefore not sufficient, they point out, to equip learners with creative representational resources and to assume that their agency and control over modes, meaning making and the learning process and thus their autonomy will increase by default.

Undoubtedly, Web 2.0 technology has given language learners access to novel ways of exercising their autonomy. In an effort to reconcile old and new ways of thinking about the nature of autonomy, Little and Thorne (2017) offer the following explanation: "The concept of […] learner autonomy […] provides us with a framework within which we can think about language learning and teaching and then […] apply that thinking and adapt it to the needs of specific contexts" (p. 15). Like Benson (2001), they acknowledge the context dependent aspect of investigations into language learner autonomy, i.e. the fact that autonomy manifests itself in different ways in different environments. Hence, as Cappellini et al. (2017) conclude, "[l]earner autonomy, like learning itself, is contextual" (p. 3).

The link between multimodal communicative competence and autonomy has been highlighted by Fuchs et al. (2012). In their four-way VE project, student teachers were engaged in hands-on analyses of multimodal online applications and web resources with the aim of realising their potential for subsequent task design. The authors suggest a task sequence that systematically raises awareness of the affordances of the available modes. While becoming gradually more versed in multimodality, they illustrate, learners become more self-directed in the online learning and teaching environment and thus, more autonomous.

This paper contributes to this knowledge base by establishing the link between multimodal literacy and autonomy. This is achieved by making explicit participants' informed use of a range of semiotic resources in context (their autonomy) while in a VE project they engage in motivated sign-making and transformative meaning-making processes to complete telecollaborative tasks individually and as a group. To this end, in the next sections we explain our methodological approach: the VE setting, the participants and the tasks they carried out, as well as our research instruments and data analysis procedures. This is followed by a presentation and discussion of our main findings.

Our hypothesis, which we discuss in the next section, is as follows: there is an interrelationship between online language learners' multimodal literacy as reflected in their (un)informed semiotic choices, and their autonomy as framed by Palfreyman (2006).

## 3 Methodological Approach

### *3.1 Participants and Context*

In summer term of 2014, 70 students took part in a 13-week multiliteracy course designed by two of the authors of this study: 25 students majoring in teaching English as a second or foreign language at a higher education (HE) institution in Poland and 45 tourism students from the a HE institution in Spain. The project addressed different learning goals for each of the groups: while for Spanish students it was practicing conversational English in intercultural settings, for the Polish ones it was the enhancement of their digital literacy. The shared objectives included the refinement of multimodal communicative competence and intercultural collaboration skills. English was used as a lingua franca but language learning in the traditional sense of form or function-oriented activities was not among the course objectives.

The cohort consisted of 48 female and 22 male participants working in 15 randomly composed intercultural groups. The pre-course survey used a 6-point Likert scale to assess participants' self-perceived understanding of and confidence with various online environments and practices (see Appendix for sample questions). The results showed that participants in each cohort had diverse levels of language and intercultural competence and digital literacy. The authors who led the course felt that this disparity influenced students' task perception and interaction level and let to a relatively high dropout rate. The latter was also influenced by the fact that the students' institutional circumstances were very different. While the Polish students came from a compulsory, teacher training blended course based on weekly face-to-face meetings, the Spanish students were enrolled in a voluntary online-only module to improve their conversational English.

### *3.2 Tasks*

Tasks have been identified as central to technology-mediated instruction (Furstenberg, 1997; Hampel, 2010; Hauck, 2010b; O'Dowd & Ware, 2009; Rosell-Aguilar, 2005). While we subscribe to van den Branden's (2006, p. 4) understanding of tasks as an "activity in which a person engages in order to attain an objective and which necessitates the use of language", we conceptualise language in line with a social semiotics stance as one of several systems of representation alongside the visual, audio, gestural and spatial modes of meaning. Following this conceptualisation, we subscribe to a wider definition of a task understood as an activity in which the attainment of an objective engages the learner in the use of several representational systems, one of them being language. This understanding of task is in line with Lai and Li (2011), who question the appropriateness of "a predominant focus on the linguistic aspects of language learning […] when applying task-based

language teaching (TBLT) in technology-enhanced language learning contexts" (p. 501). As they highlight, adding technology to the equation increases the number of resources for task execution considerably.

The tasks designed for the VE under study were informed by Kurek and Hauck's (2014) framework for instructed learner reflection on the learning environment and explicit multimodal literacy development. The framework (Fig. 1) – ideally implemented, as Kurek and Hauck (2014) claim, in VE contexts allows students to move along a progressive continuum from *informed reception* of multimodal input through *thoughtful participation* in opinion-generating activities and on to *creative contribution* of multimodal output.

The three defining components of the developmental continuum both, as individual components and jointly, contribute to learners' gain in multimodal literacy skills and consequently – as Kurek and Hauck (2014) argue – to their informed and autonomous technology use. For instance, at the stage of *informed reception,* learners are provided with various types of technology-mediated input to become aware of various aspects of meaning making and their interpretative potential. In this sense, informed reception activities serve as the first steppingstone towards autonomous learner participation in other digitally mediated practices. This orientation changes in activities focusing on *thoughtful participation,* in which interaction is fostered and students are assisted in making informed rhetorical decisions, while in the *creative contribution component*, various forms of learner design and creativity are nurtured.

The VE under study spread over 13 weeks. It provided ample space for the implementation of the above framework, which underpinned the design of a sequence of collaborative tasks scaffolding learners' encounters with various modes,

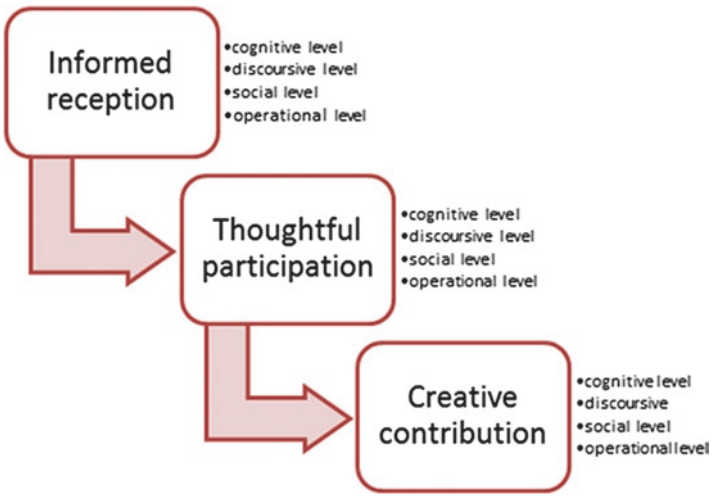



**Fig. 1** Task framework for multimodal literacy development (Kurek & Hauck, 2014, p. 126)

**Table 1** Polish-Spanish VE Task 1

| Task description | Stage | Tool | Modality |
|---|---|---|---|
| Getting ready – introductions | Informed reception | Discussion board | Text & imagery |
| Creation of group identity | Thoughtful participation | Discussion board<br>Padlet Wall | Text<br>Text & graphics |
| Digital biographies – designing multimodal group presentations reflecting chosen identities | Creative contribution | Prezi | Text<br>Graphics<br>Images<br>Audio |

and opportunities for meaning-making. Table 1 shows how the approach was operationalised in Task 1 in the current VE.

In the sequence above, group members first introduced themselves in the textual group discussion board (Canvas) and negotiated a group name. They then posted a description of their group identity including the rationale for the chosen group name on the Padlet wall. Subsequently, communications continued via the discussion board as part of the ongoing collaboration for the production of group identity presentations using Prezi. These were shared via links embedded into discussion board postings and received evaluative feedback from other groups. Thus, using a variety of online tools and applications, participants created multimodal presentations of themselves and their virtual groups and engaged in instructed reflection on the modal affordances (see Sect. 4.1) of the resources they had chosen.

### *3.3 Dataset and Data Analysis*

In the following analysis we triangulated data generated via three digital media:

- discussion boards in Canvas, a learning management system (https://canvas.instructure.com)
- a Padlet wall, an application suitable to create and display information on virtual Post-it Notes (https://padlet.com)
- Prezi presentations (https://prezi.com)

Drawing on the concepts of learners as sign makers engaging with different semiotic modes and combining their affordances to express meaning, we explore participants' processes of meaning-making, collaboration, and presentation of their individual and group identities as they engaged with the task outlined above. We also explore participants' transformative engagement with signs while carrying out the task, which we see as evidence for their autonomy. Finally, as we analyse participant feedback on the digital artefact (Prezi presentation) produced by one of the groups, we use Bezemer and Kress's (2016) terminology for assessment.

Two semiotic processes that demonstrate transformative engagement with signs are *transformation* and *transduction* (Bezemer & Kress, 2016). While transformation relates to semiotic change within the same mode (e.g. translation between

languages or expressing the meaning of a poem in prose), transduction relates to semiotic change across modes (e.g. change between written language and drawing). We refer to the creators of the artefact as rhetor, and the viewers as interpreters, and look for evidence of assessment by both.

In the analysis, we provide thick descriptions (Geertz, 1973) of indicators of multimodal literacy and autonomy. All three authors first explored the data independently following the aforementioned social semiotics approach in order to uncover as many potential data interpretations as possible. Moreover, one of the authors was not involved in the VE, which allowed her to consider the data without any preconceptions. Finally, we looked for contrastive instances of meaning making, transformation and transduction and thus present in Sect. 4 a comparative analysis of two illustrative cases. Which reflect, respectively, higher and lower levels of autonomy in their multimodal literacy practices.

## 4 Presentation and Discussion of Findings

We start by identifying the modal affordances of the digital tools and applications used by the participants (Sect. 4.1). We then present our analysis of two cases to illustrate varying levels of autonomy as displayed by the participants in their multimodal literacy practices (Sects. 4.2, 4.3, 4.4, and 4.5).

### *4.1 Modal Affordances*

The three tools on which we focus here are the Canvas discussion board, Padlet and Prezi.

#### 4.1.1 Canvas

Canvas (https://canvas.instructure.com) is an open-source learning management system incorporating a wide selection of digital tools to facilitate online learning and teaching. One such tool is a discussion board, which affords learners to communicate asynchronously. In the current dataset, messages on the discussion board were predominantly in written language and tended to be short. Limited non-linguistic elements comprised emoticons, few video introductions, images that were key to the message (e.g. when suggesting a logo for the group), and hyperlinks to their Prezi presentations. Figure 2 shows representative instructor and learner posts, as well as the editor tools.

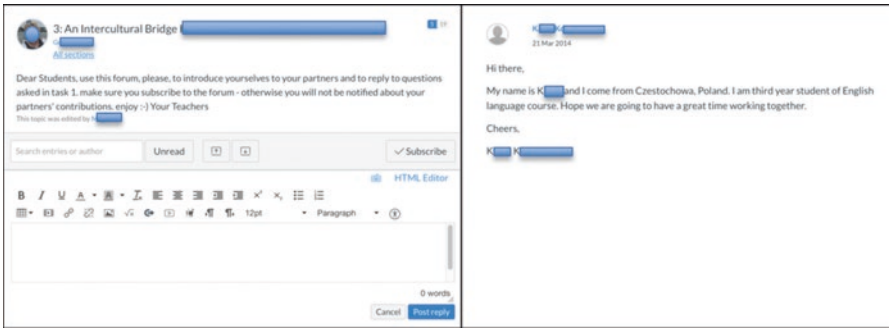



**Fig. 2** Modal affordances of the Canvas discussion board

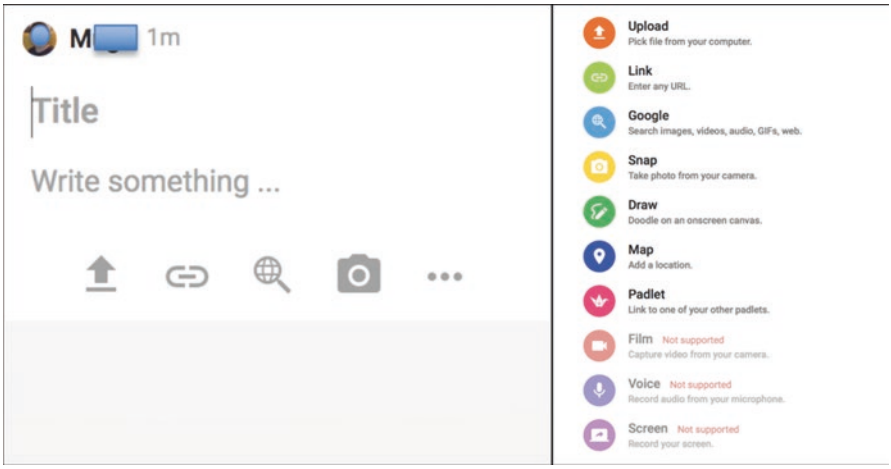



**Fig. 3** Modal affordances of Padlet

### 4.1.2 Padlet

Padlet (https://padlet.com) is an online virtual bulletin board, which allows users to asynchronously pin multimodal messages on a virtual wall. Padlet walls do not accommodate longer text as comfortably as discussion boards do. The title of a message (optional) is automatically displayed in bold. Users in the free version of Padlet can upload one video or image files up to 8 MB with each message and insert other semiotic resources (Fig. 3).

The participants in our dataset used images only as an additional mode to writing in their posts, which tended to be a group logo when group names were shared or a selfie of individual participants in their goodbye messages at the end of the VE. Nobody used videos, hyperlinks or maps. Figure 3 demonstrates modal affordances of Padlet.

### 4.1.3 Prezi

Prezi (https://prezi.com) was the online presentation software chosen for the VE as it allows users to asynchronously edit a presentation together. Prezi affords inclusion of written language, images, hyperlinks and videos. Its distinct affordances are motion, zoom, and spatial navigation by allowing authors to work on a single screen (as opposed to individual slides) and identify aspects viewers can zoom in on.

The majority of the participants used the motion and zoom function to display information about an individual group member in a different section of their screen. They linked their sections – largely designed using the modes of image and written language – with lines and arrows. The written input tended to be short, and the visual layout of the screen allowed users to present a more harmonious modal ensemble of images and written language. The two presentations we analyse in Sect. 4.4 are representative of the modes used in the Prezi presentations in our dataset.

## *4.2 Who Am I?*

As a short pre-activity to the main part of Task 1 (Getting Ready) participants were asked to post a message on the Canvas discussion board introducing themselves to their group members. They were encouraged to post multimodal contributions. The instructions were as follows (Fig. 4):

Here, having analysed students' output, we focus on Group 4, who called themselves Digital Wings (Fig. 5). An analysis of their multimodal outputs demonstrates their emerging autonomy in summarised and executing the affordances of the available semiotic resources and with them, also their growing awareness as meaning makers.

To start with, all five group members: Pamela, Irene, Jeff, Amy and Giselle (pseudonyms) structured their messages in the form of an email with a salutation, a few paragraphs, and a signature, but with varying levels of formality. The modal choices in these posts, including the written language, emoticons, layout and structure perhaps represented the popular expectations for asynchronous forum

> Once you have watched these clips, post a message to the forum **of your group** introducing yourself and answering the following 3, 2, 1 sequence:
>
> ***Three*** Web 2.0 tools that you use on a regular basis and why you are using them.
>
> ***Two*** Web 2.0 tools that you are using or have used to learn something new.
>
> ***One*** new thing you learned from watching the clip(s).

**Fig. 4** VE Task 1 pre-activity task instructions

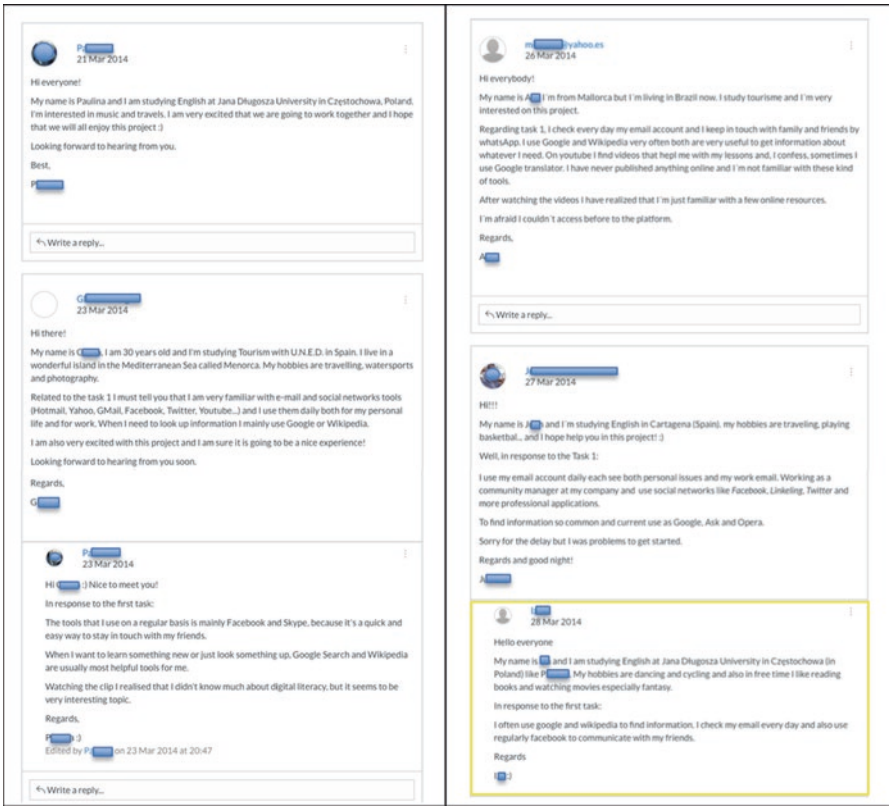



**Fig. 5** Introductory posts by members of Group 4

communication at the time of the VE (2014) and were deemed apt to portray an initial identity within this specific community of students. The actual introductions were text heavy, with few emoticons, and only two members put up profile pictures. In terms of synchronicity, all participants responded within a week, with Pamela responding to Giselle on the same day addressing her by using her name. As for the content of the messages, they all mentioned their area and place of study, their hobbies, followed by their response to the instructions (Fig. 5) with varying levels of detail. The responses indicated that they used social media to connect with others, and communicated enthusiasm as regards their participation in the project (except Irene: see last comment in the right-hand column of Fig. 5).

In short, Group 4 participants' ability to design similar posts in content, layout, and modal choices shows that their introductory posts on the Canvas discussion board were motivated signs using apt semiotic resources to represent individual identities and readiness for collaboration.

### *4.3 What Is in a Group Name?*

Following introductions, Group 4 members continued posting messages in the same discussion thread to find a group name (Fig. 6). In terms of modal composition, these posts were similar to the introductory posts. The modes used were written language, layout, and emoticons. Two posts included images (see Insets 3 and 4), to represent potential group names.

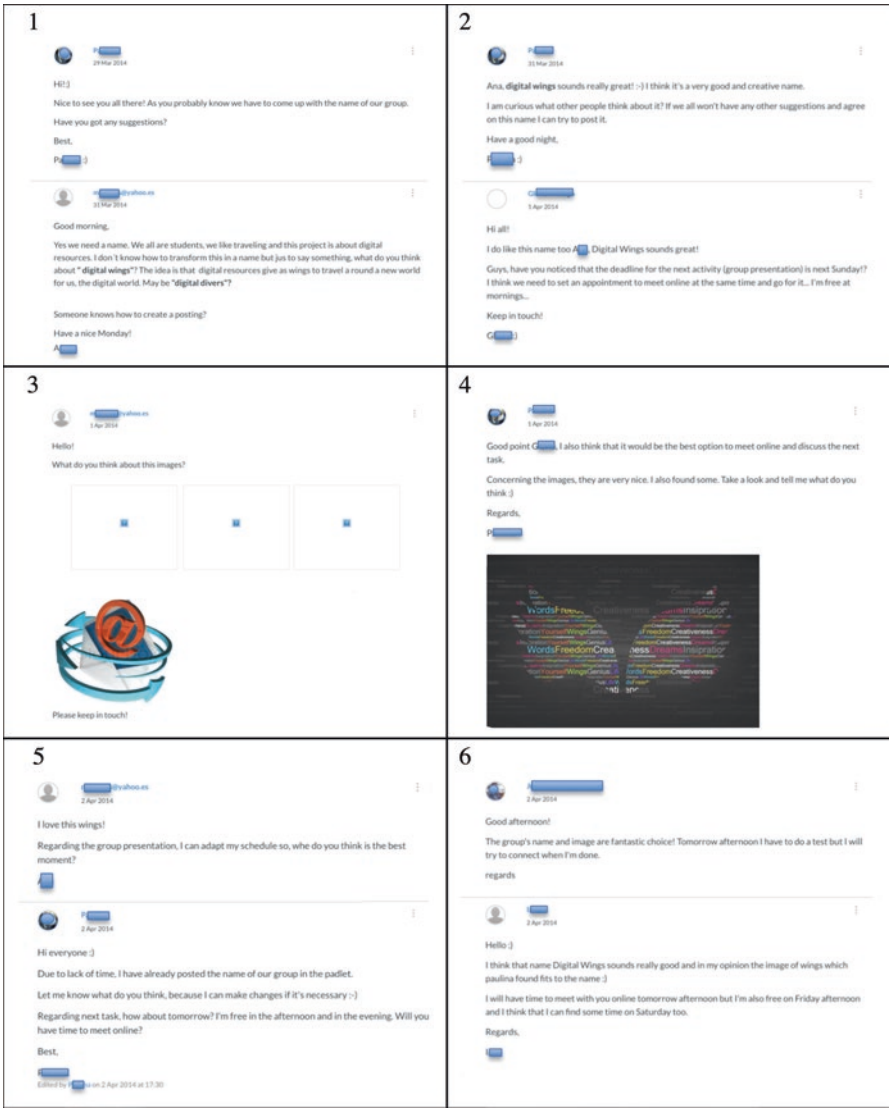



**Fig. 6** Finding a group name and logo (Group 4)

The collaborative processes at play here were reflected in the way the name and images were first proposed, and then evaluated. Pamela started the discussion, followed by Amy's suggestions: digital wings and digital divers. Amy's rationale, and her actual use of the word "transform" was an indicator of her transformative engagement. Once she summarised the common characteristics of the group members (students, like travelling, participants of the same project on digital resources), she subjected this information to semiotic change and transformed it into a metaphor (digital wings). Two members immediately reacted positively, and Amy and Pamela further engaged in transformative processes by suggesting images (Insets 3 and 4) that could represent the group name (transduction).

The group members' evaluations of possible group names and images illustrate how these signs were assessed by them and acknowledged as informed semiotic choices. Amy, as the rhetor, proposes two potential names, and seeks evaluation from other group members' (the interpreters'), who orient to holistic criteria "as signs 'for' assessment" (Bezemer & Kress, 2016, p. 89), focusing on how the name sounds, or their emotional response to it (like/love).

Likewise, Amy and Pamela, as rhetors of the images, seek assessment from the interpreters. Inset 6 (Fig. 6) shows how the rhetors' shape engagement through their focus on transformation and transduction and represent interpreters' semiotically informed evaluations that "the name and image are fantastic choice", and "the image of wings … fits to the name".

The outcome of the collaborative decision-making process – the informed semiotic choices of the group members – were then shared with the rest of the VE participants on the Padlet Wall. Most groups posted their newly identified group name alongside a rationale for the name and an image that represented the name either literally or metaphorically. Figure 7, a screenshot of the Padlet Wall, illustrates the transduction processes in posts from 3 different groups.

In Fig. 7 Inset 1, the process of transduction between the group name and the chosen image is made evident in the written explanation. It is possible to trace the signs included in the written mode in the image: squaring the circle, geometric, and 4000 years ago (as indicated by the way the man in the image is dressed). In the second inset, the group image is an exact representation of the last part of the group name, i.e. a bridge. The transformative process in Inset 3, however, is metaphoric. The image of an ant that carries a leaf much bigger than its own size seems to be intended to represent the abstract adjectives in the suggested group name: initiative and perseverance. Group 4's Padlet post followed a similar trend, which was a literal representation of the group name: Digital Wings (Fig. 8).

After their discussion on the Canvas discussion board (Fig. 6), Group 4 posted their name and the corresponding image on the Padlet Wall (Fig. 8). Their post demonstrates informed and motivated use of semiotic resources, and thus their autonomous use of modal affordances of Padlet to represent their group identity effectively. The post is also an example of transformative engagement between the text and the image.

The image chosen to represent the name of the group Digital Wings is a digital image of wings based on a so-called word cloud (Fig. 8). The two words in the

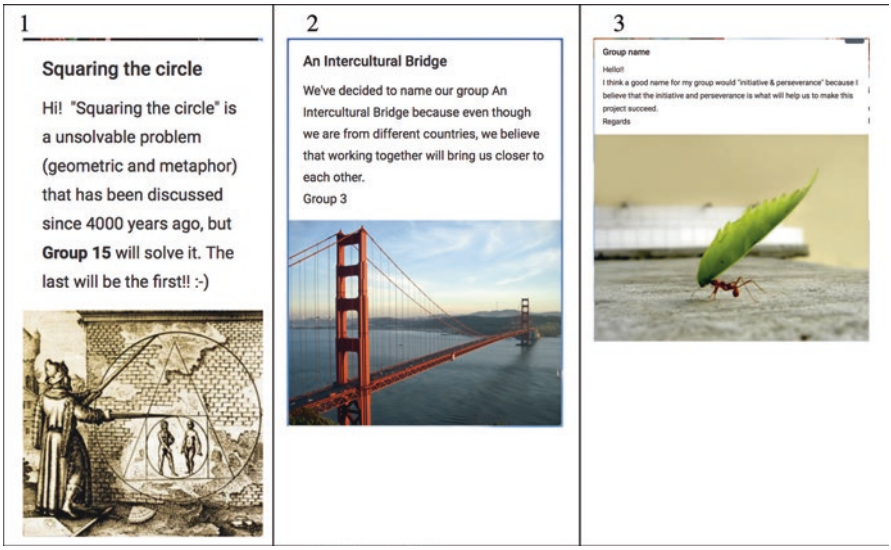



**Fig. 7** Padlet posts for group name and logo

centre of the wings written in bold large fonts and in colour are *Freedom* and *Dreams* and become the interpreters' focus of attention. These words are signs which are closely linked to the concept of travelling, the shared characteristic of the group members. Other words represented on the wings, some of which may be salient to the concept of travelling, are *Inspiration, Creativeness, Yourself, Wings, Words,* and *Genius*.

The written text on the Padlet post contains the rationale for choosing this specific group name, which is further evidence for the members' informed semiotic choice in terms of expressing their group identity both in the mode of written language (name and rationale) and image (digital wings). They mention that the project is a digital journey for them, where they explore a new digital world with their digital wings (resources) also represented in the image.

## *4.4 Co-creation of Digital Artefacts: Prezi Presentations*

Digital Wings negotiated preparation, time management and role allocation for the co-creation of their Prezi presentation on the Canvas discussion board. Giselle initiated the process by explaining the rationale behind her choice of a world map as the background image and suggesting multiple digital ways of access to the presentation. Her contributions are indicative of her transformative engagement (transduction between her idea and the presentation template) and of motivated sign-making (Figs. 9 and 10). Giselle's explanation included justification of her use of the image that they "all liked" it, followed by an invitation to co-create the presentation

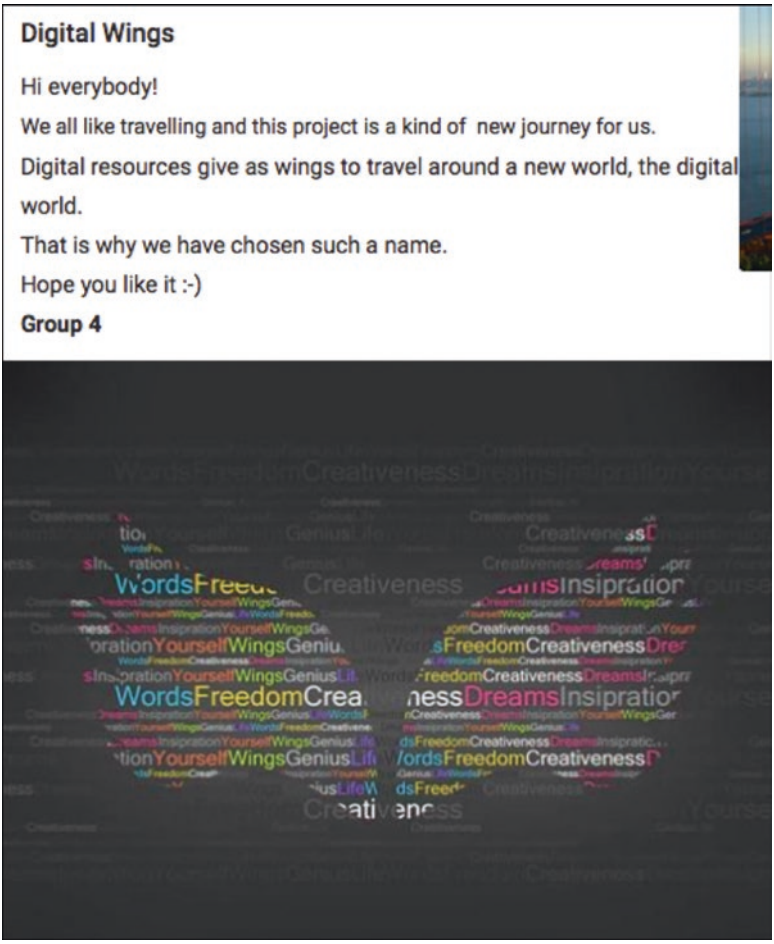



**Fig. 8** Digital Wings' Padlet post for group name and logo

suggesting two appropriate means (via email or the URL given the modal affordances of the discussion board) to access Prezi "so that they all can edit the presentation".

As can be seen in the finished product (Fig. 10), Giselle's design allocated sections of the background image to each group member depending on the countries they have lived in. Semiotically, this design situated each participant in a given socio-cultural context evoked by the location specified on the map and constituted literally the background for the assessment of each member's signs. Further, Giselle's explanation that "the presentation goes one by one to the different countries" highlights her informed use of the modal affordances of Prezi (motion, zoom, and spatial relationships) in that the viewers/interpreters travel from one part of the world to the other as they digitally navigate the presentation in order to find out

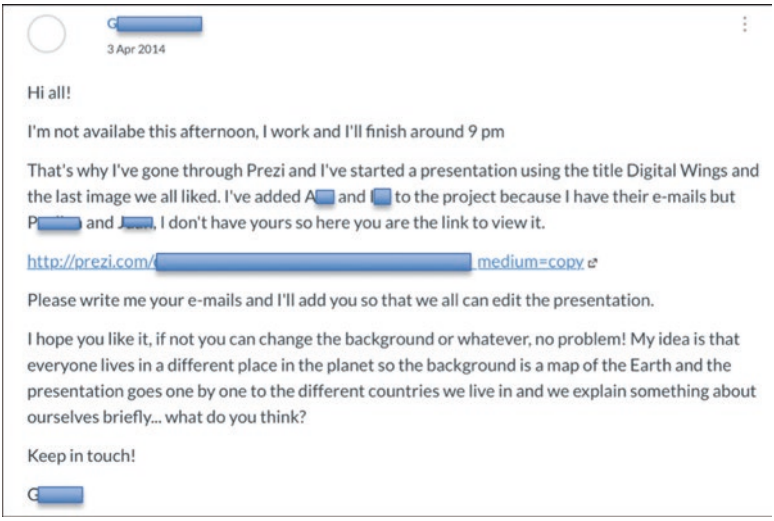



**Fig. 9** Initiation of the co-creation process


**Fig. 10** Digital Wings' Prezi presentation

about each group member and their identity. Thus, the physical spatial relationships between the group members are transduced on the map and made visible to other virtual learners. The interests of each person are summarised in circles representing interest spheres and are clearly associated with a person through arrows.

During the collaboration process on Canvas, Digital Wings demonstrated their awareness of the challenges involved in working together synchronously across

time zones and geographical distance – one of the defining elements of VE and identified alternative approaches. For instance, on April fourth, Irene and Pamela posted the following: "we can write about 3 topics: family and friends, hobbies and places where we live (add some texts, photos to each section)" thus identifying the content and modes to be used in the presentation. On the same day, Giselle stated that this was a "Good idea!" and suggested a way the group should organise their work: "It's going to be difficult to meet all together at the same time, so we can do our parts and upload when finished".

On both Prezi slides (Insets 1 and 2), the mottos suggested by Amy are presented in a central position and in brackets, which enhances emphasis. On the first slide (Inset 1), each group member's name is displayed around the motto, and placed in circles, representing their individual identities. Capitalising on Prezi's affordances for motion, the presentation subsequently zooms in on each individual name drawing the viewer's attention to the circles. As the circles do not overlap, the design seems to reflect the content of the written message, i.e. "five people … that never met before". The digital map in the background foregrounds the meaning expressed in "to fly around the digital world". Yet, the placement of the circles does not yet represent "different countries", nor is the digital wings image used in this segment. The group members' pictures are also not displayed yet. As motivated sign-making, one possible explanation for these choices could be to keep the focus on the written message rather than reveal individual identities at the onset of the presentation.

The final section of the presentation (Fig. 11, Inset 2) also displays the concluding message in the centre, acting as a summary emphasising "learning together" and being "truly digital students". Like in the first zoomed-in section, a small part of the world map in the background is visible, along with part of an image that displays a graduation hat and a certificate with a red ribbon, reinforcing the meaning expressed by the word "learn" in the text.

Other parts of the presentation that could be zoomed in on, showed almost identical sequences of information for each group member: (1) Key information about the person, (2) My home, (3) Family & friends, and (4) Hobbies. They all followed the same layout and visual structure, with different images and text. Irene's slides (Fig. 12) were representative of how each participants' slides were designed. The

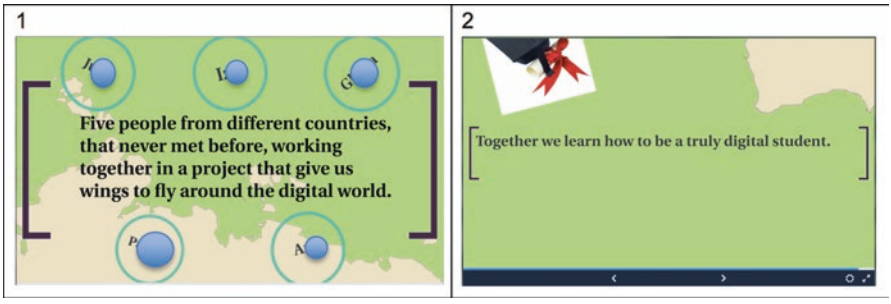



**Fig. 11** First and last slides of Prezi Presentation by Digital Wings

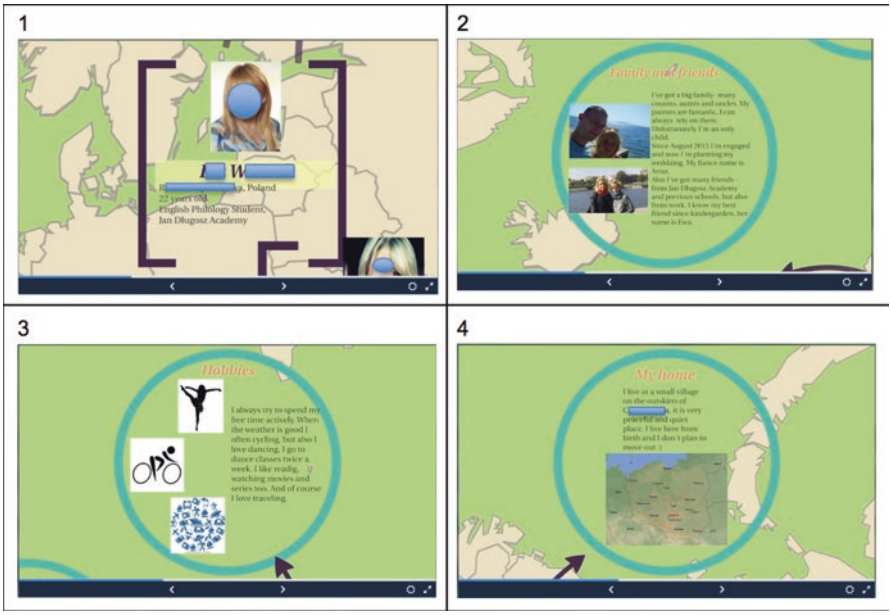



**Fig. 12** Zooming in on each group member (Digital Wings)

participants used both options for navigation afforded by Prezi and allowed the viewer to either use the arrows at the bottom, or explore the whole screen using their mouse. Thus, when the second method is employed, it was possible for the viewer to zoom in on any segment in any sequence, allowing viewers flexibility in interpretation and exploration of the whole screen.

Individual segments were designed as follows: a mugshot image of the participant with the name underneath in bigger font than the remainder of the text, in bold and highlighted (Fig. 12, Inset 1), followed by pieces of information about the participants' location, age, academic discipline and institutional affiliation. These were presented in circles similar to the one used in the initial slide. They were linked to the personal information with arrows creating three branches (Fig. 10).

The text in each circle included a title for the topic (with same font typeface, size, colour, and in italics), written information and accompanying images directly related to the content (Fig. 11, Insets 2, 3, and 4). For family and friends, all participants posted photographs with their loved ones. For hometown, they preferred to include a map, or a photograph of the place they were coming from. Finally, for hobbies, they either used representative images or their own photograph showing them carrying out the activity. The layout of the circles was similar with images occupying as much space as text.

One of the group members, Jeff, did not contribute to the presentation. Yet, the members did not delete the segment allocated to Jeff from the final product, thus keeping his presence as a group member (Fig. 13).

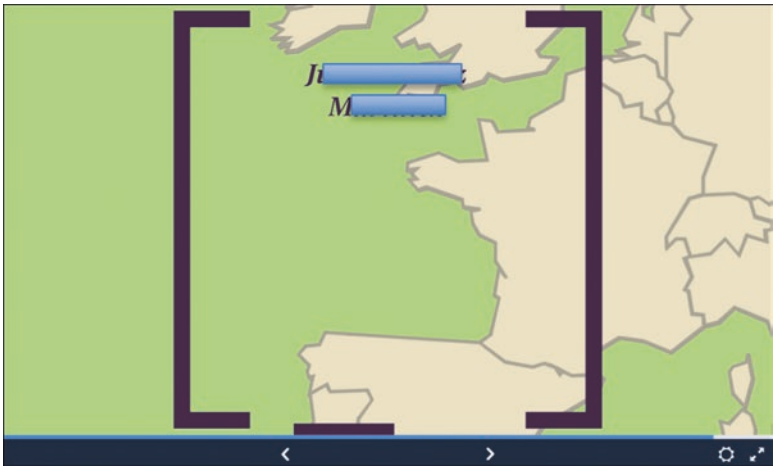


**Fig. 13** Jeff's section in the Digital Wings Prezi presentation

In sum, our analyses in this section focused on a representative VE group and their input on Canvas, the Padlet Wall as well as their Prezi presentation. We have illustrated the many ways in which participants' informed semiotic choices could be observed in their contributions. These involved their ability to present their individual identities, collaboratively deciding on a group identity, displaying their group identity and designing a digital artefact reflective of their identity, i.e. a joint presentation to be shared with other VE participants. Especially for the latter, the group members capitalised on the affordances of the presentation software such as motion, zoom, and spatial relationships. We explored the transformative processes participants engaged in with the aim to make motivated sign-making, transformation, and transduction explicit. We see these processes as indicative of the participants' (1) ability to understand, interpret and execute the relationship and interaction between different formats of digital media and their modal affordances, i.e. their multimodal literacy and (2) their informed use of a range of interacting representational resources in context. i.e. their autonomy.

Before we move on to how the Digital Wings' presentation was assessed by other VE participants, we show an example of less informed semiotic choices. Figure 14 shows the Prezi poster created by *Intercultural Bridge*, who used a similar green background and circles in their design as Digital Wings (Fig. 10).

However, there are several differences between Figs. 10 and 14. First, the spatial relationships between each section (each circle) was not made evident. The circles seemed to be scattered around randomly. The layout of the individual circles also did not seem to follow a pattern. There was no background image, and the image chosen as the group logo was used in the circle in the middle of the presentation. This was the first section viewers zoomed in on when using the navigation set by the learners. Compared to the Digital Wings' presentation, the motion affordance of Prezi was used less effectively with the zoom moving from one circle to the next,

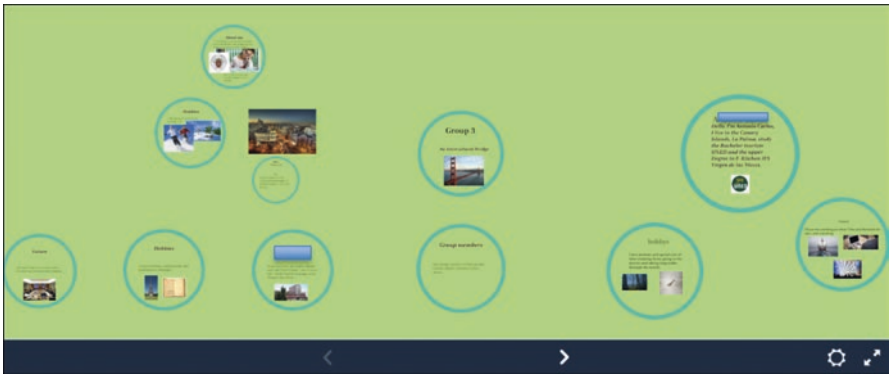


**Fig. 14** Intercultural Bridge's Prezi presentation

lacking the jump from one corner of the world to the other chosen by Digital Wings and immediately representative of their group identity. Finally, information for only two group members was given in the presentation, and the members who did not contribute were excluded. One could argue though that the rudimentary design of the presentation reflected the lack of interactions in this group where 2 out of 4 members dropped out in the course of the VE. The disappointment was reflected in a metaphorical reference to a 2-pillar bridge by the group members: "The bridge ended with only two pillars".

## *4.5 Assessment*

Finally, we focus on how the artefact produced by Digital Wings was received and assessed by the other VE participants (interpreters). We use the term assessment as conceptualised by Bezemer and Kress (2016), in which the interpreter is the one "who decides what is and is not to be taken as signs 'for' assessment" (p. 89). These assessments were part of the task, but they were not assessments of course work in a traditional sense. Hence, there were no criteria or rubrics for peer feedback.

Six other VE participants (Table 2) from other groups offered feedback on Digital Wings' presentation. Three learners (Kate, Anna, and Eric) commended the first and/or the last sections of the Prezi presentation (Fig. 11), which indicated that the interpreters took these messages as key "signs 'for' assessment" as per Bezemer and Kress (2016, p. 89). Peers'/interpreters' assessments also included other modal elements, such as emoticons. Moreover, objective criteria for assessment did not seem to exist as interpreters expressed subjective preferences and affect implied by comments such as "really sweet", "I like", "very nice", "my favourite", "I really enjoy", and "very good" (Table 2). Interpreters rarely explained the basis of their judgement. When they did, they seemed to highlight the mode more than the content. The modal elements that were commended included colour and images (colourful

**Table 2** Interpreters' assessment of Digital Wings' Prezi presentation

| Student/date | Feedback |
|---|---|
| Kate/8 April | I've seen the presentation of [redacted], I like the first slide, where the whole group is introduced, the last comment is really sweet ;-) What is more, I like the colorful photos included in presentation. |
| Marta/11 April | Dear Digital Wings<br><br>You made very nice presentation. I like that you placed your slides on a map ;) |
| Carey/10 April | I have wathed all presentations!<br><br>Digital wings is very nice! |
| Elia/11 April | I've seen all of your presentations and I like them very much:) The presentation of Digital Wings is my favourite;) Great job! |
| Anna/11 April | Dear Digital Wings,<br><br>I like your concept of the map and the introductory note which makes me feel like I'm watching some kind of trailer ;) If you added music to it, that would be even more trailerous :) You included also a lot of info about you and your lives.<br><br>I really enjoy watching your presentation :) |
| Eric/20 April | Dear Digital Wings, your presentation is very good. It has a very nice design and plenty of information. The introduction of the presentation is remarkable too. Congratulations! |

photos), layout (placement of slides in a map), and design (nice design). Content-related assessment expressed in written language involved "the last comment", and "plenty of information" about the participants.

Anna's feedback was particularly interesting, as it seemed to point to the modal affordance of motion. In her feedback, she stated that the introductory note made her feel like she was *watching* a trailer, as opposed to *reading* a presentation. She believed that sound effects would have improved this sense of *watching* a trailer as the main act of the interpreter.

In our view, this speaks to Bezemer and Kress (2016) who perceive semiotic resources as providing 'inroads into learning' and explain how through 'transformative engagement' with the available resources, learners gradually expand their resources for making meaning and 'acting' in a bespoke environment and thus their semiotic budget (Hauck & Satar, 2018). Applied to language learning and teaching in online contexts such as VE, this amounts to learners enhancing their linguistic and semiotic skills by interacting via the available communication modes, by making use of them while carrying out tasks including – as we have shown here – their evaluation.

## 5 Concluding Remarks

Kramsch (2006) stresses that it is no longer "sufficient for learners to know how to communicate meanings", and that "they have to understand the practice of meaning making itself" (p. 251). To this effect, we have implemented a task-based approach which, by being non-interventionist by nature, makes it possible for learners to exercise control over task completion and associated meaning-making processes.

Task design was informed by Kurek and Hauck's (2014) framework which sees learners moving along a continuum from *informed reception* of multimodal input to *creative contribution* of multimodal output – in our case, the final Prezi presentations of the group identities. In this process, Kurek and Hauck (2014) see learners as 'semiotic initiators' and 'semiotic responders' akin to rhetors and interpreters in a social semiotics approach (Bezemer & Kress, 2016).

Drawing on social semiotics then – the concepts of modal affordances, motivated sign-making and transduction in particular – we have shown how the task the VE participants engaged in and the task products they assessed allowed them to alternate in their roles as rhetors and interpreters while making use of and stretching their multimodal literacy skills. We framed the latter in accordance with Pegrum (2009) as the ability to understand and interpret and also to execute the relationship and interaction between different formats of digital media. We see VE as the ideal setting to foster such skills development and – as a result – learner autonomy which we framed drawing on Palfreyman (2006) as the semiotically informed use of a range of interacting semiotic resources in context. The context in a VE is by default technology-mediated and – as a result – learners are dependent on the affordances of the environment to express their meanings, collaborate and design their joint products (here, Prezi presentations).

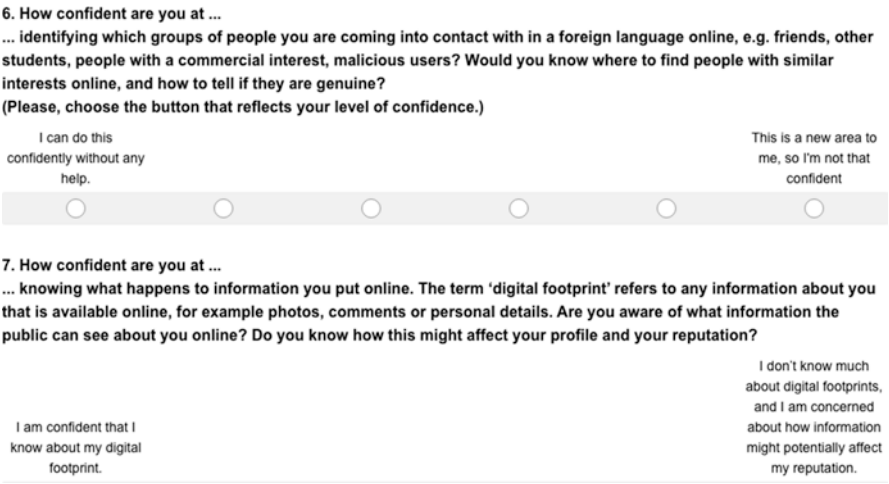
Our data analysis and the comparison of multimodal performances in two groups testify to the fact that varying levels of multimodal literacy and autonomy among learners are contingent on their awareness and control over the modal affordances of the available resources provided by the technologies. At the same time, the variety of modal or semiotic options at their disposition is likely to impact on the multimodal quality of their output. In other words, learners will be limited by the semiotic affordances of the environment and the tools they (choose to) use for expression of the self which, in turn, has an impact on their ability to exercise autonomy as it has been framed here. Kern (2015) reminds us that all interaction, not just technology-mediated interaction such as it happens in VE, is, in fact, multimodal. What technologies have added are new modalities and media for communication. However, different media can facilitate or favour different kinds of meaning making (Bezemer & Jewitt, 2010). They can also constrain them through the design of the tools themselves and differential access to production and reception of meanings by the semiotic initiators/rhetors and semiotic responders/interpreters.

Following the above, we reinforce Hampel and Hauck's (2006) call for learner (and tutor) preparation based on multimodal pedagogy (Stein, 2004). As we argue, in order to develop their autonomy, online language learners should be offered contexts in which they can combine various semiotic modes and resources to address their intended purpose and audience. In our study, one example of informed semiotic choice is reflected in Fig. 6 (Inset 6). It shows how the rhetors shape engagement through their focus on transformation and transduction as well as the interpreters' semiotically informed evaluations ("the name and image are fantastic choices", and "the image of wings…fits to the name"). Not only is this indicative of the learners' ability to transform and transduct, it is also a sign of their awareness of modal interaction – the idea of 'complementarity'. In this sense, Palfreyman's

(2006) conceptualisation of autonomy has to be understood in relation to the affordances of the resources. If we accept then, as Lamy (2012) put forward that "learning is affected by the resources that are available to learners and their use" (p. 429), the learning of languages and cultures in VE settings can be conceptualised as transformative engagement (Bezemer & Kress, 2016) with multimodal meaning-making – in our case, for collaboration and self-representation and collaboration – on the path to enhanced autonomy.

## Appendix

Sample questions from pre-training survey. Due to the length of the survey its full version will be made available upon request.

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# From Autonomous Learners to Self-Directed Teachers in Telecollaboration: Teachers Look Back and Reflect


**Jelena Marjanovic, Melinda Dooly, and Randall Sadler**

**Abstract** This chapter presents data stemming from surveys and interviews of students who have taken part in a teacher education course that consists of project-based collaboration between geographically distant classes (one in the USA, the other in Spain; often known as telecollaboration) as part of the course program. This study has been produced in part under the framework of the PhD program on Education from the Universitat Autònoma de Barcelona. The historical evolution of the course during the 16-year continuous collaboration (since 2004 and ongoing) between the two teacher educators is briefly outlined before presenting the context of the data compilation and the most predominant outcomes from the survey of former students who had graduated between 2004 and 2015. The focus of the analysis is to discern whether the design of the initial teacher education program, which aims to promote a gradual but steady increase in learner autonomy, and exposure to telecollaboration can promote eventual teacher autonomy. It is assumed that these teaching characteristics will be important for student-teachers to implement telecollaboration in their own teaching in the near future.

**Keywords** Teacher autonomy · Learner autonomy · Telecollaboration · Teacher education · Virtual exchange

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## 1 Introduction

The use of telecollaboration (also known as Virtual Exchange) in teacher education has become more common in recent years (Baroni et al., 2019). With the augmented use of Internet and digital technology around the world, the opportunities for collaborative partnerships are being exploited much more frequently among professionals (OECD, 2018); similar patterns can be perceived in teacher education programs (Baroni et al., 2019). It should be noted, however, that telecollaboration is not an entirely new teaching approach (Dooly & O'Dowd, 2018), resulting in different definitions over the past decades (see Dooly, 2017; Guth & Helm, 2010; Lewis & O'Dowd, 2016; Ware, 2018). In this chapter, we use the term to refer to a teaching approach that is supported through digital communication tools for the purpose of formal teaching and learning. It is differentiated from single-class online teaching because it aims to engage teachers and learners from entirely different classes in pre-designed activities that must be *collaboratively* performed, meaning that the teaching syllabus is co-designed. It is also different from informal online language learning because it is an integrated part of a formal education program.

The increased use of telecollaboration in teacher education has opened up fields of inquiry into autonomy, in particular learner autonomy (Dooly, 2017). This is concurrent with general strands of research in education as learner autonomy has become a fundamental goal for education in many (mostly Western) countries (Kerr, 2002). This increase aligns with widely accepted approaches to teaching that are based on constructivist and sociocultural theories of learning (Thornbury, 2013). Similarly, many practitioners of telecollaboration in education base their approaches on these same paradigms (Dooly & O'Dowd, 2018), providing further justification for research into learner autonomy in telecollaborative settings.

Nonetheless, there has been far less research into the development of teacher autonomy in telecollaborative environments (Baroni et al., 2019). Moreover, in-the-moment studies into learner autonomy of students of teacher education, that is to say, teachers-in-the-making, do not necessarily provide insight into whether their development of autonomy as a learner will transfer into teacher autonomy once they join the workforce.

Predominantly, in literature regarding autonomy in educational settings, learner and teacher autonomy are described as being interconnected (Manzano Vázquez, 2017). Drawing on a prior argument by Smith and Erdoğan (2008) that students in teacher education must have the ability to self-direct their learning and development as future teachers, Manzano Vázquez (2018) states that "the fact that teachers have a dual role to play as self-directed practitioners and learners" must be emphasized (p. 82). Still, as we discuss further on, conceptualizing autonomy is far from simple; Manzano Vázquez (2017) states that as a "multidimensional construct" (p. 83), it has been defined from many different perspectives. It is beyond the scope of this study to consider all of the dimensions so we have focused principally on the role of agency in teacher development.

We first provide an overview of the role of agency in teacher development and education, followed by a discussion of these same issues in telecollaborative settings. Next, to contextualize the data compilation, we provide an overview of the telecollaborative course as it has evolved from 2004 to 2020. Following the context description, we discuss data collection from former students who graduated from the course during an 11-year period (2004–2015), first providing an overview of the survey responses, followed by a descriptive analysis of ways in which telecollaboration is being carried out by former students in their own teaching practices, based on their self-reporting interview and survey answers.

## 2 The Importance of Agency in Teacher Development and Teaching

As early as the 1970s, researchers have illustrated the key role that teacher decision-making can have regarding what occurs in the classroom and eventually on their pupils' overall learning outcomes (see Bishop, 1976; Shulman & Elstein, 1975; Stern & Shavelson, 1983). While these first studies did not explicitly link the findings to teacher development, the research established a basis for understanding the ways in which teachers' previous knowledge and beliefs – many of which are formulated during teacher education – can have an impact on 'in-the-moment' decisions in the classroom.

Studies have explicitly explored the connection between teacher agency, decision making and teacher development (Sawyer, 2001). Many of these investigations have led toward practices that promote teacher education programs that encompass teacher reflection and professional collaboration (Barfield et al., 2002; Hargreaves & Dawe, 1990; Hargreaves, 1993) with a growing emphasis on teacher agency, subjectivity, teacher inquiry and transformation, versus a more passive, receptive model of teacher knowledge acquisition.

It has also been argued that the concept of agency is relevant for learning, both in formal learning environments (e.g., university) and in the workplace (e.g., continued teacher development) because, to a large degree, an individual's agency will have an impact on how this person engages in the process of learning in whichever context she finds herself (Billett, 2004). While there are many different definitions of agency (see Edwards, 2015, for a thorough review), one of the most commonly highlighted features traversing the definitions is: taking the initiative to intentionally set events into action rather than simply allowing them to happen; and in the case of learning, holding a sense of ownership of the process. For this study, we deem this characteristic as agency. Agency is a key ingredient for autonomy; the learner must activate their agency in order to 'take charge' of their learning (Holec, 1981) and thus become an autonomous learner.

As mentioned previously, to a large degree the central focus of educational research has been on learner autonomy, although recently teacher autonomy has also emerged as a topic of interest (Manzano Vázquez, 2017). Perspectives on

teacher autonomy have tended to either concentrate principally on professional freedom of choice (Benson & Huang, 2008) and attitudes toward promoting their learners' autonomy (Burk & Fry, 1997; Jiménez Raya et al., 2007; Smith & Erdoğan, 2008); although for Little (1995), teacher autonomy is a personal responsibility which includes an obligation to strive for effective teaching, continuous reflection on own practice and ongoing professional growth. McGrath (2000) suggests that teacher autonomy should be a compulsory outcome of professional development and Little (2000a) underscores the coalescence of teacher and learner autonomy as flip sides of the same coin:

> […] the development of learner autonomy depends on the development of teacher autonomy. By this I mean two things: (i) that it is unreasonable to expect teachers to foster the growth of autonomy in their learners if they themselves do not know what it is to be an autonomous learner; and (ii) that in determining the initiatives they take in the classrooms, teachers must be able to exploit their professional skills autonomously, applying to their teaching those same reflective and self-managing processes that they apply to their learning. (p. 45)

Still, a black and white correlation between the teacher-learner has been challenged (see Lamb, 2008 for an overview of the arguments) since "the relationship between learner autonomy and teacher autonomy remains a difficult relationship to conceptualize […] partly because we tend to understand the two constructs as belonging to two different parties in the teaching and learning process" (Benson & Huang, 2008, section. 5 Discussion, para. 5). However, some authors have argued that while it is not a simple issue of causality, it is evident that teachers have a key role for supporting learners in their evolution to become increasingly more autonomous (Lamb & Reinders, 2005) and that teacher education should include experiential learning that requires learner autonomy so that student-teachers can transfer this knowledge into their own teaching contexts in the future (Smith & Erdoğan, 2008).

## *2.1 Teacher Agency in Telecollaborative Environments*

Other studies, aimed more specifically at understanding the interrelationship between teachers' technology integration, their beliefs in the value of technology and their autonomous use of technology in their teaching, highlight the role of teacher education and future actions of the teachers (Nelson et al., 2019). In Antoniadou's (2011) study, an outcome of the pre-service teachers' involvement in telecollaboration was their critical reflection on telecollaboration affordances from the teacher (as opposed to student) point of view. She found that the pre-service teachers included their ability to autonomously organize telecollaboration as a priority when ranking teacher skills acquired during the telecollaborative experience. In another study (Enson et al., 2017), it was found that following their participation in telecollaboration, the pre-service teachers predominantly viewed their teacher

role as that of an innovator and e-moderator of the learning process. Again, the ability to implement telecollaboration was seen as an important asset for their future career, which even influenced some to undertake further relevant professional development and they underscored the potential of telecollaboration as a means for developing student autonomy (Enson et al., 2017). Other literature highlight the role of experiential modeling of telecollaboration tools and implementation procedures to foster learner autonomy in teacher education (Dooly & Sadler, 2013; Fuchs, 2006). Along these lines, there have been studies regarding the transfer of pedagogical skills related to telecollaboration in teacher education, however, most of these reports used case studies of student-teachers at the time of their enrolment in the program (Luo & Yang, 2018); there is a lack of studies of teachers' retrospective recall of their teacher development within the context of their current teaching.

## *2.2 Contextualizing the Data: The Course*

The genesis for this research began in 2003 when one of the authors (Dr. Sadler) was seeking another professor with whom he could engage in course-to-course telecollaboration. After another colleague guided him to Dr. Melinda Dooly (another author), and following an initial email contact, they began their collaboration. Subsequent to some months of planning, they implemented their first telecollaborative attempt in 2004 between students at the University of Illinois at Urbana-Champaign (UofI) enrolled in a Master's in Teaching English as a Second Language (MATESL) program and taking a course on *Network-Based Language Teaching* and students in a Bachelor of Arts (BA) in the English Teacher Education program at the Universitat Autònoma Barcelona (UAB) enrolled in a course focused on *Interlinguistics*. As might be expected given the year, the first exchange used relatively simple technology by today's standards, including a phpBB Message Forum in order to brainstorm topics for discussion, followed by synchronous audio and text chat meetings over the course of 2 weeks (via Yahoo messenger) in which the students discussed the topics generated on the forum and then compiled a report on their experiences.

From that first iteration of the telecollaboration, the professors had the idea firmly in mind that a principal goal should be for the students involved to be the primary directors of the telecollaborative process in order to encourage them to become autonomous learners. Over each of the following years, up to and including the present one (Fall, 2020), the exchange was repeated by new groups of students with the telecollaborative component steadily expanding and the courses taught by the two professors becoming more similar as the aims of the courses increasingly focused on preparing the student-teachers for telecollaborative teaching once they graduated from the course. In 2009, the telecollaboration was expanded to include the entire shared duration of the semesters in which it was implemented and there

was an increasing use of flipped materials[1] during the telecollaborative activities, with the goal of increasing learner autonomy. Beginning in 2013 the UofI and UAB courses involved in the telecollaboration shared the same course title – *Technology-Infused Language Teaching* – and identical core curriculums, leading to 14 weeks of telecollaboration between groups of students each semester. The end goal of the telecollaboration each semester has been for each group to design their own telecollaborative project that they might implement in the future with their own class.

The students and professors' experiences since 2004 led to the creation and implementation of the FIT model, emphasizing the interaction between the use of **F**lipped Materials, **I**n-Class activities, and **T**elecollaboration (Dooly & Sadler, 2020; Sadler & Dooly, 2016). In this model, students engage with the flipped materials prior to their telecollaborative meetings and face-to-face classes so that they can discuss those concepts with their fellow future teachers and put them into practice (see also Fuchs, 2019). Both telecollaboration and flipped classroom models have been linked to facilitation of learner autonomy, especially through self-regulation and self-directed learning, peer collaboration and management of material (Fuchs et al., 2012; Lai & Hwang, 2016; Little, 2016). In that sense, each element of the model reinforces the others and further encourages students to become autonomous learners rather than depending solely on the voice of the teacher educator (see Dooly & Sadler, 2020; Sadler & Dooly, 2016 for more details of the course design).

## 3 Methodology

### *3.1 Data Collection Process*

The data were compiled during 10 months, beginning with a 'master database' taken from an online student registration file of students who had been enrolled in the course (at the Spanish university only) over the span of 11 years (2004–2015). The initial list contained 453 Former Students' (herein FSs) names and contact details. Due to limitations of resources, the database was constructed only from one university.

[1] Increasingly, technology is used in educational settings to create a flipped classroom approach. This implies having the learners complete activities outside the classroom that are usually done inside the classroom (e.g. viewing of recorded mini-lectures rather than sitting through face-to-face talks). As Dooly and Sadler (2020) have pointed out, this approach places "emphasis on active learning, both inside and outside the class" (p. 2). The authors also make a distinction between flipped instruction and telecollaboration. "Although both involve outside the classroom work, the students may engage with the flipped materials individually (human-to-computer interaction), whereas […] telecollaboration consists of human-to-human interaction mediated through computer or digital technology" (p. 2).

Because the contact information in the student registry was mostly out of date, each student name was thoroughly searched in common Internet media and search engines (e.g. LinkedIn, Facebook, Twitter, YouTube channels). To further refine the potential list, indicators such as whether the person was currently involved in teaching or other education-related professions in their social media profiles (websites, blogs, pages) or prior relationship to the university were researched. Once the database had been narrowed down to individuals positively identified as having been enrolled in the course in question, the database was then more finely profiled to only include potential participants who appeared to be currently teaching or somehow involved in education or had taught/been involved in education at some point after graduation. These culling steps resulted in 151 FSs (see Table 1).

The 151 FSs were contacted with an initial online survey which aimed to confirm that they were indeed involved or had been involved in teaching or similar educational endeavors and to request their interest and consent to participate in the study. The initial contact included explicit notification of the research ethics protocol that would be used if the participants were to consent. These protocols were based on those established by both universities and guided by the research ethics guidelines set out by the second author's research group.[2] It is important to point out that initial contact was not a straightforward process as social network privacy regulations and other restrictions often made contacting difficult or impossible. At that time, the European Union General Data Protection Regulation 2016/679 had not gone into effect so the authors relied on the above-mentioned research protocol. In the end, a total of 63 FSs responded, all of whom gave their consent to participate in the first survey aimed to establish whether they had had any experience in telecollaboration after having graduated from the course.

After this, the 63 FSs were sent a second more detailed survey, which was online and contained 29 multiple choice and open-ended questions related to their experience with telecollaboration implementation, reasons for implementation (or not), details of implementation and general information such as years of teaching experience and levels taught. Out of 63 FSs, 50 responded. Additionally, there were three more former students who were contacted through other venues and who provided information about telecollaborative exchanges they had been involved in. After the initial analysis, 17 respondents were selected to participate in the next study phase that included more in-depth questions in order to gain more detailed descriptions of telecollaborative projects and clarification regarding motivation and roles in the

**Table 1** Summary of respondents

| | |
|---|---|
| Number of former students who had online contacts and had careers in education and who were initially contacted | 151 |
| Number of respondents: 1st survey | 63 |
| Number of respondents: 2nd survey | 50 |
| Number of respondents in-depth interviews | 17 |

[2] http://grupsderecerca.uab.cat/greip/en/content/greip-research-protocol

projects or reasons for being interested but not having implemented such projects in their teaching, if this were the case.

## 3.2 Data Management

The data were stored and analyzed in an online software called Dedoose, a qualitative data management platform. This platform was chosen because the research was part of a larger, qualitative research and at the time, the platform was free for users.

Each respondent was recorded as an individual entry and all his or her answers were added to the data software management platform. Their initial binary responses of yes or no regarding telecollaborative experience were recorded and then matched with corresponding qualitative descriptors (e.g., reasons for not participating, motivations for initiating a telecollaborative teaching experience). This resulted in 53 descriptors.

Written and audio materials submitted by the 17 participants were then inserted in Dedoose and linked to the corresponding respondents. These materials were thematically analyzed using the following broad categories[3]: (1) attitudes and opinions regarding telecollaboration and implementing it (again) in the future; (2) implementation challenges and dealing with them; (3) project description and telecollaboration materials; and (4) autonomous teacher behavior. This resulted in 148 coded excerpts.

We then cross-compared descriptor to descriptor, code to code and descriptor to code to find potential correlations between variables such as unsuccessful/challenging telecollaboration implementation; motivation and autonomy to try implementing telecollaboration again and belief in telecollaboration value.

## 3.3 Participants

The 50 participants who responded to the second more detailed survey all graduated with a teaching degree from the UAB between 2004 and 2015 (There were no participants belonging to the year 2011). The three informal respondents came from the first and final years (one from 2004, two from 2015).

The participants from the first survey were all teaching or else involved in some type of educational activities (administration, informal learning contexts, etc.) at the moment of the data collection. Out of the 50 second survey respondents, 36 taught in primary schools, and 12 taught in kindergarten. One FS was teaching adults, teens and children in a private language school and one was involved in therapy and education and was not teaching. On average, they had 7.14 years of teaching

[3] Categories derived from the initial research questions of the PhD work by the first author of this chapter.

experience. Among these 50 respondents, there were 14 FSs who had graduated with a teaching degree from the UAB but who had not taken the course described in the previous section because they had opted for an Erasmus mobility exchange and therefore had the course credits recognized through an institutionalized learning agreement that forms part of the exchange.

The three former students that did not participate formally in the study but who provided information regarding their telecollaborative project in private conversations are currently working in schools in public primary education.

## 4 Survey Results: An Overview of Responses

We first present some numerical values from the responses of the 50 survey participants (plus the 3 who answered outside of the survey) before discussing these values in relation to the question of teacher autonomy.

As seen in Table 2, out of the 53 respondents, 17 FSs have used telecollaboration in their own teaching and on their own initiative. Of the 17 FSs who have implemented telecollaboration, 9 have less than 5 years of teaching experience. There were also four FSs who stated that they have helped other teachers set up telecollaboration programs, but did not answer 'yes' to the question of whether they had implemented telecollaboration in their classrooms, two of whom graduated in 2008, one in 2012, and one in 2015.

Regarding the FSs who had not taken part in telecollaboration (see Table 3), here are some key characteristics (the possible answers were not mutually exclusive).

**Table 2** Values and descriptors related to 'yes' responses

| |
|---|
| Total respondents = 53 |
| 17 carried out telecollaboration on their own initiative |
| 17 planned to repeat it |
| 0 claimed to have insufficient knowledge to engage in telecollaboration |
| 0 claimed difficulties in task design/implementation |
| 17 gave positive evaluation of student experience as reason |

**Table 3** Values and descriptors related to 'no' responses

| |
|---|
| Total respondents = 53 |
| 36 had not carried out telecollaboration |
| 14 did not attend the course (were in exchange programs) |
| 16 planned to use telecollaboration |
| 5 attempted telecollaboration |
| 11 had not thought of doing so before the survey |
| 2 cited a lack of student interest |
| 4 considered themselves incapable |

Out of the 53 FSs contacted, 14 did not attend or complete the telecollaboration course at the UAB (due to study abroad programs, etc.). Only one of these 14 FSs who had not taken the course had implemented telecollaboration in their teaching. Of the 36 who said they had no experience with telecollaborative teaching, 16 indicated that they have plans or are planning to implement telecollaboration in their teaching in the future, 9 of whom have less than 5 years experience. Five indicated that they had tried to start or wanted to implement a telecollaborative project but could not obtain appropriate resources and/or funding to do so (3 of the 5 with less than 5 years teaching experience). Two of these (both with less than 5 years teaching experience) further explained that they had actually started a telecollaborative activity but it had failed for diverse reasons. Of the 11 FSs respondents who said that it had not occurred to them to try to implement a telecollaboration, the overwhelming majority of them were teachers with less than 5 years experience (10 out of 11). Regarding reasons for not initiating telecollaboration in their teaching, two respondents declared that it was due to lack of student interest (one was an experienced teacher the other one with less than 5 years teaching). The years of experience were equally divided (2 with 5+ and 2 with less than 5 years) regarding the four teachers claimed they felt incapable of carrying out a telecollaborative exchange in their classrooms.

Regarding the respondents who indicated that they had taken part in telecollaboration as teachers, some points stand out. Firstly, 100% of the 17 FSs who have implemented telecollaboration are planning to do it again. Of these 17 FSs, no one reported having had difficulties with task design in their implementation of telecollaboration. Likewise, no FSs claimed to have had insufficient knowledge of telecollaboration as a challenge in their telecollaboration projects. All the respondents indicated that the telecollaborative exchange had contributed positively to their teaching and their students' learning.

At first glance 17 out of 53 FSs carrying out telecollaboration in their current teaching does not seem like a high number, however this is 32% of all the respondents. If we add the number of respondents who had indicated 'no' regarding participation in telecollaboration (but who then explained they had assisted other teachers in the school with telecollaboration or that they had tried to do so but had failed), the percentage of former students who have participated or are participating in telecollaboration rises to 41%. Moreover, removing the 14 FSs from the survey who had not taken part in the telecollaboration course (they were abroad in that semester and therefore exempt from the course), the number of respondents who had graduated from the course and who currently have some experience in telecollaboration as teachers is more than half (54%). It is worth noting that 53% of this percentage of teachers who have taken part in the telecollaboration had less than 5 years experience, placing them in the most recent iterations of the telecollaborative course at the Spanish university. Significantly, these iterations correspond with the timespan in which the component of telecollaboration has become a central and fully integrated part of the program (see section describing the course above; see also Dooly & Sadler, 2020; Sadler & Dooly, 2016).

Notably, 43% of the FSs who declared that they had not taken part in any type of telecollaboration in their teaching stated that they planned to do so in the future and of these, 56% are also recent graduates (5 years ago or less) while at the same time, the principal reason for recent graduates who had not taken part and had no plans to do so was because 'they had not thought of it before'. While it is impossible to make confirmed assertions regarding these values it is worth noting that some other factors such as the circumstances of the FSs employment may shed more light on these numbers. Many of the respondents had relatively little teaching experience. This, paired with the general job insecurity in Spain/Catalonia may mean the FSs had little to no room for innovation. Most newly graduated teachers in Spain face the difficulty of having to work on temporary contracts or have part-time jobs for many years (they can be on call for temporary teaching up to 10 years) before earning the stability of a full-time teaching job. Such conditions are more likely to discourage any kind of initiative, including organizing telecollaboration, as the FSs may feel it makes little sense to invest their time and effort into such relatively long-term projects when their own positions at the institution are probably not permanent. Nonetheless, of the 17 respondents who declared they had taken part in telecollaborative teaching, over half of them had less than 5 years experience in the classroom.

Of the FSs who carried out telecollaboration in their teaching practice after having graduated from the university, around 50% reported that at least one of their primary reasons for implementing telecollaboration was because they had felt inspired by their previous participation in telecollaboration as students during their studies and/or they thought it would be beneficial for their students.

It can be extrapolated from these responses that the double experience of taking part in telecollaboration as student-teachers and then implementing telecollaboration as teachers reinforces their confidence and motivation to repeat the experience. Additionally, the prior knowledge stemming from an intensive immersion in the principles of telecollaborative project design during the course appears to have made an impact on their actual implementation. No one cited task design difficulties or insufficient knowledge as a problem during the telecollaborative exchange.

## 5 Qualitative Analysis

### *5.1 A Synopsis of the 17 Telecollaborative Exchanges Reported by the FSs*

Most of the telecollaborative projects were organized with primary school students (6–12 year olds). Two reported implementing telecollaboration with kindergarten students (1–5 year olds). All of the projects involved partners in the European Union or the USA. The projects had a general average duration of 7 months.

The majority of the telecollaboration projects described in the study were aimed at improving students' language (mentioned by 92.3% of the respondents) and/or intercultural competence (84.6%). These aims were followed by the objective of

improving students' digital competence (cited by 38.5%). Other objectives reported by the FSs were: "to improve online communication competence," "to foster intrinsic motivation when learning" and "to know the other students."

Despite a lower average regarding explicit reference to digital competence, digital tools were clearly an integral part of the projects' implementation. The use of many different digital communication tools were reported, including but not limited to email, video-conferencing software such as Skype or Zoom, use of shared storage devices such as Google Drive, LMSs such as Moodle, eTwinning tools, text chats (e.g., Messenger), integrated platforms such as Padlet as well as the use of YouTube for producing introductory videos of themselves and their schools, and Tablet-hosted apps for storytelling and video sharing.

In terms of pedagogic design, the projects described in this study ranged from less formal configurations that involved very little actual collaboration, such as 'show and tell' exchanges based on pen pal activities (exchanging emails and video messages) to ones featuring elements of project-based telecollaborative projects that were minimally 4 weeks in length (for some examples see Dooly & O'Dowd, 2018). There were several projects that involved quite complex setups, both pedagogically and logistically, and in which the participants were language learners who communicated digitally and engaged in social interaction that included both intercultural exchange and collaborative problem-solving activity (e.g., producing a story together). In a highly complex project configuration, one FS with 10 years of teaching experience took on the coordination of a project that brought together 7 schools from different countries. The project lasted for 2 years and included 'physical mobility' (hosted visits from partner classes). These examples illustrate the agentive teacher behavior that the course aimed to foster: taking initiative to organize international telecollaboration and assuming personal responsibility and control over implementation of activities with highly multicultural participant profile.

## *5.2 From Learner to Teacher Autonomy: Self-Reporting of Initiatives and 'Owning' the Process*

Of the 17 FSs who had carried out telecollaboration (described in the previous section), around 50% reported that their principal reasons for doing so was because they had felt inspired by their previous participation in telecollaboration as students during their studies and/or they thought it would be beneficial for their students. In at least one case, the telecollaborative exchange was derived from continued contact between classmates after leaving university. After moving to England to teach, one interviewee explained that she received an invitation from her university colleagues to set up telecollaboration and help their students get more interaction with native speakers of English.

Other FSs reported that the telecollaborative project was not their idea originally; they found themselves in situations where it was either proposed by a colleague (four cases) or requested/organized by the institution where they were working at

the time (three cases). However, even though they had not initially proposed the idea, the students felt empowered to take on the projects. While the principal underlying objective stated for carrying out the projects was to encourage their students to use the target language of study (English) for authentic communicative purposes (in particular, oral competences), another explicit aim in at least one case was the promotion of learner autonomy, as stated by the respondent.

Regarding difficulties faced during the process, the FSs reported a variety of challenges that can be classified as external issues, student-related issues, and organizational issues. Similar to what has been reported elsewhere (e.g., Baroni et al., 2019; Helm, 2015), external issues were the most common challenges FSs faced in their telecollaborative projects. These included:

- Technical issues (poor Internet connection, communication breakdown due to technological failures): 9/17;
- Differences in timetables or time zones: 6/17;
- Insufficient resources (time/money): 5/17.

At the same time, these findings revealed resourcefulness on the part of the FSs as they found creative ways to resolve their difficulties: "I had several difficulties with the Internet connection from the school: the connection was not good. Luckily, I had a Plan B and I connected the computer to my mobile phone, so I could use 4G during the connections."

However, the FSs found it more difficult to come up with such quick solutions when faced with organizational issues, the second most common challenge and the single most common reason given for *failed* telecollaboration. They included:

- Lack of institutional support: 3/17;
- Teacher to teacher relationship: 4/17;
- Lack of teamwork: 4/17;
- Work ethics mismatch: 2/17.

Frequently the FSs described the sense of "feeling alone" in their efforts (6/17) either due to "little support from their institution" or due to their telecollaborative partner "disappearing" and not investing the same amount of effort as they did.

These results may seem pessimistic at first glance, but they reveal another manifestation of autonomous teacher behavior on the part of the FSs. Specifically, their agency is demonstrated through initiation, organization and/or carrying out of telecollaboration in an institutional context where such activities had not been implemented before or where such activities had not been encouraged. This may even entail carrying out the project in unsatisfactory technical conditions and completely on one's own, as described below. One FSs provided a detailed account on how he initially faced heavy opposition by his colleagues at the school regarding the initiation of his project:

> […] the first problem I had to face was with the school teachers: nobody from the department believed in or supported this project. They told me that it was very difficult to follow [sic] this kind of projects because normally the other teachers are not responsible with them. At the end of the project, they congratulated me.

Working in a context where the notion of telecollaboration was not only unfamiliar but was met with resistance, this FS exemplifies how he took ownership of his teaching. He challenged the status quo, struggled for permission and eventually gained the freedom to implement the pedagogical approach he considered to be most appropriate for his students. He also managed to carry out the 9-month project without additional support from the rest of his colleagues as well as facing many of the issues that are most commonly reported by the other FSs such as lack of adequate space for carrying out the project and poor Internet connection, which he overcame by using his mobile phone as an Internet hotspot. Moreover, even these issues have not deterred him from continuing to implement telecollaboration with his students: "This year I'm continuing the project with Finland and we are exchanging videos. I could not continue the project with England because the school closed due to a lack of funding." This respondent, along with several others who discussed how they 'self-managed' and resolved emergent problems, is an indicator of self-regulation, which refers to the ability to adapt to changing circumstances by shifting to more appropriate strategies, adopting more adequate resources, or reconceptualizing expected outcomes (Zimmerman, 2000). This mix of flexibility and informed and highly proactive decision-making was demonstrated by many of the FSs in this study when facing challenges in their telecollaborative efforts.

As said before, no one mentioned difficulties in the telecollaborative task design as a challenge. Overall, the FSs felt confident in their pedagogical skills to implement telecollaboration and in most cases their tasks fit the pedagogical methods they had studied as part of the content design of the aforementioned course. These results contrast findings from Fuchs' (2006) study on preservice teachers. Fuchs found that 15 out of 26 student-teachers were able to imagine themselves using computer-mediated communication in their teaching.

> However, some of them pointed out that they felt "motivated but not quite competent" yet, that they would "not use [computer-mediated communication] by themselves," that they would "only do it after having taught for a while," and that they would "only do not-so-complex projects (i.e., with small classes and with a lot of learner training)." A definite "No" came from 4 preservice teachers (15%), while 2 preservice teachers did not know (8%), and 5 did not provide an answer (19%). (Fuchs, 2006, p. 265)

The fact that once they become teachers (the aforementioned study covered preservice teachers), many of the respondents in our study did implement telecollaborative projects, including a few highly complex ones is indicative.

Furthermore, the challenges the FSs experienced did not seem to significantly affect their satisfaction with their telecollaborative exchanges. On average, they graded their teacher satisfaction with 4.07/5 and marked their students' reaction to telecollaboration with 4.46/5. Positive student experience stood out as the most rewarding outcome and simultaneously the biggest incentive for implementing telecollaboration projects again in their teaching. Moreover, while the participants valued their students' experiences as the most important key motivational factor, they also indicated (although to a slightly smaller degree) their own positive experiences as teachers to be an important incentive to repeat telecollaboration again in the future.

The generally positive attitude toward the challenges faced was also reflected in the FSs' seeing the entire process as an opportunity for learning. One respondent acknowledged both her lack of know-how as well as lack of infrastructure as being key obstacles when first implementing telecollaboration at the beginning of her career. However, this same respondent, after 4 years of telecollaborative experience as a teacher, highlighted the role of self-reflection in improving her teaching practice. Recognition of her own gaps in knowledge led to proactive learning regarding affordances of the necessary digital tools for her telecollaborative project.

Along with self-reflection, self-regulation was reported by a number of FSs respondents as a key feature for successful implementation of telecollaboration. They recognized the importance of breaking big projects into smaller tasks and steps and in general evaluating projects more realistically before deciding how to approach the projects. This important skill is related to the ability to use foresight (see Marjanovic, 2018; Zimmerman, 2000), which must exist in parallel with self-direction for self-regulation to be successful. Overall, these FSs who have engaged in telecollaboration in their teaching demonstrate that they are able to "exploit their professional skills autonomously and [apply], reflective and self-managing processes" (Little, 2000a, p. 45); in short, they 'own' both their professional development and performance.

## *5.3 Limitations*

It is recognized that the data gathered in this study do not allow measurement of the complex milieu of attitudes, values and beliefs and multitude of experiences that will influence the way in which the respondents in these studies carry out their teaching. Moreover, it may not always be clear-cut as to which changes are due to normal maturation that occurs with professional experience. The data collection depends on self-reporting and individual memory of the events, which cannot always be independently verified, although answers regarding participation in telecollaboration as teachers can be verified by consulting their workplace, thus, arguably, amplifying motivation to be truthful. The respondents' recollection of the events are not equivalent to documentation of the events (as would occur in video-recordings), for this reason we requested additional information regarding materials and output. We also gave as few prompters as possible regarding extended responses to reduce 'leading the interviewee'.

This study focuses on a particular aspect of the teacher education program – knowledge of and willingness to engage in telecollaborative exchanges with their pupils in their current professional experience. This provides insight into how the respondents behave after they have completed their study programs to become teachers. It also brings out the contrasting results regarding the impact of the course as we are able to compare former students who received greater and lesser intensity of exposure to telecollaboration in their formal education.

## 6 Discussion

The study endeavored to probe whether the design of the initial teacher education program, which aims to promote a gradual but steady increase in learner autonomy, and exposure to telecollaboration can eventually lead to the teacher autonomy required to implement telecollaboration in their own practice. While it cannot be argued with certainty that former students' participation in telecollaboration implementation can be ascribed to impact from the course (a more forward-looking study would be necessary to ascertain this), some indications suggest that it did have an influence on their decision-making related to telecollaboration. First, it seemingly had an effect on some former students' decision to implement telecollaboration: Approximately half of them stated they had been inspired by the telecollaboration course to carry out their own as teachers. In addition, 9 of the 17 FSs had implemented telecollaboration within 5 years from taking the course, which may indicate that their own recent participation experience encouraged them to organize telecollaboration early in their careers. This is relevant given the aforementioned obstacles in implementing innovative methods (temporary jobs, lack of infrastructure, etc.). These percentages are also relevant given the amount of literature that explicitly points out the relatively slow pace of change in educational practices (Biesta, 2010; Cuban, 1988; Dooly & Vallejo, 2020; Ellsworth, 2000; Fullan, 1991). It can be argued therefore that in this case, the telecollaboration course bridged the institutional and other out-of-classroom restraints (Mackenzie, 2002), which lead to greater teacher autonomy, seen by some as a necessary outcome of professional development (McGrath, 2000).

As said before, teachers' knowledge, attitudes and beliefs affect their decision-making and level of autonomy to a great extent (Little, 2000a; Smith & Erdoğan, 2008). Arguably, the course has afforded the students with certain advantages regarding their know-how and confidence to implement telecollaboration in their teaching. As one respondent commented, "I want to apply it [telecollaboration] as I understood it at university, as a cooperative project with common objectives and a meaningful outcome."

We found that the former students who implemented telecollaboration exhibited a high level of resourcefulness and the skill of resorting to 'plan B' to cope with organizational and technical challenges. Such results seem to align with Hoven's (2006) 'experiential modeling' approach that aims to engage pre-service teachers with hands-on experiences of tool and methodological applications that are likely to be replicated in their teaching role later on. This also aligns with the fact that no one reported having difficulty with pedagogic design in the projects. We see this as a positive result considering their relatively little previous experience implementing telecollaboration as teachers. Their previous participation in the telecollaboration course did require good pedagogic instruction but good preparation cannot always guarantee successful implementation later on, especially when some time passes between the two, as it was the case with many former students. In this sense, the experiential modeling of telecollaboration in practice and explicit teaching of

telecollaboration design principles are likely to have given substantial advantages to the former students who have implemented telecollaboration.

The connection between teacher development (the course) and decision making and agency (the subsequent implementation of telecollaboration) (Sawyer, 2001) seems to be reflected in the apparent correlation between the required learner autonomy (required during the course) and the agentivity displayed in their later teaching practice. As students, the participants were required to self-regulate their learning process and execute group autonomy in order to complete their telecollaboration projects successfully (see Mangenot & Nissen, 2006; Marjanovic, 2018). This seems to suggest that the experiential modeling of these autonomous learning skills has had direct effect on their teacher autonomy and agency although undeniably both autonomy and agency are complex and not easily measurable concepts (cf. Mercer, 2011).

Of particular interest is the growing number of FSs who have either started on their own or taken over the responsibility of telecollaborative exchanges in their classes. These respondents demonstrate the capacity to take initiative and a willingness to assume personal accountability for their teaching practices, including the design, implementation and assessment of innovative learning processes that require both considerable digital competences and intensive teacher management skills. There is also evidence that these teachers seek ownership of their teaching process and curiosity to research and develop enhanced methods to promote learning skills, including 'learning to learn'. Little (1995, 2000a, b) has argued that autonomous (and genuinely successful) teachers exhibit personal responsibility for their pedagogy. The FSs we examined showed high levels of personal accountability for their pedagogy, best illustrated in their resolve to implement innovative methods such as telecollaboration, the preparation of which is time-consuming and challenging as reported by even senior teachers (Baroni et al., 2019; Helm, 2015; Sadler & Dooly, 2016).

Besides agency, the right to implement pedagogy that one deems most appropriate for their class has also been identified as an indicator of teacher autonomy (Benson, 2000; Little, 1995). Gaining this freedom to teach as one desires is far from a straightforward process; the reality of a classroom reveals a myriad of limitations on teachers (administrative, student-related, legislative, institutional, etc.). Despite this, the former students who participated in the study demonstrated determination to teach as they saw fit.

## 7 Concluding Remarks

In this study we identified and surveyed 53 former student-teachers who had taken part in a course that integrated telecollaboration as a key component of the program. The pool of respondents concurred with 11 years of the course, between 2004–2015 and who are/or had been teaching or working in education. The findings from the study are encouraging. Fifty-four percent of the respondents who had taken the

course have been involved in some sort of telecollaboration in their own teaching – including taking the initiative to find partners, set up the exchange and in some cases, to set up sustained programs that have lasted several years. The results indicate a strong sense of teacher agency, manifested through these teachers' willingness and ability to plan and initiate innovative telecollaborative projects with the purpose of enhancing their students' learning process. We found evidence of teacher autonomy reflected in a strong sense of ownership of their own teaching, a desire to implement what they deemed as the most appropriate methodology as well as activation of agency, self-regulation, and self-direction in how they set up their learning environments for their own students.

These findings are encouraging in the sense that it is highly likely that these teachers will continue implementing telecollaboration; or if they have not done so, will do so in the near future as many of the respondents explicitly stated. It is also heartening to see that these teachers are capable of overcoming the inevitable challenges that embarking on complex telecollaborative projects can bring, while serving as stewards and acting as leaders for other teachers and colleagues. This look back at the past decade of telecollaboration in one teacher education course and its impact on teacher and learner autonomy seems to bode well for the upcoming future of telecollaborative teaching. It is our hope that courses such as these can become core elements of teacher education curriculums around the world.

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# Learner and Teacher Autonomy Through Virtual Exchange: The Use of Videoconferencing Recorded Sessions as Stimuli for Reflection


**Chesla Ann Lenkaitis**

**Abstract** Although research has shown that virtually partnering second language (L2) learners with other L2 learners (Kinginger, Modern Lang J 82: 502–513, 1998; O'Dowd, ReCALL 12(1): 49–61, 2000) can be beneficial for language development, this current study adds to the growing body of knowledge of apprenticeship virtual exchanges by partnering L2 learners of English with English teacher candidates and having participants utilize the recorded synchronous sessions in order to reflect on their coursework and overall experience. In this study, 12 English as foreign language (EFL) learners interacted with 13 teaching English to speakers of other languages (TESOL) teacher candidates, via videoconferencing, for 6 weeks. In order to examine their learner autonomy, Little's (Innov Lang Learn Teach 1(1): 14–29, 2007) pedagogical principles of autonomous learning: learner engagement, reflection, and use of the target language, were implemented. Learners explored their language acquisition while teacher candidates explored language produced by learners and utilized learned teaching techniques. The 25 participants developed their reflective practices (Nelson et al., Reflect Pract 17(5): 648–661, 2016) by watching their recorded synchronous sessions to reflect on what they noticed about their experience. Results from quantitative and qualitative data, including transcripts and written reflections, not only showed that participants became more aware of their language development and language teaching, but also that incorporating a virtual exchange with subsequent reflection into coursework is valuable for learner autonomy as it allowed participants to be engaged, reflect, and use the target language.

**Keywords** Synchronous computer-mediated communication · Virtual exchange · Reflection · Learner autonomy · Higher education · Second language (L2) learning · L2 teaching

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## 1 Introduction

Technology has changed the communication landscape by the ways that we learn, teach, and use languages (Kern, 2006, 2014). Due to this changing educational landscape, instead of meeting in the same physical place, learners can virtually communicate with other through synchronous (real-time) and asynchronous (non-real-time) computer-mediated means. This study focuses on the affordances of utilizing synchronous computer-mediated communication (SCMC) to connect learners in different geographical and cultural contexts with one another (Belz, 2003; Dooly, 2017; O'Dowd, 2018). Originally coined by Warschauer (1996) as telecollaboration, virtual exchange can also be referred to as online intercultural exchanges and teletandem (O'Dowd, 2018).

In a virtual exchange, technology affords a variety of collaborative opportunities for the second language (L2) classroom in order to support language development (Lewis & O'Dowd, 2016) and interaction with course content outside of the classroom (Guichon, 2017; The EVALUATE Group, 2019). Because social interaction is crucial for language learning, SCMC, such as videoconferencing, allows face-to-face (F2F) communication where learners become "agents" (Lantolf & Pavlenko, 2000, p. 162) of their learning. In virtual exchanges that utilize videoconferencing (Develotte et al., 2008; Guichon, 2017), learners are afforded F2F interaction through a "virtual co-presence" (de Fornel, 1996, p. 50) and the opportunity to become autonomous learners when they are engaged with language, reflect on language learning, and appropriately use language (Little, 2007). Although research has been done on partnering L2 learners with teacher candidates via videoconferencing (Malinowski & Kramsch, 2014), according to Akiyama and Cunningham (2018), little research exists on apprenticeship virtual exchanges that partner language learners with teacher candidates of the language being learned. As will be discussed in detail below, building on this existing research, this study will examine an apprenticeship virtual exchange, that partners teaching English to speakers of other languages (TESOL) teacher candidates with English as foreign language (EFL) learners by creating a community of practice (Lave & Wenger, 1991; Wenger, 1998), and its implications for learner autonomy.

## 2 Literature Review

### *2.1 Learner Autonomy Theoretical Framework*

This current study[1] utilizes Little's (2007) pedagogical principles of learner autonomy, which include learner engagement, reflection, and use of the target language, to explore the ways in which such principles are facilitated in a SCMC-based

[1] Parts of this study have been published previously in Lenkaitis (2019).

apprenticeship virtual exchange for both teacher candidates and L2 learners. According to Little (2007), learners must be encouraged to be part of their learning process. This engagement can include "cultivating a classroom dynamic that constantly lifts them to new levels of effort and achievement" (p. 22). In order to reflect, Little (2007) mentions that besides thinking about what they are doing during the learning process itself, learners should complete a "detached reflection on the process and content of learning" (Little, 2007, p. 24). Finally, the target language must be "the medium through which all classroom activities are conducted" (Little, 2007, p. 25). These classroom activities must include group work "because it is only by working in small groups that learners can engage in intensive interactive use of the target language" (Little, 2007, p. 25). Therefore, besides working on one's own, learner autonomy includes collaborative experiences (Little, 1990, 2007; Little & Brammerts, 1996) that occur through social interaction (van Lier, 2008). For this reason, learner autonomy is both an individual and collaborative process (Little, 1991; Little & Brammerts, 1996).

By taking more responsibility for one's learning (Holec, 1981), students become "agents" (Lantolf & Pavlenko, 2000, p. 162) of their learning and are more engaged in the process, which allows them to be more effective in the short- and long-term (Çakici, 2015; Little, 1991). Both asynchronous computer-mediated communication and SCMC can facilitate learner autonomy (Kessler & Bikowski, 2010; Lee, 2016) in an online learning environment. While integrating digital tools into coursework, results from Lee (2016) indicated that increased structure led to more independent work and that the more open-ended the task, the more collaborative the work. In Kessler and Bikowski's (2010) study, results of teachers working together to build a wiki demonstrated that participants manifested autonomy. During this collaborative experience, they were required to "independently contribute [and] use appropriate strategies for communicating as a collaborative member of a group … [and] demonstrate these abilities within the group" (Kessler & Bikowski, 2010, p. 49).

## *2.2 Reflection to Promote Autonomy*

According to Little's (2007) pedagogical principles of autonomous learning, reflection is an important aspect of learner autonomy. In teacher preparation programs, reflecting on professional experiences can provide opportunities to develop new perspectives (Hickson, 2011), which in turn can lead to finding innovative ideas to overcome classroom challenges (Friedman, 1999; Rudolph, 2006). Besides being used in teacher education, reflection has also been studied in language classroom settings (Desautel, 2009). Reflective activities in the classroom have shown that journal writing have supported students' learning experiences (Schultz & Delisle, 1997; Yancey, 1998). Similarly, in telecollaborative exchanges, participants have completed reflections through blogs (Nogueira de Moraes Garcia, O'Connor, & Cappellini, 2017) and on task sequencing (Fuchs et al., 2012) to develop their

autonomy. No matter what the reflective practice is, reflection allows "students [to] self-evaluate, … step back and reflect on what and how they learn" (Carr, 2002, p. 195) and gives students the opportunity of "Becoming … Thinking Thinker[s]" (Desautel, 2009, p. 1997).

Even though reflection has been known to be part of teaching and learning processes since the early 1900s (Dewey, 1933), the communication landscape has changed the ways in which we can reflect. Video can now be used as a tool for self-development (Walshe & Driver, 2019). Being able to analyze videos (Richardson, 1990; Saunders et al., 1992) of a SCMC-based virtual exchange can provide a catalyst to reflect (Maclean & White, 2007) and notice specific things about the learning process, as this study set out to explore. Because technology is changing the ways in which we communicate and reflect, there are a variety of opportunities that exist with SCMC (Lewis et al., 2017). For instance, in this study, Zoom, a videoconferencing application, is used. Unlike traditional video recordings where often it is difficult to hear everything the teacher and students say based on where the camera is located in the physical classroom, Zoom is able to record and document all of what is said during the virtual exchange. Participants are then able to reflect on the entire SCMC discourse. Because of this feature of Zoom, this study examines reflecting on recorded Zoom session and, ultimately, how teacher preparation and language programs should be re-envisioned to include virtual exchanges with subsequent reflection.

## *2.3 SCMC-Based Virtual Exchanges*

SCMC virtual exchanges have been realized through videoconferencing tools like Skype (Kato et al., 2016; Terhune, 2016) and Zoom (Lenkaitis, 2020b; Lenkaitis et al., 2019). Benefits of incorporating videoconferencing into the classroom can include developing critical digital literacy (Darvin, 2017) and intercultural learning (O'Dowd, 2000). SCMC virtual exchange have partnered L2 learners with native speakers to not only promote language and intercultural skill development (Helm & Guth, 2010) and learner autonomy (Guth & Helm, 2010), but also to provide opportunities to make connections with coursework and between their own culture and that of their partners (Runyan et al., 2015). Research has also shown that virtual exchanges are used in teacher preparation programs (Dooly & Sadler, 2013; The EVALUATE Group, 2019; Zhang et al., 2016). However, the main objectives of virtual exchanges that have partnered teacher (candidates) with other teacher (candidates) have been to educate participants about (1) the technological resources that exist for teaching and the ways that they could be integrated into the L2 classroom (Dooly & Sadler, 2013; The EVALUATE Group, 2019), (2) the technological resources that exist for designing L2 tasks (The EVALUATE Group, 2019), and (3) the ways in which participants can reflect on the learning and teaching processes in relation to technology (The EVALUATE Group, 2019; Zhang et al., 2016).

Although there have been studies that focus on apprenticeship (Akiyama & Cunningham, 2018), in which foreign language (FL)/L2 learners are partnered with teacher (candidates) of the language being learned, the majority of participant populations have included L2 learners of French (Develotte et al., 2010; Mangenot & Zourou, 2007; Malinowski & Kramsch, 2014), German (Belz, 2003; Chaudhuri, 2011), and Spanish (Jauregi & Bañados, 2008; Lee, 2004). This current study adds to the growing body of knowledge of apprenticeship virtual exchanges that focuses on L2 learners of English (EFL learners) with English teacher (candidates) (Iino & Yabuta, 2015). In addition to this unique configuration, this study also makes a contribution as participants reflect on their virtual exchange experience (Develotte et al., 2010; Müller-Hartmann, 2006) by watching their recorded synchronous sessions. In Develotte et al. (2010), teachers candidates reflected about their experience in post-virtual exchange interviews while in Müller-Hartmann (2006), teacher candidates needed to complete reflective tasks, including portfolios. This current study will discuss the ways in which ways SCMC can afford not only teacher candidates but also language students ways to exercise their autonomy and develop their reflective practices (Nelson et al., 2016) by reflecting on their synchronous recordings. Unlike Iino and Yabuta (2015) that primarily used qualitative data to investigate the effects of video SCMC, this study uses both quantitative and qualitative data.

## *2.4 Research Questions*

Although the literature presented has shown that the teacher participant population has been partnered with L2 learners in virtual exchanges (Chaudhuri, 2011; Iino & Yabuta, 2015; Jauregi & Bañados, 2008; Lee, 2004; Malinowski & Kramsch, 2014; Mangenot & Zourou, 2007), there is less research on how teacher candidates and L2 learners reflect on these experience (Develotte et al., 2010; Müller-Hartmann, 2006) during and after these apprenticeship exchanges. Furthermore, with the onset of digital technologies, investigating ways on how participants reflect on the learning process in these SCMC-based exchanges can now be done by watching recorded videoconferencing sessions. Therefore, this study that partners TESOL teacher candidates with EFL learners will focus on the use of recorded videoconferencing sessions and answer the following Research Questions (RQs):

- RQ 1: In what ways does a SCMC-based virtual exchange and subsequent reflection on it, via using recorded videoconferencing sessions, facilitate learner engagement for TESOL teacher candidates and EFL learners?
- RQ 2: In what ways does a SCMC-based virtual exchange and subsequent reflection on it, via using recorded videoconferencing sessions, facilitate reflection about the learning process for TESOL teacher candidates and EFL learners?
- RQ 3: In what ways does a SCMC-based virtual exchange and subsequent reflection on it, via using recorded videoconferencing sessions, facilitate the use of the target language for TESOL teacher candidates and EFL learners?

## 3 Methodology

This study was designed in the following ways in order to implement Little's (2007) pedagogical principles of autonomous learning: (1) Learner involvement – all participants were encouraged by their course instructor to be involved in their learning by focusing on either teaching methodologies (TESOL teacher candidates) or language learning (EFL learners) during the virtual exchange and its activities, (2) Reflection – participants self-assessed the virtual exchange and their teaching (TESOL teacher candidates) or learning development (EFL learners) by watching the recordings of their weekly SCMC sessions and then completing a weekly reflection, and (3) Use of the target language (English) – participants interactively used English as the lingua franca for the duration of the SCMC sessions and also used it in all written work, including subsequent reflections.

EFL learners synchronously met TESOL teacher candidates for 6 weeks via Zoom (https://zoom.us) videoconferencing. Participants were instructed to virtually connect for at least 15 min with their international partner(s), only speak in English when meeting, record their session, and solely use the videoconferencing feature. Mirroring Lenkaitis (2020a), there were no specific discussion topics. The EFL learners were simply told to choose a subject that they would like to talk about while the TESOL teacher candidates were to direct the course of the conversation based on what was presented by their partner(s).

In order to measure how involved participants were and to ensure that they were using the target language, all weekly Zoom videoconferencing sessions for the 25 participants were reviewed by me and a research assistant. Self-rating data were also utilized to assess participant engagement while the coding of open-ended survey and weekly reflection responses provided data on what topics participants were focused on during the virtual exchange; this latter part assisted in assessing participant involvement. Finally, analyses of Zoom interactions, via weekly reflections, were used to assess participant reflection.

### *3.1 Participants*

There were 25 total participants in the 6-week virtual exchange that took place in the Fall 2018 semester. The 13 TESOL teacher candidates (Participants 1–13) took a Linguistics for Teachers course in a teacher preparation program at a public university in the northeastern part of the United States while the 12 EFL beginner or intermediate learners[2] (Participants 14–25) were registered students for an EFL course (Business English) at a northern Colombian private university. Therefore, there were 2- and 3-person teams since each TESOL teacher candidate was

[2] Beginner students were A2-B1 while intermediate students were B1 as per the Common European Framework of Reference

partnered with at least one EFL learner. The average age of the 25 participants was 23.4 years (SD = 8.37). Looking at the TESOL teacher candidates and EFL learners separately, the average age of teacher candidates was 27.4 years (SD = 10.1) while for learners it was 19.0 years (SD = 0.95). Finally, teacher candidates were either Native Speakers (NSs) or Non-Native Speakers (NNSs) of English while all EFL learners' L2 was English.

I was not the course instructor for either group of participants, but rather the sole researcher. The main objective was that the virtual exchange would be a value-add (Lenkaitis, 2020c) for both TESOL teacher candidates and EFL learners alike. Therefore, the pedagogical goals of the exchange were: (1) for TESOL teacher candidates to implement teaching strategies with EFL learners in hopes that teacher candidates would develop their practical application of linguistic knowledge such as pragmatics, morphology, semantics, phonology, and syntax in the classroom and (2) for EFL learners to communicate with teacher candidates in hopes that EFL learners would develop their English language skills.

## *3.2 Data Collection and Analysis*

### 3.2.1 Pre- and Post-Surveys

All participants were instructed to complete a pre- and post-survey before and after the virtual exchange. The pre-survey included background questions, such as age and native language, and a Likert-like[3] (Brill, 2008) question where participants were asked to self-rate their perceived engagement in teaching (TESOL teacher candidates) or learning English (EFL learners) using the following scale: 0 (not at all engaged); 1 (very disengaged); 2 (somewhat disengaged); 2.5 (neither disengaged nor engaged); 3 (somewhat engaged); 4 (very engaged), 5 (completely engaged).

Because Zoom was able to record and document all of what was said during the virtual exchange, participants were able to watch all recorded sessions to reflect on their virtual exchange. The post-survey included a follow-up Likert-like (Brill, 2008) question where participants were asked to self-rate their perceived engagement in teaching (TESOL teacher candidates) or learning English (EFL learners) as a result of their 6-week virtual exchange using the same scale as the pre-survey. The post-survey also included the following open-ended questions: (1) reflecting on your 6-week virtual exchange, how did it assist you in developing as a TESOL teacher candidate or an EFL learner and (2) reflecting on your 6-week virtual exchange, in what ways did you help your partner(s) develop language skills

[3] Although this question has seven levels, which is a characteristic of Likert-scale questions, it does not meet all other question criteria. Therefore, according to Brill (2008), the term Likert-like is better to use for this type of question.

(TESOL teacher candidates) or did your partner support your development of language skills (EFL learners)?

### 3.2.2 Weekly Procedures

In addition to meeting synchronously will their partner(s) for at least 15 min and recording their session, participants were required to complete a weekly reflection[4]. Just as in the pre- and post-surveys, participants were asked to self-rate their perceived engagement in teaching (TESOL teacher candidates) or learning English (EFL learners) as a result of their weekly virtual exchange. In addition, participants responded to the following open-ended question: In what ways has your virtual exchange experience helped support your engagement in teaching (TESOL teacher candidates) or learning (EFL learners) English?

After completing these questions, participants were instructed to watch the video recordings of their Zoom sessions so that it would provide a stimulus for reflection (Richardson, 1990; Saunders et al., 1992). Instructions for these Zoom analyses that were given to TESOL teacher candidates and EFL learners simply stated the following: List details from your partner exchange that you noticed about your teaching by focusing on course topics (TESOL teacher candidates) or about your English as you discussed course topics (EFL learners). It was the goal of the research that participants would be able to reflect (Little, 2007) on their own practices (Nelson et al., 2016), and consequently examine the ways in which learner autonomy was exercised by noticing specific things about the interaction of their virtual meeting through the lens of course content. For TESOL teacher candidates, this meant focusing on topics including pragmatics, morphology, semantics, phonology, and syntax and indicating how they implemented strategies related to this course content while interacting with their EFL partners. On the other hand, EFL learners concentrated on topics from their Business English course in order to analyze their own speech and interaction with their TESOL teacher candidate partners.

### 3.2.3 Data Analysis

For all quantitative data, statistical analyses were completed using IBM SPSS Statistics 25.0. Descriptive statistics were run on Likert-like (Brill, 2008) questions as well as paired sample *t*-tests on pre- and post-survey rating scale questions to compare means.

After word frequencies were completed to determine the most frequent words used in qualitative data (open-ended participant responses), coding categories from participants' answers regarding their learning process, such as awareness, confidence, practice, proficiency, and skills, emerged from the data. All qualitative data

[4] Weekly reflections are available upon request.

were then independently analyzed by the same two coders, me being one of them, using NVivo 12. Input was coded by phrase(s) or sentence(s) since autonomous learning was not quantified by a specific word count (see Lenkaitis et al., 2019 for a more detailed description of the quantitative analysis). This means that one open-ended response could have been coded using more than one theme as each was mutually exclusive. After independently coding data, the two coders worked together to reach a 100% agreement and then chose the most representative examples to use for reporting purposes.

## 4 Results

To reiterate, when watching traditional video recordings, it is often difficult to hear everything the teacher and students say based on where the camera is located in the physical classroom. Because Zoom was used for this study, all participants were able to hear all of what was said during the virtual exchange when watching the recordings and subsequently reflecting on them. Because of this, the results were impacted by how participants were able to reflect on the virtual exchange through these recorded Zoom sessions.

Results will be organized into sections based on Little's (2007) pedagogical principles of autonomous learning in order to answer the study's RQs:

- RQ 1: In what ways does a SCMC-based virtual exchange and subsequent reflection on it, via using recorded videoconferencing sessions, facilitate learner engagement for TESOL teacher candidates and EFL learners?
- RQ 2: In what ways does a SCMC-based virtual exchange and subsequent reflection on it, via using recorded videoconferencing sessions, facilitate reflection about the learning process for TESOL teacher candidates and EFL learners?
- RQ 3: In what ways does a SCMC-based virtual exchange and subsequent reflection on it, via using recorded videoconferencing sessions, facilitate the use of the target language for TESOL teacher candidates and EFL learners?

### *4.1 RQ1: Learner Engagement for TESOL Teacher Candidates and EFL Learners*

#### 4.1.1 Self-Rating of Engagement on Pre- and Post-Surveys

Results of the question to self-rate perceived engagement in teaching (TESOL teacher candidates) and learning (EFL learners) English before and after the virtual exchange provided evidence of increased engagement for all participants. The means and standard deviations of these self-rating questions for both TESOL teacher candidates and EFL learners are presented in Table 1.

**Table 1** Means and standard deviations for self-rating of engagement for TESOL teacher candidates and EFL learners

| | Mean | | Standard deviation | |
|---|---|---|---|---|
| Survey | TESOL Teacher candidates (N = 13) | EFL learners (N = 12) | TESOL Teacher candidates | EFL learners |
| Pre-survey | 2.62 | 3.5 | 1.33 | 0.67 |
| Post-survey | 3.54 | 3.92 | 1.20 | 0.67 |

**Table 2** Paired sample t-test results for self-rating of engagement for TESOL teacher candidates and EFL learners

| Pair | Mean | Standard deviation | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|
| TESOL teacher candidate Pre- and post-survey | −0.92 | 1.12 | −2.98 | 12 | .01 |
| EFL learner Pre- and post-survey | −0.42 | 0.51 | −2.80 | 11 | .02 |

As shown in Table 1, for teacher candidates, prior to the virtual exchange, they rated their engagement in teaching as neither disengaged nor engaged. After the virtual exchange, their rating fell between somewhat engaged and very engaged. For EFL learners, prior to the exchange their self-rating of their engagement in learning was between somewhat engaged and very engaged. However, after the exchange, EFL learners' rating was very engaged. In order to investigate the significance of the gain for both TESOL teacher candidates and EFL learners from pre- to post-survey, Table 2 presents paired sample t-test results.

As seen in Table 2, a significant difference was found for the TESOL teacher candidates from pre- to post-survey; $t(12) = -2.98$, $p < 0.05$. A significant difference was also found for EFL learners from pre-to post-survey; $t(11) = -2.80$, $p < 0.05$. Furthermore, Cohen's $d$ was used to calculate effect size and teacher candidates ($d = 0.73$) and EFL learners ($d = 0.63$) were found to meet Cohen's (1969) guidelines for a moderate effect ($d \sim 0.50$) to a large effect ($d \sim 0.80$).

### 4.1.2 Self-Rating of Engagement on Weekly Reflections

Both TESOL teacher candidates and EFL learners believed they were very engaged in their teaching and learning of English by the end of Week 6 of the virtual exchange. Table 3 illustrates the self-ratings for all participants that occurred during the 6-week virtual exchange.

As shown in Table 3, results from the weekly reflections demonstrate how both TESOL teacher candidates and EFL learners developed their engagement throughout the virtual exchange. Participants rated themselves higher in Week 6 than when starting the exchange in Week 1. Means either increased or stayed the same every

**Table 3** Means and standard deviations for self-rating of engagement for TESOL teacher candidates and EFL learners

| | Mean | | Standard deviation | |
|---|---|---|---|---|
| Week | TESOL teacher candidates | EFL learners | TESOL teacher candidates | EFL learners |
| 1 | 3.15 | 3.80 | 1.41 | 0.92 |
| 2 | 3.38 | 3.82 | 1.12 | 0.75 |
| 3 | 3.54 | 3.82 | 1.20 | 0.75 |
| 4 | 3.77 | 3.78 | 0.93 | 0.67 |
| 5 | 4.00 | 4.00 | 0.82 | 0.67 |
| 6 | 4.10 | 4.30 | 1.10 | 0.67 |

week of the exchange except for a slight decrease that occurred for EFL learners from Week 3 to 4.

## *4.2 RQ2: Reflection about the Learning Process for TESOL Teacher Candidates and EFL Learners*[5]

### 4.2.1 TESOL Teacher Candidate Weekly Reflections

From the open-ended responses to the weekly reflection question, In what ways has your partner experience helped support your learning process in teaching English?, the following five themes emerge: (1) knowledge, (2) language, (3) teaching, (4) learning, and (5) culture. The two coders independently reached a 95.4% agreement (Kappa = 0.53 with $p < 0.001$) for these data before reaching a 100% agreement. Table 4 details the definitions of each theme for the TESOL teacher candidates and coding breakdown.

As illustrated in Table 4, there were a total of 83 coded instances of TESOL teacher candidates which showed the ways in which TESOL teacher candidates reflected about their learning process. The *knowledge* theme was the highest coded category while *culture* was the least coded category. In order to present coded instances for each of these five coding categories, Table 5 lists examples from TESOL teacher candidates' weekly reflections.

As highlighted in Table 5, regardless of the number of coded instances, the themes listed exemplify how the virtual exchange experience helped TESOL teacher candidate participants improve their teaching of English. For example, Participant 1 noted "[t]his experience helped deepen my understanding of the importance of contextualized cues and other elements of pragmatics."

[5] In addition to this section's data providing evidence of reflecting about the learning process for both TESOL teacher candidates and EFL learners, these results also show that all participants are engaged and using the target language.

**Table 4** TESOL teacher candidates' themes from weekly reflections

| TESOL teacher candidates | |
|---|---|
| Theme and coding breakdown | Definition |
| Knowledge | When the teacher candidate wrote that he/she became more knowledgeable about a particular topic. |
| (31 instances – 37% of total) | |
| Language | When the teacher candidate made a connection between his/her native language and the native language of his/her partner(s). |
| (25 instances – 30% of total) | |
| Teaching | When the teacher candidate related his/her teaching to a part of the virtual exchange. |
| (13 instances – 16% of total) | |
| Learning | When the teacher candidate commented about how languages are learned. |
| (10 instances – 12% of total) | |
| Culture | When the teacher candidate recognized similarities and/or differences between his/her culture and/or the culture of his/her partner(s). |
| (4 instances – 5% of total) | |

**Table 5** Examples of TESOL teacher candidates' themes from weekly reflections

| TESOL teacher candidates | |
|---|---|
| Theme | Example |
| Knowledge | Week 1 – Participant 1 |
| | This experience helped deepen my understanding of the importance of contextualized cues and other elements of pragmatics. |
| Language | Week 2 – Participant 6 |
| | Because my partner is a native Spanish speaker, she helped me think about the language differences in how speech sounds are organized in English and Spanish. Our discussion increased my understanding of how certain speech combinations that are possible in one language can be disallowed in another, such as the starting of a syllable with the [bw] sound in Spanish versus English. |
| Teaching | Week 6 – Participant 5 |
| | My partner showed me how different it is to organize activities to children and adults. |
| Learning | Week 5 – Participant 6 |
| | … I realized how complicated and contributory semantics is in communication. … my partner experience has helped me understand the importance of practice and exposure to a language to get a grasp on its system of meaning. |
| Culture | Week 6 – Participant 10 |
| | The Colombian students gave me a different perspective of learning English. Even though I've worked with Spaniards learning English, it was much more of a difference culturally. |

### 4.2.2 EFL Learner Weekly Reflections

From the open-ended responses for the following question: In what ways has your partner experience helped support your success in learning English?, the following five themes are identified: (1) awareness, (2) confidence, (3) practice, (4) proficiency, and (5) skills. The two independent coders reached a 94.8% agreement (Kappa = 0.60 with $p < 0.001$). Table 6 provides the definitions for these five themes as well as coding breakdown.

As displayed in Table 6, the coded instances across the five categories provide evidence as to how EFL learners reflected about their learning process during the 6-week virtual exchange. The highest coded theme was *skills* with 30% of all coded instances while the second highest theme was *practice* at 24%. In order to draw attention to each coding category, Table 7 offers examples of coded instances from EFL learners' weekly reflections.

As depicted in Table 7, the coded instances display that EFL learners noticed specific details of their language learning process while working with their TESOL teacher candidate partner. For example, Participant 16 mentioned that "It has helped me to tune my ear to understand more."

### 4.2.3 TESOL Teacher Candidate Zoom Analyses

The following three themes emerge from the TESOL teacher candidates' Zoom analyses: (1) language, (2) knowledge, and (3) teaching. Before a 100% agreement was reached, the two coders independently reached a 94.0% agreement (Kappa = 0.51

**Table 6** EFL learners' themes from weekly reflections

| EFL learners | |
|---|---|
| Theme and coding breakdown | Definition |
| Skills | When the EFL learner commented that he/she made improvements in a specific language area such as grammar and vocabulary. |
| (26 instances – 30% of total) | |
| Practice | When the EFL learner noted how he/she was able to practice. |
| (21 instances – 24% of total) | |
| Proficiency | When the EFL learner mentioned this his/her overall language proficiency improved. |
| (17 instances – 20% of total) | |
| Awareness | When the EFL learner pointed out that he/she became more aware of language learning and/or gained perspective on a particular topic. |
| (11 instances – 13% of total) | |
| Confidence | When the EFL learner wrote that he/she had become more comfortable with using the English language. This also included an increase of confidence. |
| (11 instances – 13% of total) | |

**Table 7** Examples of EFL learners' themes from weekly reflections

| EFL learners | |
|---|---|
| Theme | Example |
| Skills | Week 1 – Participant 16 |
| | It has helped me to tune my ear to understand more. |
| Practice | Week 2 – Participant 25 |
| | The meetings make me practice. |
| Proficiency | Week 5 – Participant 17 |
| | She helps me improve my fluency and find new ways to express myself. |
| Awareness | Week 6 – Participant 24 |
| | She helped me by teaching me about my flaws in the language. |
| Confidence | Week 4 – Participant 15 |
| | I feel more confident with my level of [E]nglish … |

**Table 8** Themes from TESOL teacher candidates' Zoom analyses

| TESOL teacher candidates | |
|---|---|
| Theme and coding breakdown | Definition |
| Language | When the TESOL teacher candidate noted how one language can influence another. |
| (53 instances – 54% of total) | |
| Knowledge | When the TESOL teacher candidate connected his/her reflection to coursework and/or development of knowledge. |
| (24 instances – 24% of total) | |
| Teaching | When the TESOL teacher candidate either a) reflected on a teaching strategy that he/she used or should use or b) related his/her reflection to a past teaching experience. |
| (22 instances – 22% of total) | |

with $p < 0.001$). Table 8 summarizes the teacher candidates' Zoom analyses themes and indicated the coding breakdown.

As presented in Table 8, out of the three themes, the majority of coded instances fell into the *language* theme. Coded instances showed that incorporating virtual exchange into a teacher preparation program was beneficial to assist TESOL teacher candidates with learning, practicing, and reflecting and provided a way to bridge theory into practice (Turunen & Tuovila, 2012; Yuan, 2018). In order to exemplify these coded instances from TESOL teacher candidates' Zoom analyses, Table 9 gives examples for each coding category.

As shown in Table 9, TESOL teacher candidates were able to reflect on lesson planning and gain perspective on teaching strategies. For example, Participant 5 wrote that "[t]eachers should have more diverse activities to help students memorize the vocabulary instead of giving a test."

**Table 9** Examples of each TESOL teacher candidate theme from Zoom analyses

| Theme | Open-ended response |
|---|---|
| Language | Week 2 – Participant 2 |
| | It made me think about, compare and contrast the phonology of the Spanish language vs English language. |
| Knowledge | Week 1 – Participant 6 |
| | Pragmatics played a role in this statement because as [removed for anonymity] was saying "main" she made a gesture of quotation marks in the air, and this contextual clue informed me that her city may be acknowledged as a main city but she does not consider it to be large. This is derived from our shared knowledge of the use of hand drawn quotation marks, which change the meaning of statements to mean the opposite of what the words mean usually. |
| Teaching | Week 6 – Participant 5 |
| | Teachers should have more diverse activities to help students memorize the vocabulary instead of giving a test. |

**Table 10** Themes from EFL learners' Zoom analyses

| EFL learners | |
|---|---|
| Theme and coding breakdown | Definition |
| Skills | When the participant reflected on what skills he/she used to develop his/her English skills or can use in order to help with English skills. |
| (37 instances – 49% of total) | |
| Confidence | When the EFL learner reflection included a comment noting increased ease with and/or confidence in using English. |
| (23 instances – 31% of total) | |
| Awareness | When the EFL learner became more aware of a positive or negative aspect of his/her English as a result of reflection on the recorded session. |
| (15 instances – 20% of total) | |

### 4.2.4 EFL Learner Zoom Analyses

The three themes from EFL learners' Zoom analyses include (1) skills, (2) confidence, and (3) awareness. The two coders independently reached a 95.1% agreement (Kappa = 0.64 with $p < 0.001$). After working together, they reached a 100% agreement. Table 10 shows the themes, their definitions, and the coding breakdown.

As seen in Table 10, out of the 75 total coded instances, *skills* was the highest coded theme at 49% in the EFL Zoom analyses. To illustrate these coding categories further, Table 11 gives examples of coded instances for *skills*, *confidence*, and *awareness*.

As identified in Table 11, these data demonstrate that EFL learners noticed details about the way they spoke and became more self-aware about their speech and language acquisition when they reflected about their learning process. For instance, Participant 16 commented that "I think it is important to implant habits of

**Table 11** Examples of each EFL learner theme from Zoom analyses

| Theme | Open-ended response |
|---|---|
| Skills | Week 1 – Participant 16 |
| | I think it is important to implant habits of true tolerance in students so that there is a respect and acceptance toward the differences of each one because learning a language involves learning part of the culture. … I think teachers have great influence when teaching, that is why they have to be qualified and well trained to teach, and also use resources such as web pages, music, literature or cinema will increase the motivation to learn English. |
| Confidence | Week 4 – Participant 16 |
| | I express my opinion and what role I prefer to take an I think I did it clearly. I feel that in each zoom I improve my pronunciation and my way of expressing myself, because if I do not know how to say something, I explain it and use other words so that, they understand what I am trying to say. |
| Awareness | Week 1 – Participant 18 |
| | I can see that I have trouble with the pronunciation of the word "nervous." |

true tolerance in students so that there is a respect and acceptance toward the differences of each one because learning a language involves learning part of the culture."

### 4.2.5 Post-Surveys for TESOL Teacher Candidates and EFL Learners

Upon analyzing the data from both participants' two open-ended post-survey questions, two common threads are evident for TESOL teacher candidates and EFL learners as they reflected about the learning process: (1) knowledge and (2) skills. A 93.7% agreement (Kappa = 0.72 with $p < 0.001$) was reached by the two independent coders before they worked together to reach a 100% agreement. Table 12 illustrates the common threads, their definitions, the coding breakdown, and examples for the first question while Table 13 details the same for the second question.

As highlighted in Table 12, for the question focusing on developing as a teacher candidate or learner, *knowledge* is the theme with the majority of coded instances. For example, Participant 19 wrote that "[t]he telecollaborative exchange was really helpul [sic] … and the meetings were an opportunity to share what I had understood about them, and also receive additional information from another teacher, resulting in a better understanding of the concepts."

As depicted in Table 13, the responses to the second question centered around the support that each participant gave his/her partner. *Skills* is the highest coded theme for the EFL learners. For example, Participant 24 indicated that "[i]t helped me lose my fear of speaking english [sic] by encouraging me and giving me confidence." For example, Participant 24 indicated that "[i]t helped me lose my fear of speaking english [sic] by encouraging me and giving me confidence."

**Table 12** Post-survey open-ended responses regarding self-development

| Reflecting on your 6-week virtual exchange, how did it assist you in developing as a TESOL teacher candidate or an EFL learner? | | | |
|---|---|---|---|
| **Theme and coding breakdown** | **Definition** | **TESOL teacher candidates** | **EFL learners** |
| Knowledge | When the participant mentioned an increase of knowledge. | Participant 1 – | Participant 19 – |
| (20 instances – 59% of total) | | I understand now that having a full grasp on either the pragmatics, semantics, phonology, morphology, or syntax of English is not enough to be fluent. However, not having a full grasp on one of these components to language does not necessarily mean someone isn't fluent or at least conversational in English. | The telecollaborative exchange was really helpul [sic] because I was learning new concepts at my english [sic] classes, and the meetings were an opportunity to share what I had understood about them, and also receive additional information from another teacher, resulting in a better understanding of the concepts. |
| Skills | When the participant indicated that the virtual exchange provided a way to apply what he/she was learning in class. | Participant 7 – | Participant 23 – |
| (14 instances – 41% of total) | | Through this exchange I became more aware of linguistics. These zoom meetings were an opportunity to … review what we read, and make connections between theory and practice. | As a language learner it helped me to be more confident while speaking and I could put to practice all the concepts from class. |

## *4.3 RQ 3: Use of the Target Language for TESOL Teacher Candidates and EFL Learners*[6]

In order to show how both TESOL teacher candidates and EFL learners in the virtual exchange were utilizing the lingua franca of English, weekly Zoom videoconferencing sessions were reviewed by me and a research assistant. It was confirmed that all SCMC recordings totaled 32 h, 30 min, and 50 s of videoconferencing sessions and were complete only in English. On average, this meant that each participant spent 25 min on Zoom videoconferencing per week and 2 h and 30 min on Zoom throughout the 6-week virtual exchange.

[6] Even though the data presented in this section show evidence of use of the target language, the results also provide evidence for learner engagement for both TESOL teacher candidates and EFL learners.

**Table 13** Post-survey open-ended responses regarding development of partner(s)

| Reflecting on your 6-week virtual exchange, in what ways did you help your partner(s) develop language skills (TESOL teacher candidates) or did your partner support your development of language skills (EFL learners)? | | | |
|---|---|---|---|
| **Theme and coding breakdown** | **Definition** | **TESOL teacher candidates** | **EFL learners** |
| Skills | When the participant wrote about development of practical skills. | Participant 7 – | Participant 24 – |
| (15 instances – 56% of total) | | Learning vocabulary and fluency. My partner told me she found this exchange beneficial to improve her speaking skills since apart from her English class, she does not have other opportunities to practice the language. | It helped me lose my fear of speaking english [sic] by encouraging me and giving me confidence. |
| Knowledge | When the participant reflected on development of course concepts. | Participant 8 – | Participant 19 – |
| (12 instances – 44% of total) | | I think I helped her in the correct use of simple past structures. | He always explained the new concepts I was learning in a [sic] easy way, and also explained the ways those concepts could be applied in future assigments [sic] that I had. Having each week a conversation in english [sic] was very helpful as it allowed me to get a little more involved with english [sic], something I'm not able to do on a daily basis. |

## *4.4 Limitations*

Although this study explored both quantitative and qualitative data, because most of the data were self-reported, some participants may have not wanted to express their teaching or language shortcomings, which in turn could have impacted their reflections. Nevertheless, coding was completed to find commonalities among answers and the two independent coders worked together to choose the most representative examples from the analysis. In addition, since all teacher candidates were not NSs of English, examining the differences between NS and NNSs TESOL teacher candidates could have been beneficial to explore the nuances of these apprenticeship virtual exchanges.

## 5 Discussion

Digital technologies not only allowed TESOL teacher candidates to partner with EFL learners during this study's 6-week virtual exchange, but they also gave all participants the opportunity to analyze on their teaching and learning processes by reflecting on their recorded videoconferencing sessions. By collecting Likert-like (Brill, 2008) question data and open-ended responses, results showed that a SCMC-based virtual exchange with subsequent reflection facilitated learner engagement, reflection about the learning process, and use of the target language (Little, 2007) for both TESOL teacher candidates and EFL learners.

### *5.1 Learner Engagement for TESOL Teacher Candidates and EFL Learners*

By being encouraged by their course instructor to be part of the learning process, participants in this 6-week virtual exchange recorded over 32 h of Zoom sessions. It was apparent that all 25 participants were involved and, consequently, engaged through SCMC, more specifically through Zoom, as their virtual exchange work was reviewed for completion[7]. Participants' high level of engagement was evident in the time spent on the virtual exchange and the subsequent reflection of it. For example, on average, Zoom weekly meetings lasted for more than the instructed 15 min, which suggested that participants were confident and comfortable with speaking with their partners.

Videoconferencing also allowed EFL learners to collaborate with their TESOL teacher candidate partners to develop their language skills. Although studies such as Malinowski and Kramsch (2014) gave teacher candidates the opportunity to apply French teaching methods, this study allowed teacher candidates to reflect on course topics that would, in turn, develop their pedagogy. Both teacher candidates and EFL learners were able to get hands-on experience by having weekly Zoom sessions and subsequently reflecting on them. Due to the ways in which all participants took charge of their learning process during weekly Zoom meetings, the self-rating of their perceived engagement in teaching and learning improved from before to after their virtual exchange. Like other apprenticeship virtual exchanges, the data revealed that teacher candidates believed that their teaching skills improved (Malinowski & Kramsch, 2014) and L2 learners that their language skills developed (Lee, 2004; see also Lenkaitis, 2019).

[7] All virtual exchange activities were course requirements. However, a formal grade was not given for the length of the Zoom session and the language used during the SCMC. Nonetheless, tasks were reviewed to ensure that they were completed as per instructions.

### 5.2 *Reflection About the Learning Process for TESOL Teacher Candidates and EFL Learners*

Participant reflection occurred throughout the 6-week virtual exchange as TESOL teacher candidates and EFL learners were able to think about their weekly SCMC sessions by answering an open-ended question and then analyzing their recorded Zoom sessions. By being able to reflect on both individual and collaborative experiences (Kessler & Bikowski, 2010; Lee, 2016; Little, 1990, 2007; Little & Brammerts, 1996), participants had the opportunity to notice details about their teaching and learning processes. Coded instances of open-ended responses from weekly reflections revealed how participants exercised their learner autonomy and were taking more responsibility for their own learning (Holec, 1981). Teacher candidates noted that they were becoming more knowledgeable in how to teach language and how learners learned language. Because of this, teacher candidates were developing their pedagogies. Similarly, EFL learners indicated that they too were becoming more well-informed about specific topics, which, in turn, progressed their language skills.

By watching recorded videoconferencing sessions, participants were able to notice additional details, some of which may have not been observed without using video as a tool for self-development (Walshe & Driver, 2019). TESOL teacher candidates became more aware of the course topics and their connections to teaching, languages, and cultures. TESOL teacher candidates were able to focus on linguistic topics such as pragmatics, morphology, semantics, phonology, and syntax. EFL learners noted making improvements in specific language skills and recognized parts of the L2 learning process and their language by being able to watch recorded sessions. By noticing what they were doing correctly or incorrectly, these EFL learners were able to be cognizant of their L2 skills in order to develop them throughout the exchange. All of these specifics that participants were able to identify while viewing their recorded Zoom interactions showed that TESOL teacher candidates and EFL learners were becoming even more mindful and conscious of their learning process, which allowed them to develop their pedagogical (TESOL teacher candidates) or language (EFL learners) skills.

This study showed that TESOL teacher candidates and EFL learners were able to think deeply about their learning process. Although culture was not a focus on this virtual exchange, upon interacting with one another, all participants also made connections to this valuable component and recognized how it can benefit both L2 teaching and learning. By thinking about their learning and then watching recorded sessions and writing about them, TESOL teacher candidates and EFL learners were able to self-evaluate and have the opportunity to apply their coursework to their culture and/or that of their partner(s).

### *5.3 Use of the Target Language for TESOL Teacher Candidates and EFL Learners*

From the over 32 h of recorded Zoom interactions and written work, it was evident that videoconferencing and subsequent reflection of recorded sessions allowed TESOL teacher candidates and EFL learners to actively think about the virtual exchange. By reflecting on their recorded Zoom sessions, participants were able to reflect on their experience and develop their English teaching (TESOL teacher candidates) and language (EFL learners) skills. By being able to practically implement strategies with their EFL learners, TESOL teacher candidates recognized theory taught in the classroom during their virtual exchange while the EFL learners noticed things related to their language development. Therefore, incorporating an apprenticeship SCMC-based virtual exchange with a subsequent reflection that utilizes English as a lingua franca is essential in "re-designing new ways to address educational challenges" (Zhang et al., 2016, p. 156) and re-envisioning teacher preparation and L2 programs.

By capitalizing on the variety of opportunities that exist with SCMC (Lewis et al., 2017) and using video as a tool for self-development (Walshe & Driver, 2019), TESOL teacher candidates and EFL learners in this study were be able to (1) exercise both individual and collaborative facets of learner autonomy (Little, 1991; Little & Brammerts, 1996) and (2) develop reflective practices (Nelson et al., 2016) in order to strengthen their teaching (TESOL teacher candidates) and learning (EFL learners) skills. Not only did TESOL teacher candidates develop their teaching skills of English throughout the virtual exchange and its subsequent reflection, but EFL learners were also able to focus on their English language skills by reading, writing, speaking, and listening in the target language. Because of the practical training that all participants received by interacting with their partner(s) in this apprenticeship virtual exchange, they became more comfortable with teaching (TESOL teacher candidates) and learning (EFL learners) English. By taking more responsibility for their learning, participants became "agents" (Lantolf & Pavlenko, 2000, p. 162) and were more engaged in the learning process as noted through their open-ended responses. Although the data provided evidence of reflecting about their experience, TESOL teacher candidates and EFL learners mentioned that their interactions with their partner(s) afforded opportunities to look at L2 language teaching and learning, respectively. This distinct perspective allowed participants to recognize things that they did not notice before the virtual exchange and its subsequent reflection.

## 6 Pedagogical Implications and Conclusions

Over the course of a 6-week virtual exchange, TESOL teacher candidates and EFL learners were not only able to synchronously meet, via Zoom, with their partner(s), but were also able to use SCMC recorded sessions as stimuli for reflection. The watching of recorded Zoom sessions allowed TESOL teacher candidates and EFL learners to develop their learner autonomy, and, in turn, their teaching competences and language skills, by being engaged with the L2 teaching and learning processes, reflecting on their experiences, and utilizing the target language (Little, 2007). Not only did results show that self-perceived ratings of engagement in teaching and learning English improved significantly from before to after the exchange as well as weekly, but open-ended responses also exhibited patterns that showed participants were developing their pedagogical or language skills. Therefore, both teacher preparation and L2 programs should devote time to (1) incorporate virtual exchanges that partner teacher candidates with learners of their content area and (2) encourage reflection, which is crucial for learner engagement (Fuchs & Vandergriff, 2018). By re-envisioning these programs to include apprenticeship virtual exchanges with subsequent reflective experiences that facilitate learner autonomy, SCMC will change the educational landscape.

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# Structured Reflection to Support Pre-Service Language Teachers' Autonomy Development


**Constanza Tolosa**

**Abstract** The study reported here sits at the intersection of learner autonomy and teacher autonomy as it is situated in a pre-service language teacher education course. It provides evidence of the development of pedagogical, technological and professional competencies in a year-long course for pre-service teachers (PSTs) of languages in New Zealand that aimed to foster an attitude of inquiry in the PSTs through an experiential approach to learning how to teach languages using digital technologies. Resting on the presumption of a close relationship between reflective learning and teaching and the development of autonomy, data collected from reflective texts and interviews with two PSTs were analysed using I-statements analysis (Gee, An introduction to discourse analysis: theory and method. Routledge, New York, NY, 2005). Findings indicate that engaging PSTs in structured cycles of reflection is a valuable pedagogical strategy to promote their autonomy. Implications are drawn for teacher education programmes that need to address an increasingly complex set of pedagogical skills, professional competencies and personal qualities to prepare PSTs appropriately for their professional life.

**Keywords** Experiential teacher education · Digital technologies · Structured reflection

> Working on the last assignment brought everything home. I managed to justify why my digital resource was a task, why it promoted authentic interaction and why it would contribute to language learning. I was only able to get here because throughout the year we engaged in all those reflections. We learned to question our actions as learners and as teachers. But most importantly, we learned to let go of the training wheels (Grace/Interview/22 November).

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## 1 Introduction

This interview excerpt synthesises the trajectory of pre-service language teachers who need to simultaneously develop pedagogical skills and professional competencies as well as personal qualities (e.g. autonomy, reflexivity) that will be instrumental in their entrance to the teaching profession. The development of these sets of complex skills and competencies is the concern of formal teacher education programmes. One domain that has become a matter of increasing urgency in teacher education is the pedagogically sound integration of technology into teaching. In the field of language teacher education, several contributions had warned that preservice programmes were not adequately preparing future teachers to effectively integrate digital technologies into language teaching (Hubbard & Levy, 2006; Kessler, 2013; Stockwell, 2009). Although recent publications identify attempts to address the situation (see for example, the Special Issue of "Language Learning & Technology", 2015; Torsani, 2016), it seems that the expectations regarding the inclusion of technology in teacher preparation have yet to be fully met by teacher education programmes. Recent publications concur that those expectations have been met with varying degrees of success in areas such as future teachers' understanding of the affordances of technology and their appropriate uses of technology for personal and some professional purposes (Cutrim Schmid, 2017; Guichon & Hauck, 2011; Tondeur et al., 2012). However, concerns remain on identifying elements of successful pre-service programmes that create the conditions for appropriate integration of technology into language education (Arnold & Ducate, 2015; Cutrim Schmid & Whyte, 2012). Parallel to concerns about developing technological competencies in language teacher education are calls for programmes that promote the development of autonomy (Jiménez Raya & Vieira, 2015; Manzano Vázquez, 2016).

The study presented in this chapter contributes to the literature by providing discursive evidence of the development of pedagogical, technological and professional competencies in the context of a pre-service language teacher education programme in New Zealand. Data were collected in a year-long course that aimed to foster an attitude of inquiry in the PSTs through an experiential approach to learning how to teach languages using digital technologies. The study rests on the presumption of a close relationship between reflective learning and teaching and the development of autonomy in PSTs. The chapter starts by briefly reviewing the literature on preservice language teacher education and its relationship with technology and autonomy; this is followed by a presentation of the context and methodology of the study. The next section presents findings from two sources of data: reflective texts written at two points during the course and interviews conducted after the course finished. The reflections and interviews from two participants were first analysed using I-statement analysis (Gee, 2005), a method considered useful to identify development of autonomy (Fang & Warschauer, 2004; Ushioda, 2010). The analysis then turns to common themes identified in the data. The chapter ends with some conclusions about the use of structured reflection to support the development of autonomy and the implications for teacher education practice.

### *1.1 Technology and Pre-service Language Teacher Education*

Although the integration of technology into language teaching has an established tradition, there are still concerns of a mismatch between the digital demands that PSTs will encounter in teaching, and the development of digital competencies during their teacher education. These concerns have motivated calls for language teacher programmes informed by pedagogical considerations and suitable theoretical frameworks where PSTs develop techno-pedagogical competencies (Guichon & Hauck, 2011) and understand how to effectively integrate technology into their teaching. Effective integration "involves not only the development of teachers' technical skill, but also an evolution of their ideas about teaching and learning" (Warschauer, 2011, p. 107) as it requires better understanding of the transformational possibilities of learning with the technology tools (Blake, 2008). Besides developing general pedagogical understandings, PSTs need to attend to current theories of language learning and teaching (Cutrim Schmid, 2017) as well as contemporary pedagogical theories.

To address these goals, a number of frameworks have articulated sets of skills, competencies and understandings that language teachers need in order to use technologies appropriately in different language learning and teaching contexts (see Cutrim Schmid & Whyte, 2012; Hampel & Stickler, 2005; Hubbard & Levy, 2006; O'Dowd, 2015) as well as in other teaching areas (see the literature that follows the TPACK construct, e.g. Mishra & Koehler, 2006). Some of the commonalities across frameworks include the need for teachers to be able to transfer their knowledge and technological skills from their personal sphere to academic environments; their understanding of the affordances of technology tools for learning and teaching; and their knowledge of the contextual realities that will shape their integration of technology into teaching.

Given that the integration of technology into teaching is such a multifaceted and complex undertaking, it requires a different model of language teacher education that moves away from a purely skills-based method to approaches that promote experiential modelling (Hoven, 2007; O'Dowd, 2015) and that have an inquiry or research orientation (Vieira, 2007). Advocates of experiential or vicarious experiences (Bandura, 1997) argue for programmes that allow PSTs to go beyond modelling the use of technology (Franklin, 2007) to actually experiencing the technological tools in their own learning as a way to foster their understanding of the affordances of the tools for their future language teaching practice (Dooly & Sadler, 2013; Haines, 2015; O'Dowd, 2015). Whyte (2011) warns, however, that these approaches should not completely abandon explicit teaching as PSTs "cannot identify the affordances of the new tools unless they receive help in identifying effective language learning practices" (p. 291). Cakir (2013) suggests that teacher educators should provide opportunities for PSTs to use technological tools as learners to raise their skill levels in utilising technology. Common to these different suggestions is an insistence on the convergence of technology, pedagogy, and language learning content with ongoing reflection (Bustamante & Moeller, 2013; van Olphen, 2007).

Guichon and Hauck (2011) contend that the combination of experiential modelling and exploratory practice with reflective practice will lead to a deeper understanding of the complex processes involved in technology and language teaching. Arguably, then, this approach to language teacher education is conducive to self-directed learning that results in more autonomous PSTs (Fuchs et al., 2012).

## *1.2 Autonomy and Pre-service Language Teacher Education*

Sitting at the intersection of learning and teaching, teacher education is ideally placed to cultivate autonomy in PSTs as trainees acquire content and develop pedagogical competencies and professional qualities. Loughran (1996) cautions that teacher education requires a pedagogy that is "interactive and challenging as learning does not occur just by listening, it occurs by reconsidering one's understanding through deeds, thoughts and actions" (p. 25). However, a recent review of the literature points to the "lack of teacher education programmes which aim to equip language teachers with the knowledge, skills and confidence to promote autonomous learning in their classroom" (Manzano Vázquez, 2016, p. 2) and proposes a reflective, inquiry-oriented teacher education as the most powerful approach to promoting PSTs' autonomy. Similarly, Arnold and Ducate (2015) contend that, in teaching, "the more reflectivity, the more autonomy will be observed" (p. 2). Farrell (2016) advocates that PSTs should be given opportunities to reflect individually and collectively on their experiences as learners and as teachers of a particular curricular area. Bringing these arguments to the field of technology in language teaching, Reinders and White (2016) claim that "our understanding of the impact of technology is changing our understanding of learner autonomy and, more broadly, the roles of learners and teachers" (p. 143). Even more, such reflective experiential approaches via technologies have the potential to bridge learning contexts and facilitate the construction and dissemination of knowledge while allowing for personal and ubiquitous connections among learners and between learners, teachers and their environments (Crompton, 2013).

Although autonomy can be seen solely as an individual quality, a wider reconceptualisation following sociocultural perspectives claims that "the social nature of people drastically challenges any individualistic construction of autonomy" (Jiménez Raya & Vieira, 2015, p. 19). Furthermore, Lamb (2017) suggests that the development of language learner and teacher autonomy is mediated by social and contextual processes in an increasingly interconnected world. This sociocultural perspective sees autonomy as manifested in collaborative approaches to language teaching and learning. This level of autonomy requires flexible language teaching practices and a student-centred approach that redefines the role of the teacher "who must become a pedagogical inquirer" (Jiménez Raya & Vieira, 2015, p. 20). Drawing on data from PSTs of French in Norway, Trebbi (2008), for example, explored the potential of technology to support PSTs' metacognition and autonomy by creating virtual environments where the PSTs shared their written reflections on

their own learning and teaching experiences. Similarly, Haines (2015) investigated how collaborative schemes supported two teachers of English as a Second Language in identifying technological affordances of digital tools (wikis and blogs) that could then be used according to learners' needs, task demands, and desired learning outcomes. In a case study of teachers of German engaged in an online professional development programme, Bustamante and Moeller (2013) found that reflection in discussion boards during a teacher education programme allowed for deeper processing of information as the collaborative environment was regarded by the participants as conducive to reflection about pedagogy. These different opportunities to experience the use of technology, both individually and collaboratively, as well as reflecting on the need to be flexible created during PST education will arguably support the development of autonomous learners/teachers.

## 2 Context of the Study

Data for this study were collected in a one-year course for PSTs of foreign languages taught at a Faculty of Education in New Zealand as part of a postgraduate programme that qualifies candidates for teaching in secondary schools. The course has a curricular and pedagogical focus to support students' development of teaching competencies and skills in enacting the New Zealand Curriculum for Foreign Languages which promotes communication as the core aim of language learning and teaching. The course has embedded digital technologies within an experiential approach to teacher education that places the PSTs in the role of learners as they experience the use of the technologies to learn to teach languages. The course aimed to take into consideration the complex interaction among language learning and teaching content, pedagogy, and affordances of the digital tools while developing professional attitudes, competencies and skills for teaching languages in secondary schools.

The course is taught over 18 weeks in two, 2-h weekly sessions spread over the year during the weeks that the students are on campus for a total of 72 h of face-to-face teaching and learning time. In the intervening weeks, the students go to schools for supervised practicum placements. Following the requirements of the New Zealand Teachers' Council, the course follows an inquiry approach that culminates in an e-portfolio where each teacher candidate demonstrates how they have developed the pedagogical content knowledge, competencies and professional attributes of a teacher. The course uses different digital tools within a range of pedagogical tasks aligned with a social-constructivist pedagogy by focusing on students' collaborative work. This usually involves a communicative or interactive language teaching task, fostering self, peer and lecturer feedback and reflection. The format ensures that the PSTs experience first-hand the digital resources and tools and, most importantly, reflect on and discuss how they would use them in their own language classrooms in the future.

**Table 1** Excerpt from the Teaching Languages in Schools course syllabus

| Week | Lecture/workshop 1 | Lecture/workshop 2 |
|---|---|---|
| 6 | Topic: Individual differences in second language acquisition | Topic: Pedagogy in the *Learning Languages* curriculum area |
| | Reading: Loewen (2015) | Reading: http://seniorsecondary.tki.org.nz/Learning-languages/Pedagogy |
| | Digital tool: Google forms | Digital tool: Audacity |
| | Pedagogical affordance: Surveys | Pedagogical affordance: Podcasting |
| | New reflective step: Action plan | New reflective step: Action plan |
| 7 | Topic: Principles of Intercultural Communicative Language Teaching (1) | Topic: Principles of Intercultural Communicative Language Teaching (2) |
| | Reading: Newton et al. (2010) | Reading: Newton et al. (2010) |
| | Digital tool: GoSoapBox | Digital tool: Playposit |
| | Pedagogical affordance: Backchannel | Pedagogical affordance: Interactive video |
| | Reflection: Description, evaluation/analysis, and action plan | Reflection: Description, evaluation/analysis, and action plan |

To illustrate how the course operates, Table 1 presents the content of 2 weeks of the course. Each lecture/workshop session had a topic and introduced a digital tool with a particular pedagogical affordance. Students were expected to come to the lecture having done the assigned reading and having familiarised themselves with the digital tool to be used. Besides the readings, different resources were available in the learning management system that formed the backbone of the course to ensure that students were ready to engage with the digital tool during the lecture. These resources included links to download the tool or to sign up on the platform, video explanations about how to use the tool, and exemplars of uses of the tool in language classrooms. During the lecture/workshop session, the selected tool was used to demonstrate its pedagogical potential. For example, in the first lecture of Week 6 on the topic of Individual Differences in SLA, Google forms were used to survey the students' learning styles. In the workshop part of the session, the PSTs worked in groups to develop a resource for using Google forms for teaching their language. The French language group, for example, developed a survey as part of a unit on likes and dislikes of food for intermediate students. Towards the end of the session, another survey collected the PSTs' reflections. The course structure scaffolded the PSTs so that they approached each tool as learners first, then as teachers and finally as critical evaluators. During the second semester, the lecture/workshop sessions followed the same format as described above with the difference that the students selected the digital tools to be used in each session. The PSTs were asked to nominate tools that they were interested in using, and the lecturer scheduled these in the course syllabus. Giving the students the opportunity to choose the digital tools encouraged them to make increasingly autonomous decisions about their learning and aligned well with the aforementioned inquiry approach of the programme.

The PSTs' reflections were systematically collected at the end of each lecture/workshop session using a template (Appendix A) following the six steps in Gibbs' (1988) reflective cycle: description, feelings and thoughts, evaluation, analysis,

conclusion, and action plan. The steps of the cycle were introduced gradually, one per week during the first semester, and included brief prompts to further guide answers. Once the six steps had been introduced by Week 6 and, following feedback from the PSTs in previous years, three of the steps were merged. The resulting reflective steps used for the remainder of the course were description, evaluation/analysis, and action plan.

## 3 Methodology

The study presented here is part of a larger study that investigated the use of digital technologies in a language teacher education programme at a Faculty of Education in New Zealand. The larger study collected data from the same course in three instances (2013, 2015 and 2016) to answer two overarching research questions:

- How does the use of digital technologies enhance teaching and learning?
- How does feedback provided by PSTs promote their reflective practices?

The wider interest in the larger study was to examine the role/s of digital technologies in an initial teacher education programme with a particular focus on identifying how technology/ies both became a vehicle for learning and a tool to collect feedback about learning from the PSTs. Feedback from the PSTs about their learning processes was sought using different methods, including reflective practices embedded in the courses, as illustrated in the present chapter. Using data from the 2016 course delivery, this chapter examines how two PSTs became autonomous while developing pedagogically grounded knowledge and skills to effectively integrate digital technologies into the teaching and learning of foreign languages.

The overall project took an interpretivist qualitative approach that focuses on an exploration of the problem and a detailed understanding of the phenomenon at hand (Creswell, 2012). The interpretive worldview allows for the combination of data types alongside the multiple realities of the various participants and the interpretations of the researcher.

Ethical approval for this study was obtained from the university's ethics committee. All students from the "Teaching Languages in Schools" course ($N = 26$) were invited to participate. A total of 22 students volunteered and consented to give access to their coursework for research purposes; of the students who consented, five agreed to be interviewed at the end of the course. To avoid compromising the anonymity of the students (given that the researcher was also the course lecturer), all data were accessed for analysis only at the end of the course when final grades had been released and the interviews were conducted by a research assistant. Although the whole study employed a number of research tools, two instruments are considered here, namely data from the PSTs' reflections and data from the end-of-course interviews. The written reflections collected throughout the course provided linguistic evidence of the process of development of autonomy as the PSTs made their learning visible.

The two sets of data were scrutinised using I-statement analysis. This analysis is a type of discourse analysis that examines how people describe their actions using first-person statements and, through their language, construct their situated identities (Gee, 2005). Ushioda (2010) contends that I-statement analysis is useful in autonomy research where participants engage in processes of critical reflection using the first person. Authors using I-statements for their analysis (Fang & Warschauer, 2004; Gee, 2005; Ushioda, 2010) classify the predicates of the I-statements considering the data collected, the research context and the research focus. I-statements offer a systematic method for analysing changes within participants and, for the purposes of this chapter, growth in autonomy. Both Gee (2005) and Ushioda (2010) agree that, although the I-statements are tabulated numerically, these figures provide only a guide for a richer analysis of the meaning of the statements themselves.

To make the analysis manageable, it was decided to select reflections from two PSTs at two moments in the year when the PSTs re-read all their answers to the reflective templates towards the end of each semester (at Week 8 and Week 17). Analysis and reduction of the data followed for each data set: reading the reflections and interview transcripts several times considering the research focus; identifying and extracting I-statements; examining predicates for each I-statement; arranging the statements according to the categories in Gibbs' (1988) reflective cycle; and confirming the two coders' agreement in the analysis of the I-statements. In the present study, all the data were coded independently by the researcher and a research assistant. All disagreements in coding were resolved after discussion and analysis.

## 4 Findings

The two PSTs whose data are presented here were selected because both achieved the highest grades in the course, were hardworking, distinctly reflective and successful in their teaching practicum. Grace (pseudonym) was a PST of Japanese. She majored in Japanese and, after graduation, lived in Japan for 2 years teaching English. Grace described herself as a competent technology user and reported that she had previously integrated technology into her teaching. She also described herself as a successful language learner. Rose (pseudonym) was a PST of German who graduated from her Bachelors in German the year before entering the pre-service programme. She had no formal experience of teaching and described her use of technology as average. She had studied French and German and decided to major in German because she had a dedicated teacher who inspired her to become a language teacher. Both PSTs engaged readily with the reflective cycles included in the course; each produced lengthy reflections compared to their peers and willingly shared their learning with the lecturer and their peers.

### *4.1 Reflective Texts*

The first two datasets analysed were reflective texts gathered in Week 8 (first semester) and Week 17 (end of second semester) of the year-long course. As described before, one digital tool was used in each lecture/workshop as a way of processing content, then, working in small groups by language, the PSTs created a resource for language teaching and finally, using Gibbs' (1988) reflective cycle they completed a template (Appendix A) to enter their reflections. In Weeks 8 and 17, the PSTs were asked to look back at their answers in the templates and consider their responses in each category. Then they wrote a 800–1000 word reflective text which was an assignment part of their coursework. The reflective texts were initially classified according to the six categories of Gibbs' (1988) cycle used in semester one and the reduced three categories in semester two. A decision was made at the time of coding to separate the *feelings* and *thoughts* categories as these generated the highest number of I-statements. Table 2 summarises and compares the I-statement analysis of Grace's and Rose's reflections.

It is evident that the two PSTs differ across Gibbs' (1988) categories and the type of statements at the two points of data collection seem to have changed for each of them. In order to make sense of the content of the reflections, Tables 3 and 4 present excerpts of the PSTs' reflective texts arranged by category at each point of analysis.

As illustrated in Table 3, Grace's and Rose's comments in the first semester indicate that they followed different paths in approaching the use of technology for teaching. Grace's reflections were full of specific examples of her emotional reactions to the different tools while Rose's texts were perhaps less assertive yet more thoughtful. Although Grace seemed competent and comfortable with the technology, she seemed to struggle analysing and evaluating the tools' uses for teaching. She considered her feelings to be "extreme" mirroring the areas in which she felt competent and lacking competence. By the end of the first semester, her reflections seemed to be typical of PSTs starting to use technology in teaching where there is an initial fascination with the tools without fully understanding their affordances. In contrast, Rose's reflections demonstrate insecurities and frustration because of her lack of technological competence. Yet she was pleased with her ability to understand the possibilities of the tools for teaching. Rose's I-statements indicate that she

**Table 2** Comparison of percentage of I-statements in the reflective texts

| Gibbs' category | Text 1, Week 8 | | Gibbs' category | Text 2, Week 17 | |
|---|---|---|---|---|---|
| | Grace | Rose | | Grace | Rose |
| Description | 12 | 16 | Description | 19 | 13 |
| Feelings | 29 | 17 | Feelings | 25 | 14 |
| Thoughts | 12 | 21 | Thoughts | 19 | 22 |
| Evaluation | 24 | 21 | Evaluation / analysis | 28 | 39 |
| Analysis | 7 | 10 | | | |
| Conclusion | 3 | 6 | Action plan / conclusion | 9 | 12 |
| Action plan | 13 | 9 | | | |

**Table 3** Excerpts from reflective texts – Week 8

| Gibbs' category | Grace | Rose |
|---|---|---|
| Description | I could easily deal with the techie part. (…) A different story was creating the resource for teaching. I had a really hard time putting on a teacher's hat. | Not being proficient in the technology meant that I had to spend hours following instructions to download the apps. (…) it was a huge learning curve for me. |
| Feelings | Funny how most of my templates had extreme feelings of either "I love Storybird" to "I really did not enjoy I-movie". (…) I seemed to have developed a love-hate relationship with each of the apps. | I mostly recorded feelings of frustration about my incompetence with the technology. I had lots of "I was nervous" and "I hesitated". (…) I also included some positive feelings about the relationship with my group. |
| Thoughts | My initial responses focused only on technology. (…) when we used Padlet I wrote: "This is one of the easiest platforms I've seen but I think this will be tricky to use with large classes". (…) over and over again I wrote: "I hadn't thought of that" whenever one of my peers proposed an activity or task. | I think I quickly developed a clear sense of what was expected of us (…) so I had heaps of ideas about how to use the different apps. |
| Evaluation | This category proved to be the most challenging (…) I did not feel like I had the authority or knowledge to know how it would work with real students. I had such difficulty comparing the different apps. | I was so good at evaluating that I surprised myself. (…). I could see the pluses and minuses of the apps in teaching almost instinctively. (…) thanks to the readings. |
| | | I seemed to be learning a lot from my own insecurities with the technology and that made me sharper. |
| Analysis | Our initial analysis were very superficial. (…) I can see some progress (…) I understood key concepts presented in our lectures, the more I could say with some confidence how one app may be suitable. | I clearly preferred to work at my own pace (…) although I was lucky to have patient classmates who helped me. (…) I was most at home when we were matching the apps to the pedagogy. |
| Conclusion | I don't think I had much to conclude except: 'I'll recommend this or won't recommend this'. Some of my conclusions were single words. | I probably used most of my energy in analysis and evaluation because I had little to conclude in my reflections. (…) all apps have a place in teaching languages. We need to have clarity (…) why we are using them. |
| Action plan | The action plans were mostly ambitious and (…) was not very discerning (…) not much consideration of its pedagogical suitability. I sounded confident (…) "I will not hesitate to use Plickers". | Although my action plans were mostly "I will use this app for x or y", realistically I think I'd choose only a couple of those that I feel most comfortable with. |

**Table 4** Excerpts from reflective texts – Week 17

| Category | Grace | Rose |
|---|---|---|
| Description | My descriptions at this time of the year are so much balanced (…) I use the terms we have learned with confidence (…) "I embedded a YouTube silent video in Playposit to create an interactive set of questions for my students". | My descriptions have lost the obsession with listing steps for dealing with the technologies. (…) I focus much more on describing the aspects of language teaching or the learning outcome. (…) they [the descriptions] are not only more detailed (…) but also more useful. |
| Feelings | I am more confident in understanding the affordances. | I enjoyed the challenge of learning about such different apps. |
| Thoughts | I consider my comments to be more focused on what the technology can do for my students. | Once I understood what an app can do for my teaching (…) I could concentrate on developing resources that would be useful in my classes. |
| Evaluation/ analysis | My evaluative comments in the second semester are evidently underpinned by pedagogical concepts. The technology has faded to the background (…) I give far more consideration to the ways technology supports what I want to achieve for teaching. (…) I can see how learners feature more prominently. | I manage to include insightful analysis of the affordances of the apps mostly because I have seen them being used during practicum. (…) I'm more critical of the technology not because I can't use it, but because sometimes I prefer not to use it. |
| Action plan | This semester's actions plans are full of realism (…) maybe because I've taught in two different classrooms. I visualise coherent paths for the integration of theory to my teaching. (…) more critical in the lists of limitations [of using technology]. | I can now see more possibilities of using the apps. (…) I've lost the resistance created by my insecurity with the technology. (…) lesson plans integrate technology where I hope it will support what my students are learning. |

is capable of working around her limitations and she bases her work on being realistic and cautious in terms of the integration of technology into the teaching of languages.

Overall, the two PSTs' reflective texts indicate divergent paths in their understanding of technology integration: one strongly grounded in technological competence and the other derived from a seemingly intuitive sense of pedagogical appropriateness. The experiential approach used in the course seems to have provided these two PSTs with concrete evidence of their own learning trajectories and their initial attempts at seeing these in their future teaching practice. The cycles of reflections seem to have provided useful scaffolds for these PSTs' growth.

As seen in Table 4, the Week 17 reflective texts demonstrate clear influences of practicum experiences and an evolution in both PSTs towards a more balanced view of the different elements involved in the integration of technology into language teaching. Crucially, their classroom experiences have made them aware of the importance of planning with their learners in mind. Grace's reflections indicate enormous growth of her knowledge and understanding of pedagogical elements.

Her texts show her confidence in the description of the apps' uses, the identification of the tools' affordances for teaching languages and possibilities for classroom implementation. Rose's reflections are still based on her perceived strength in teaching yet with far more technological confidence. She continues being more discerning and critical of the use of technology while also being realistic about what the tools can do for her teaching. Both PSTs demonstrate increasing autonomy in the way they approached their learning particularly with reference to being critical about the integration of digital technologies to teaching languages. Interestingly, neither of the PSTs made explicit allusions to language teaching. The absence of a focus on language teaching may be due to the emphasis on technologies in the templates for reflection rather than an indication of neglect of this key component of the PSTs' programme. What is also clear is that both Rose and Grace were managing their learning by adjusting their own skills to the learning and teaching required. By Week 17, their reflections were written using terminology acquired in the course.

To sum up, the analysis of the PSTs' reflections indicates that – although they followed different paths to understand effective integration of technology into teaching – they both evolved in developing their pedagogical ideas (Warschauer, 2011) and understanding the pedagogical affordances of the tools (Blake, 2008). Similar to the findings in Haines (2015) and Bustamante and Moeller (2013), it seems that reflecting on the effectiveness of specific digital tools supported the PSTs' development. Moreover, the findings of the I-statement analysis provide further validation for the relationship between reflection and development of autonomy (Reinders & White, 2016). Thus, arguably, the structured reflection that the PSTs undertook in the course described here supported the development as autonomous learners and teachers of these two PSTs.

The reflections examined in this study provided some insight into the process of growth in autonomy of the two participants and the evolution of their ideas about teaching and learning (Warschauer, 2011). From initial hesitations and insecurities in different areas, the two PSTs engaged in processes of overcoming their shortcomings while developing further insights into how learning with digital technologies can inform their teaching. Through this process their learning became more visible, more purposeful (Benson, 2011) and more personal. Analysis of the reflections provided valuable feedback about the use of the reflective cycle as a tool for analysis. In particular, it highlighted the need to use the templates to capture more balanced data about the personal experience of the PSTs as well as to their insights into the process of language learning mediated by technology.

### *4.2 Interviews*

As described in the Methodology, at the end of the course five PSTs were interviewed. The interview schedule (Appendix B) focused on the use of digital technologies during the course and mirrored the categories for reflection used throughout the year. Grace's and Rose's interviews were analysed using their I-statements (see Table 5).

**Table 5** Comparison of percentage of I-statements in the interviews

| Gibbs' category | Interview | |
|---|---|---|
| | Grace | Rose |
| Description | 22 | 17 |
| Feelings/thoughts | 28 | 21 |
| Analysis | 16 | 24 |
| Evaluation (advantages) | 13 | 15 |
| Evaluation (disadvantages) | 8 | 12 |
| Conclusion | 5 | 4 |
| Action plan | 8 | 7 |

The first step of analysis of the interview data was a comparison of the two PSTs' I-statements. This initial analysis shows similarities with their statements gathered at other data points in the year and examined in the previous section. Both willingly engaged with the interviews and were mostly positive about their experience. Rose continued being more analytical and balanced in her description and analysis of the year's work whereas Grace provided more emotive responses, similar to her reflective texts. As a second step of the analysis, the data from the interviews were examined to look for commonalities and differences in the PSTs' end of year reflections. Of particular interest, given the focus of the course, this evidence supported the use of an experiential pedagogy that motivated situated professional reflection and understanding of the effective integration of digital technologies into the teaching of languages. This analysis yielded three common themes: learning by doing; purposeful integration of technology; and reflection to make learning visible.

## *4.3 Learning by Doing*

Both Rose and Grace agreed that the course emphasis on the PSTs experiencing the use of digital tools as learners had been powerful learning for knowing the tools and how to teach with them. Grace said, "getting to use such diverse number of tools was a definite bonus. … being forced to use the tools as a learner was the only way for me to understand how to use them". Similarly, Rose stated, "we may not use them [the digital tools] because it will come down to what's available in schools, but just knowing that those apps exist and that we've used them is comforting". Rose explained how creating the resources using the tools had been most beneficial because it gave her an understanding of learners' processes of learning with the tool. She felt that, pedagogically, she was better prepared to anticipate her learners' difficulties. Grace admitted in her interview that she had initial reservations about the course's experiential approach but understood how important those tasks were to increase their competencies in planning and teaching as well as "granting us the opportunity to learn from our mistakes". She added that her greatest realisation was that "we [were] using the technology to learn the technology. It's really that simple". In different terms, both described their satisfaction in creating their own

version of a digital resource for their future teaching. Both realised that, through experiential learning, they had moved from an emphasis on developing isolated skills to realising the complexities of learning and teaching, representing a shift from "doing and following instructions" (Rose) to "learning by doing and being a teacher" (Grace). Finally, Rose's assertion that "we all like to be hand fed but [we learned through] being left to our own devices", demonstrates that the experiential learning approach supported the development of these PSTs' autonomy.

### *4.4 Purposeful Integration of Technology*

The second common interview theme has to do with the way Grace and Rose appreciated how the course supported their understanding of technology integration with a pedagogical purpose. Grace had initially struggled with "seeing things as a teacher" but gradually found her way to "thinking how each tool best serves the language tasks and the learning required". In contrast, Rose was quite comfortable with the tasks' pedagogical aspects while feeling insecure about her technological competence. When asked to describe their experience of learning with technology, both agreed that the most difficult aspect was finding the right balance between integration of pedagogical and technological aspects and attending to the language learning and teaching required. "It was difficult for all of us to understand that these tasks were not separate, [but] were all building towards a larger purpose of seamless integration in practice" (Grace). Their first practicum experiences challenged their emerging understandings of integration because both PSTs were in classrooms where the teachers saw technology as an 'addition' or as a 'distraction'. It was only their growing security by the time of their second practicum that led them to experiment with integration and allowed them to see real benefits.

Rose provided an extended reflection about integration when asked about specific points in the course when her learning was enhanced:

> I had never been aware that what I was doing was developing all these skills little by little like constructing a building. It was not so organised from the bottom up for me, perhaps it's more like a jigsaw puzzle where you start putting the isolated pieces together. We had to take into account such different things: technology affordances, language tasks, good behaviour, students' needs, all of that in every single lesson.

### *4.5 Reflection to Make Learning Visible*

The final interview theme related to the way reflection throughout the course made learning visible. Both Grace and Rose concurred that the course's reflection cycles had been useful in their growth as PSTs. Grace spoke about how helpful the structured reflection embedded into the course was: "I learned to observe my actions thanks to those templates that we completed every session". At year end, when all

the PSTs were required to complete their e-portfolio, Rose was particularly thankful for the templates: "I was surprised by just how useful [the] reflective notes were by the time we [were] uploading things to the e-portfolio. It was a matter of selecting what to upload and organising my notes. Brilliant". Grace described a different experience with her initial reflections: "[t]he notes were helpful in making [my learning tangible] and forcing me to articulate what I was doing to the point that I began to question whether I was really becoming a teacher".

Both PSTs also commented on how structured reflection helped them at a personal level. Grace considered that a reflective stance was a necessary condition to develop awareness of her growth as a teacher, "I realised that those reflective texts uncovered personal assumptions about learning and teaching and about the place of technology in teaching". For Rose, "the tools [made] us think of the big picture. How teaching is complex and how we are both learning and learning to teach and then teaching what we learned". Both PSTs commented that the reflective cycles allowed them to develop a voice and a collective sense that their learning mattered to others. The notion of transparency was raised by Rose, "I got used to our learning being so public". Finally, both PSTs saw reflection as a change motivator. For them, the constant reflective exercises resulted in a willingness to learn from their experiences and to develop resilience. As Rose put it, "it was a relief to know that if everything failed in one session, there would be another opportunity in the following session". Equally important to making their learning visible through reflection was making their learning their own through reflection – as summed up by Grace: "in the end it was all about giving us the tools to create our own resources, our own plans and our own learning".

The analysis of the interviews with these two PSTs resulted in three themes that resonate with previous research into the importance of the experiential approach to language teacher education (Cakir, 2013; Hoven, 2007; O'Dowd, 2015), purposeful integration of technology to language teaching (Dooly & Sadler, 2013), and the use of reflection to appreciate the complexities involved in technology and language teaching (Cutrim Schmid, 2017). Structured reflection allowed these PSTs to continuously process what they were experiencing and learning and relate these realisations to their course learning and eventually to what happened during their practicum placements. This construction and reconstruction of their learning became a continuous, self-reflexive process demonstrating how more reflection led to more autonomy (Arnold & Ducate, 2015).

## 5 Conclusion

Resting on the presumption of the close relationship between reflective learning and teaching and the development of autonomy, this contribution presented findings from a year-long study in a pre-service language teacher education programme. These stem from two data sources collected from two PSTs and have provided evidence of growth through their engagement in structured cycles of reflection

embedded in a course that follows an experiential approach to learning to teach languages with technology. This study argues that structured and ongoing reflection on the integration of digital technologies into language teaching can be a catalyst for developing an autonomous approach.

Obvious limitations to the generalisability of these conclusions are the focus on only two PSTs and the evidence being limited to two sources of data. However, from the examination of these data, it seems that the experiential approach used in the course created conditions allowing these two PSTs to critically examine their own learning as well as to evaluate and develop their future teaching. Based on the evidence presented here, learning by doing allowed the PSTs to experience, both as learners and teachers, the integration of digital tools into the learning and teaching of languages. These experiences were recorded through reflective cycles where the PSTs were asked to describe the learning and teaching processes they were involved in, to evaluate and analyse them and propose plans for future actions. They were thus constructing a richer, more complex and personal framework for the significance of learning and teaching. This allowed them to progress to more deliberate forms of purposeful and discerning integration of technology to their language teaching.

Given the complex process of becoming a teacher is one that requires the simultaneous development of pedagogical, technological and professional competencies, this study provides evidence of the benefits of embedding structured reflection in an experiential approach to language teacher education. In other words, PSTs should not 'be left to their own devices' as reflection needs to be directed, purposive and structured. Deepening our understanding of the processes that PSTs go through as they develop their initial teaching competencies is critical in advancing our professional practices as teacher educators.

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## Appendices

### *Appendix A – Template – Adapted from Gibbs Reflective Cycle*

Step 1: Description

Describe the digital tool used in today's session. Pretend that the reader does not know the tool. Include in your description how you learned about the tool, whether you had any prior experience with it, how the tool was used in the session and the process you and your group followed to create a teaching resources using the tool.

Step 2: Feelings

Describe how you felt with regards to the use of the digital tool selected for today's session. Since the tool was used in different forms, please be as detailed as possible in describing all your feelings towards the use of today's digital tool.

Step 3: Evaluation

In this step, you evaluate the experience with the digital tool. The following questions may be helpful: What went well? Why was that? What didn't go so well? Why was that? What was your contribution? What contribution did other people make?

Step 4: Analysis

This step is about what you have learned from engaging with the digital tool used today. Because of the experience, you now know what to do in similar, future situations. This means that both positive and negative things and/or problems you experienced will be written down and analysed individually.

Step 5: Conclusion

Take a step back and ask what else you could have done in your work with the digital tool today. The following questions may be helpful: Were there any positive/negative experiences? What will you do differently next time? Which skills do you need to develop yourself in the future?

Step 6: Action plan

In this final step, you identify actions to take for future engagement with digital tools. Situations, events or activities. Be specific in terms of the actions to be taken in the future (a plan).

## *Appendix B – Interview Schedule*

1. Tell me how you worked with digital technologies during your year of language teacher education.
2. How did you find the experience of working with different digital technologies?
3. Can you think of specific actions or moments when your learning was enhanced because of the use of digital technologies in this course?
4. In your opinion what are the advantages of integrating digital technologies to this course?
5. In your opinion what are the disadvantages of integrating digital technologies to this course?
6. Would you have some advice for the teaching of this course in the future (with respect to the use of digital technologies)?
7. At the moment do you plan to use digital technologies in your future teaching of languages?

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# Learnful L2 Gaming: The Wisdom of the Wild


**Jonathon Reinhardt and Yiting Han**

**Abstract** This chapter discusses the informal practice of learnful L2 gaming, that is, playing a vernacular (commercial, non-educational) game for the intentional, sometimes incidental purpose of L2 use and practice. The introduction discusses the reasons for this widespread practice and the background section surveys associated theory and research, focusing specifically on informal learning, the notions of learnfulness and gamefulness, and L2 learning with games. The chapter then presents a descriptive study that surveys online, informal advice on learnful L2 gaming culled from three openly accessible online forums from 2014–2016: Reddit, Quora, and Duolingo. In brief, users suggested choosing the right game, playing it learnfully, and interacting with others through and around it, suggestions which mirror findings from research and formal practice. Further discussion of this 'wisdom of the wild' conclude the chapter, with implications for pedagogy.

**Keywords** Digital game-based language learning · Informal learning · Learner autonomy · Gamefulness

## 1 Introduction

Estimates are that upwards of two billion people played vernacular (commercial, non-educational) digital games in 2017, with 800 million active players, increasing every month (Statista, 2018). Games are produced by thousands of designers in scores of countries in dozens of languages, usually the top languages of the biggest global gaming markets. Some avid gamers thus may play games in languages they do not know, for no other reason than the game is not available in a known language (Chik, 2014). Others whose primary languages are available recognize that the language of many globally marketed titles can be switched into other top languages,

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perhaps one they would like to learn or practice, and they may recognize their bilingualism as a useful resource for their player community (e.g., Vazquez-Calvo, 2018). To these ends, they approach L2 gameplay with a learnful disposition, that is, an attitude or even a deliberate intention toward playing the game with the informal idea that it may serve as an L2 learning resource.

Learnful L2 gaming, the practice of playing a game and engaging in learnful practices in an L2 (Reinhardt, 2019a), is practically unrecognized by L2 educators as something beneficial that their gamer-students might do (Chik, 2012), or that might be associated with social and cognitive learning benefits (Sylvén & Sundqvist, 2012), or that might be leveraged for more formal or classroom-based learning purposes (Blume, 2019; Chik, 2014). There are many reasons for the lack of acknowledgment of the learning benefits of gaming, sometimes based on myths and misconceptions (Reinhardt, 2013). In brief, modern educational ideologies consider gaming – whether gambling, sports, or playing videogames – a vernacular, everyday activity, contrasted with academic activities that are in theory more productive and aligned with modern social purposes of education. These ideologies are deep, unexamined, and espoused by not only educators and parents, but learners and gamers as well (e.g., Blume, 2019; Reinhardt, Warner, & Lange, 2014). Besides overcoming these biases, a challenge for those who would use games learnfully lies in recognizing that learnful dispositions are sometimes opposed, and sometimes in complement, to gameful dispositions, as is realizing and maintaining a balance between them (Reinhardt, 2019a).

When the game they have purchased is marketed globally and therefore produced in multiple languages, gamers are immediately faced with a choice of languages when they start up their copy, and they may choose an L2, perhaps one they know in varying degrees of proficiency, or one they would like to learn. Once they start playing, they may be able to rely on their general gaming literacies and to transfer skills relatively easily if they have played the title in their L1. If they have not, they may more generally rely on knowledge of the designed mechanics associated with the genre of the game and deduce its rules through trial and error. This reflects the experiential learning instructional design of game tutorials, where novice players learn to play through scaffolded tasks of gradually increasing difficulty and timely, adaptive feedback, giving them a sense of agency and discovery, as if they are actually playing the game from the start (Gee, 2003). In this way, the L2 is operationalized in meaningful contexts that associate form, meaning, and function (see Sect. 2).

L2 gamers may also rely on the wisdom of the Internet wilds, and browse social media for advice. They may find considerable resources in the L2 for expert and native speakers – for example, player guides, game walkthroughs, or Twitch videos – created by both the game's publishers and its player communities, as well as resources in their L1 for L2 play of the most popular games. While many who L2 game are exposed to the L2 incidentally and may thus learn it informally without consciously trying, many also realize the practice can lead to increased proficiency, and attempt to learn the L2 more purposefully, that is, with a learnful disposition. A web search for resources on learning foreign languages with videogames finds a

growing academic community of researchers and publications, blog posts aimed at teachers and more popular audiences, as well as discussions among gamers in various forums associated with specific games. For example, in a now-defunct 2009 discussion forum for *World of Warcraft (WoW)* players (wow.com) a post asked "Does *WoW* help you learn a foreign language?". While the game *WoW* has evolved considerably since 2009, the forum no longer exists and the identities of the posters are unknown, its content serves as anecdotal evidence that is repeated in many forums in the Internet wilds for the widespread practice of learnful L2 gaming. Replies included:

> Although I've learned English – I am Turkish btw – at school I was far away from speaking it. I've been playing *WoW* for the last 2.5 years and speaking with my buddies in-game has helped me a lot in speaking English fluently.
>
> Hell yeah! I'm Brazillian and my english gots a lot of improvement. In my guild we have something like half of the members from Brazil and the US players learned a little of portuguese too.
>
> Playing on the European realms, i find myself subject to a large variety of languages on a day to day basis. I've managed to pick up a fair understanding of Swedish and Dutch as a result, with no effort put in i can even form some sentences and phrases. Thanks to *WoW*, Min Svenska ar bra!
>
> Hey there, first i'm a french canadian, and i play on a server on which texas people play mostly, and i must say i learned ALOT! First when i started playing wc3, i couldn't speak english at all. So i decided to buy a french/english dictionary and translate/memorize every words and sentances i saw …
>
> Well, being Russian playing on an English realm I have learned English. From nearly zero level to 108 out of 120 points in TOEFL [Test of English as a Foreign Language] test. I also meet lots of Swedes, Danes and even British from Caribbean

These anecdotal data provide a few leads into the purpose of this chapter, to apprehend the practice of learnful L2 gaming as a productive activity by exploring the concept and finding more empirical evidence of it in the wild. To this end, in the remainder of this chapter we will first survey the theory and research associated with the practice, specifically on informal learning and learnful L2 gaming. We will then present a descriptive study that surveys online, informal advice in the wild culled from three openly accessible online forums from 2014–2016: Reddit, Quora, and Duolingo. Five questions posted on the sites (not by us) about the practice received 183 replies, which we collected and categorized according to common themes. Data collection and analysis methods are described, followed by summaries of the findings: the games, languages, and suggestions offered[1]. Our discussion then argues that these findings are evidence for the 'wisdom of the wild', as they align remarkably well with computer assisted language learning and second language acquisition research. They also offer implications for future inquiry and more formal, gameful pedagogical practices that support self-directed, learnful L2 gaming.

[1] Some of the data is also discussed in Reinhardt (2019a), but the analysis in that publication is not repeated here but rather supplemented by the presentation below, and the data examples in both are unique.

## 2 Background

Theoretically, *informal learning* is a term grounded in the emerging field of language learning beyond the classroom (Benson, 2011; Chik & Ho, 2017; Godwin-Jones, 2018). Informal learning can be described based on Benson's (2011) framework in which he proposed four dimensions to it – *location*, *formality*, *pedagogy*, and *locus of control*. Informal learning usually takes place in both physical and virtual environments beyond classroom walls (*location*), involving pursuit of interests outside of structured courses and institution-based programs (*formality*). Different from school-based learning, informal learning largely relies on self-instruction and self-assessment (*pedagogy*), which vary considerably due to differences in learning experiences and backgrounds. Learner autonomy, defined as "the ability to take charge of one's own learning" (Holec, 1981, p. 3), is essential in informal learning because learning activities and decisions are more self-directed than other-directed (locus of control). L2 learners who engage in informal learning are more likely to become autonomous learners and practice life-long learning. With growing accessibility of digital tools and online resources, the rise of informal learning online affords countless possibilities for choice of approaches, tools, resources or communities in ways that accommodate various L2 learning motives, strategies, and preferences. This vast array of choice can both empower and overwhelm.

A large amount of L2 gaming happens in informal settings where learner-players, motivated by affinities and self-interest, engage in personal and social practice through and about games (Chik, 2014). In a framework that categorizes research and practice in games and language learning, Reinhardt and Sykes (2014) proposed *game-enhanced*, *game-based* and *game-informed* second language teaching and learning (L2TL) research and practice in formal contexts. While *game-based* refers to the use of games purposefully designed for L2TL, such educational games are rare and not always particularly well-designed (Blume et al., 2017). *Game-informed* is the use of game- and play-like elements and principles for L2TL, including what has been termed gamification (Cruaud, 2018; Reinhardt & Thorne, 2016). *Game-enhanced* involves the formal use of vernacular games, that is, non-educational commercial off-the-shelf games not intentionally designed for L2TL. The design of all three types of gameful L2TL ideally leverage understandings of games and learning from the study of vernacular, educational, and informal L2 gaming.

Complementing this framework, Reinhardt (2019a) conceptualizes *gameful* and *learnful* to refer to learner-player mindsets when engaging in game-enhanced, game-based, and game-informed L2TL. Neither are not meant to be absolute qualities, but dynamic, attitudinal, and subjective dispositions. When a learner-player is gameful or learnful, they are not necessarily entirely mindful or conscious of their disposition, and can become more or less aware of it as they learn or play. Reflecting Caillois' (1957, in Reinhardt, 2019a) distinction between *paidia* or open-ended play and *ludus* or rule-bound play, an activity that is gameful is playful but tends toward *ludus*.

When one recognizes the gameful in a traditionally non-game-like activity – for example, shopping, cleaning, working, or studying – one approaches it differently and perhaps is more engaged with it. At the same time, one can take a learnful approach to supposedly non-serious and playful activities, as well as to mundane and everyday ones, by recognizing and acting upon learning affordances with intention. In this way, gamefulness and learnfulness can be on an axis not parallel, but rather perpendicular, to an axis of game and lesson or learning experience – a game can be more or less learnful and a lesson can be more or less gameful. To further broaden this scope, the concepts can be applied to not only during-game play experiences, but also to beyond-game socio-literacy practices and attendant discourses, such as discussing game-related issues, engaging in game-related translations, and creating fan-fictions (Ryu, 2013; Seay et al., 2004; Vazquez-Calvo, 2018). These activities may be understood as serious yet casual, or as game-related yet highly productive; in other words, in the liminal spaces between learnful gaming and gameful learning.

Language learning through gaming can happen in a variety of ways. Reinhardt (2019a) and Reinhardt and Thorne (2019) highlight eight, interrelated affordances for L2 learning available in digital gameplay, whether played solo or socially, informally or in a formal classroom activity. Depending on context of play, player background and disposition, and the design of the game being played, these affordances may or may not be available to every learner-player. In brief, games can:

- contextualize L2 vocabulary in meaningful narratives and facilitate the learning of linguistic form-meaning-function relationships through interactivity (e.g., Sylvén & Sundqvist, 2012);
- allow manipulation of time and repetition of play, affording input exposure and extra time for comprehension, response, or production (e.g., deHaan et al., 2010);
- provide sheltered space for practice with low-stakes outcomes, and scaffold difficulty so that players are constantly in their zone of proximal development (Vygotsky, 1978);
- promote dynamic goal-orienting behavior (Sykes & Reinhardt, 2012) and provide timely and appropriate feedback;
- offer opportunities for meaningful collaboration and languaging (Swain, 2006), that is, collaborative goal-directed language use, when played socially;
- provide spaces for identity work and play, that is, opportunities to take on and experiment with new perspectives, understandings, and voices;
- either be played at any time and/or place, promoting autonomy and independence, or played at a specific time and/or place, promoting situated and place-based learning (e.g., Holden & Sykes, 2011); and
- promote learner autonomy through designs that allow them to function as independent learning objects, with tutorials and easily accessible help resources easily accessible, both in the game and online outside of the game.

While considerable research has examined to what extent L2 learner-players have availed themselves of this diverse array of L2 learning affordances in formal pedagogical interventions (e.g., Miller & Hegelheimer, 2006; Reinders & Wattana,

2014; Reinhardt et al., 2014; Shintaku, 2016), much research has explored how informal players utilize them in extramural (out of school) contexts. For example, in a study of young L2 English learners playing digital games at home, Sylvén and Sundqvist (2012) found that playing digital games positively correlated with increased L2 proficiency, especially with regard to vocabulary acquisition. They argued that games might facilitate incidental vocabulary acquisition by exposing L2 learners to a rich L2 environment. Games and their attendant discourses can be quite rich linguistically; for example, Thorne et al. (2012) built and analyzed a corpus of in-game *WoW* texts and online discussions, finding a complex and multimodal variety of syntactic structures and lexical items at a range of reading levels. Gameful L2 learning can be seen to occur by means of gaming activities involving these rich texts, mediated by changing dynamics distributed among the interlocutors, the activities, and the artifacts; for example, Scholz and Schulze (2017) showed how learners' trajectories could be understood as adaptive systems in which internal or external attractors led to emergence of L2 development.

Social interaction and languaging are fundamental to gameful L2 learning. In a study conducted in *WoW*, Nardi et al. (2007) found that players learned to play the game through chat conversations and considerable negotiation of meaning with other players, and that interactions that may have been associated with learning were spontaneous, unpredictable, and driven by small events in the game. Thorne (2008) examined interactions between an English native speaker and a Russian native speaker in *WoW*, showing how they were able to form a supportive relationship in and out of gameplay, by taking turns being learner and teacher. Piiranen-Marsh and Tainio (2009) examined the collaborative L2 gameplay of two Finnish boys playing a console game together informally, finding they engaged in mimicry of in-game voiceovers, collaborative decision making and co-construction of event interpretations, which afforded English learning. In a series of studies, Zheng, Newgarden, and colleagues (e.g., Newgarden & Zheng, 2016; Zheng et al., 2012; Zheng et al., 2009) have deftly illustrated that considerable, highly complex negotiation of meaning, co-participation, and shared values realizing occurs in play of massively multiplayer online role playing games (MMORPGs) among L2 learners.

Considering the fact that gamers interact with one another not only in games, but also around and about them, some research has adopted an ecological framework to apprehend gameful practices writ broadly (Reinhardt & Thorne, 2016). For example, Ryu (2013) investigated how non-native English speaking gamers participated in language learning through gameplay and beyond game activities (e.g., posting in online forums). He argued that a considerable amount of language learning happened outside of actual gameplay and in affinity spaces (Gee, 2005) that gamers created to share interests regardless of language and cultural background. Vazquez-Calvo's (2018) case study on an English learning gamer further argued that the gaming ecology was a complex semiotic social space where gamers take on different roles (e.g., commenters, translators) and participate in a variety of meaning-making practices that may eventually lead to language learning gains, "at the levels of linguistic form, semantic meaning and pragmatic use" (p. 209).

The agency and self-directed nature of informal gaming can develop a sense of investment and autonomy, which play a key role in sustained language learning and have been examined closely by Chik and colleagues. First, Chik (2011) explored how Hong Kong gamers' strategically manage their extramural gaming as both a pleasurable and learnful activity, overcoming language barriers to play popular titles before they were released in Chinese. They sought learning opportunities from in-game texts, online gaming platforms, and online discussion forums. In a follow-up study to examine autonomy development over time, Chik (2014) described how the players adopted L2 learnful trajectories when L2 gaming, actively organizing and personalizing a variety of socio-literacy gaming practices through community participation and resource management, for example, writing and sharing Cantonese translations of games published only in English and Japanese. In this way she illustrated how L2 gaming becomes for many a long-term leisure and learnful activity intertwined with various life events and stages. Taking the longitudinal perspective even further, Chik and Ho (2017) explored how learners structured their learning journeys as recreational leisure activities over time, including, but not exclusive to, informal L2 gaming practices. Describing the learners' strategies, mindsets, and challenges, they show how the L2 learners developed a strong awareness of their own language learning needs over time. Overall, Chik's (2014) work indicates that learner autonomy in finding and evaluating learning resources, developing motivations, and setting learning goals plays a core role in informal, learnful L2 gaming.

## 3 The Study

To complement the aforementioned research on gameful L2 learning in informal L2 gaming, a descriptive study was conducted that attempted to capture the sorts of knowledge shared in affinity groups devoted to the practice. The study analyzed data from five Web-based discussion boards devoted to the topic of using digital games for language learning on two sites where people ask and discuss general knowledge questions openly, Reddit and Quora, as well as on one site specifically devoted to language learning, Duolingo. Wikipedia describes Quora as "a question-and-answer site where questions are asked, answered, edited and organized by its community of users"[2], and Reddit as "an American social news aggregation, web content rating, and discussion website. Reddit's registered community members can submit content such as text posts or direct links"[3]. Duolingo is described as "a free language-learning platform that includes a language-learning website and app, as well as a digital language proficiency assessment exam"[4].

[2] https://en.wikipedia.org/wiki/Quora

[3] https://en.wikipedia.org/wiki/Reddit

[4] https://en.wikipedia.org/wiki/Duolingo

The sites were chosen because they capture online, semi-anonymous meta-discussion about language learning in the wild, that is, learning "that takes places in digital spaces, communities, and networks that are independent of formal instructional contexts" (Sauro & Zourou, 2017, p. 186). None of the sites are games themselves or focused primarily or solely on gaming, none have any commercial interest in certain vernacular games, nor in particular opinions or advice about game-based language learning. As a commercial computer-assisted language learning online service (Reinhardt, 2019b), Duolingo incorporates gamified elements into its lesson designs like points and badges, but it is not a digital game.

The three sites together provide a mix of discussion dynamics combining knowledge and opinions from experts, amateurs, and novices to either or both language learning and/or gaming. While Quora tends toward experts providing answers to novices, Reddit's unique upvote-downvote system tends to encourage expertise from non-traditional sources to rise to the top of visible answers, creating a more egalitarian feel. The board users were obviously self-selected, in that any user on a Quora or Reddit board focused on a particular topic had chosen voluntarily to post there, and the users on the Duolingo board were doubly self-selected language learners, since Duolingo itself is devoted to language learning.

## *3.1 Data and Procedures*

The three sites[5] were searched with the question "how can I learn a foreign language using videogames?", and pages on each site were identified where an answer might be found. Because the study would be qualitative and descriptive, a manageable number of suggestions, about 100, was desired, but with enough users or suggesters to represent a broad representation of opinion, about 50. Table 1 identifies the five boards and topics identified that were data sources.

**Table 1** Data sources

| Site | Board/Topic | Number of posts | Date |
|---|---|---|---|
| Quora 1 | How can I learn language by playing games? | 3 answers | 2014 |
| Quora 2 | Can you learn a language by playing video games? | 5 answers | 2016 |
| Reddit 1 | Playing video games in another language | 110 comments | 2016 |
| Reddit 2 | Anyone play video games in a foreign language? | 27 comments | 2015 |
| Duolingo | Best video games for language practice | 38 comments | 2015 |
| Total posts | | 182 | |

[5]The three sites were contacted to ask for permission to use posted comments, but they did not respond. It is assumed that because users were posting in publically accessible forums, they were not expecting complete privacy. The boards are entirely accessible without registering as a user, and none of the posts included personal identifiers; all identifiable usernames have been anonymized here.

Data collection procedures followed a grounded approach (e.g., Corbin & Strauss, 2008). The boards were read and analyzed for two kinds of qualitative data: games and suggestions. For the first (games), mention of a game title on the boards was noted, as was the language the user said it was used to practice. These were later categorized according to genre, by looking the titles up online. For the second (suggestions), each post was read and analyzed and coded. For example, the post "[w]hen I learned English by myself it wasn't my first foreign language, I already learned German in primary school for several years and spoke it well … So I had some experience with learning languages" was coded as 'language learning experience helps'. Each coded suggestion was then entered into spreadsheet with an anonymized form of the suggester's username, along with its order in the discussion. If a single post contained more than one suggestion, each was entered separately. The total number of suggesters and suggestions per board is presented in Table 2 below. Some posts contained only games, others suggestions, others both, and still others, only conversational reactions to other comments.

To categorize the data, each coded suggestion was identified for its general topic and assigned a category. For example, the aforementioned coded suggestion 'language learning experience helps' was assigned the category 'proficiency level'. Using a constant categorization process, category names were then sorted and outliers and orphans were re-categorized, and categories renamed. The final categories, their descriptions, and the total number of suggestions are provided in Table 3, with results presented in Sect. 3.2.3.

## *3.2 Results*

This section presents the game genres and titles mentioned, the languages stated, and the specific suggestions offered.

### 3.2.1 Game Genres and Titles

As shown in Table 4, in the 182 posts on the 5 boards, 68 specific game titles were mentioned 98 times, with 15 games mentioned more than once. Role-playing game (RPGs) and action-adventure game genres were suggested most frequently, with the most suggested titles being *The Elder Scrolls* series, the *Fallout* series, and the *Assassin's Creed* series. MMORPGs, which include role playing and adventure elements, were suggested 10 times, and adventure games, including point-and-click

**Table 2** Numbers of suggesters and suggestions

| | Quora 1 | Quora 2 | Reddit 1 | Reddit 2 | Duolingo | Total |
|---|---|---|---|---|---|---|
| Suggesters | 2 | 5 | 29 | 9 | 32 | 77 |
| Suggestions | 5 | 21 | 62 | 12 | 27 | 127 |

**Table 3** Data categories

| Category | Description | Total suggestions |
|---|---|---|
| Reasons | Reasons supporting L2 gaming in general | 12 |
| Approach | General advice on how to approach L2 gaming | 9 |
| Language & gaming proficiency | Linguistic proficiency and gaming experience requisites | 12 |
| Preparation | Practical advice on preparing for L2 gaming | 16 |
| Genres | Genres that support L2 gaming | 21 |
| Mechanics | Game design features and mechanics that support L2 gaming | 38 |
| General strategies | Strategies for L2 gaming | 19 |

**Table 4** Genres (See https://en.wikipedia.org/wiki/List_of_video_game_genres for a list and definitions of common game genres) and number of titles suggested

| Genre | Total mentions | Total titles | Titles mentioned more than once |
|---|---|---|---|
| Role playing game | 27 | 16 | *The Elder Scrolls* (6), *Fallout* (4), *Pokémon* (3), *Mass Effect* (2) |
| Action-adventure | 21 | 15 | *Assassin's Creed* (4), *Zelda* (3), *Uncharted* (2) |
| Mmorpg | 10 | 7 | *WoW* (2), *Star Wars KOTOR* (2), *Clash of Clans* (2) |
| Adventure | 9 | 8 | *Deponia* (2) |
| First person shooter | 8 | 5 | *BioShock* (3), *Metro* (2) |
| Simulation | 7 | 2 | *The Sims* (6) |
| Other | 7 | 7 | |
| Real time strategy | 6 | 6 | |
| Turn-based strategy | 3 | 2 | *Civilization* (2) |
| | 98 | 68 | |

and interactive fiction, were mentioned 9 times. Notably, the well-researched *The Sims* (e.g., Miller & Hegelheimer, 2006; Purushotma, 2005; Ranalli, 2008) was mentioned 6 times, but the highly researched *WoW* (e.g., Lee & Gerber, 2013; Rama et al., 2012; Scholz, 2017; Thorne, 2008; Vosburg, 2017) was only mentioned twice.

With regards to the findings on suitable game genres and titles, it is clear that L2 gamers feel that a great variety of both can be used for L2 learning, but that genres involving character development mechanics (typical of RPG and MMORPG titles) and story and dialog mechanics (typical of adventure titles) are best. This finding aligns with what theorists have speculated and researchers have found in the field (e.g., Purushotma et al., 2008; Reinhardt, 2019a). Narratives in games contextualize game content, which helps learners make form-meaning-function associations and deduce meaning (Purushotma, 2005; Reinhardt, 2019a, p. 116). Interactive

decision-making, especially when tied to game progression, affords identity investment (Norton & Gao, 2008, in Reinhardt, 2019a, p. 129) and what has been termed story mapping (Neville, 2010) and the development of personal narratives (Calleja, 2007).

### 3.2.2 Languages

As shown in Table 5, 11 languages were named as objects of study, which not surprisingly coincide with the dominant languages of the top 12 digital game markets (Reinhardt, 2019a) except for Chinese. While the locations and first languages of the board users are unknown, it is perhaps not surprising that the top three languages besides English correspond to the top non-English languages studied in the United States, and that Japanese is also mentioned with disproportionate frequency, considering the status of Japan in the gaming world as a historically global leader in game production and consumption. That Chinese was not mentioned might have to do with the difficulty of learning to read Chinese, or of the lack of global accessibility of titles in Chinese. Finally, some noted languages they wished they had been able to learn but could not, like Esperanto.

Traditionally, a copy of a mass-marketed game title sold in the Western Hemisphere is usually playable in the languages of the Western Hemisphere: English, Spanish, French, and Portuguese, while those sold in Europe are playable in the major European languages and those in Asia are playable in English and the single local language. Increasingly, however, as games are delivered digitally online, more and more game titles, especially those produced in Europe, are available to the player in a dozen or so global languages; sometimes the game language can be switched back and forth. While issues with translation and game localization will persist, game developers mentioned by the users for high quality titles available in multiple languages included Ubisoft (France), Daedalic (Germany), and Bioware (Canada).

**Table 5** Languages mentioned

| | |
|---|---|
| German | 15 |
| English | 14 |
| Spanish | 13 |
| French | 12 |
| Japanese | 6 |
| Korean | 3 |
| Russian | 3 |
| Portuguese | 1 |
| Esperanto | 1 |
| Italian | 1 |
| Polish | 1 |
| Total | 70 |

As markets and access increases, and game development globalizes, it is likely that big titles will be increasingly available to players in more languages than regional marketing traditionally allows. Since servers that host real-time gameplay usually allow players from different locations to play in multiplayer teams together, increases in broadband access will probably increase opportunities for multi- and translingual L2 gaming worldwide as well, albeit in the top global superlanguages.

### 3.2.3 Suggestions for L2 Gaming

The users of the five boards offered each other and anyone browsing through a wide variety of suggestions that overall reflected their experiences L2 gaming. These suggestions were sometimes couched in terms that made evident their considerable experience and expertise as self-directed language learners. As shown in Table 3, the suggestions were categorized into seven types:

- **Reasons for L2 gaming.** The first batch of suggestions were broad reasons and rationale why one should L2 game. Much of what was said reflects a belief that games provide an immersive, interactive, but casual complement to other informal, self-directed practices. For example, one user stated "[t]he coolest thing about this method is that you don't need to motivate yourself. You acquire useful vocabulary naturally", but that it would not replace communication, which was necessary if one wanted to truly learn (User MK, Quora 1). Another noted that one should immerse oneself in movies and shows as well, but that immersion is "a lot stronger though with video games because you're not passively watching it, you're also participating" (User GP, Reddit 2). These L2 gamers seemed to have developed an awareness of task-based language teaching principles (Ellis, 2003), that is, that learning entails use, and that gaming "would help you go through the toughest curve of learning a new language, meaning the part where you actually use the language itself" (User HD, Quora 2).
- **General advice on approaching L2 gaming.** Many users offered general advice on how to approach the practice, for example, to be patient, to take one's time, to play one's favorite games in the L2, and to try a variety of games. One user (User HD, Quora 1) argued that one cannot "just play the game and hope the learning will happen by itself", but that one had to be pro-active and have courage to interact with other players. The game needed to have texts and conversations that one has to understand in order to proceed, and that "if you started playing a game with the aim to learn a language, it is not likely to be very effective" (ibid.), reflecting the notion that a balance of learnful and gameful goals are key to success; in other words, one should want to have fun and enjoy oneself as much as to learn, approaching the game with a 'learning (in order) to play' attitude rather than a 'playing (in order) to learn' attitude (Arnseth, 2006).
- **Language and gaming proficiency requisites.** Users noted that to play vernacular games meant for native or expert L2 speakers, a certain level of linguistic and gaming proficiency was helpful and even necessary. Some mentioned one

should know some of the language and have some experience learning languages beforehand. Choosing the game at the right level was key, because "if you try something too advanced too quickly, it'll be as frustrating as reading a book in a language you don't know" (User AG, Quora 1). Several users suggested very familiar games, since one "won't have to stop to look for translations of words (you) don't recognize" (User HB, Reddit 2). Another summarized it as, "you're so familiar with it that you know the gist of the dialogue and can use context clues for unknown words" (User SS, Reddit 2). Other suggestions were that if the game allows it, one can also have L2 captions (not L1 subtitles) on during play, allowing one to simultaneously listen to and read the L2 version of the story or dialogue already known. To this end, one might also consider fan- translated versions of favorite or familiar games, either into or from one's L1.

- **Preparing to L2 game.** Besides using captions and subtitles, other suggestions from users focused on preparations for the gameplay session that would afford learning. For example, the game interface, not just the game itself, can be set to the L2, if the console or game itself allows it, and one might even consider hacking the game to access other language versions. They note to be careful of poor translations or lack of distinctions made between L2 varieties (e.g., Latin American vs. European Spanish or Portuguese). For multiplayer online games, one should play on the server in the target L2, if it is accessible. One user recommended, if playing multiplayer, to consider the age and education of the L2 speakers one chooses to play with, for example, to choose older people or non-native speakers, "so you have the guarantee people can explain to you (in English) why they would use 'that word exactly there' and not 'you can't use that cause it just sounds wrong'" (User R, Duolingo); in other words, it seems, one should find co-players with pedagogical or linguistic meta-knowledge, if it is at all possible, as they might serve as more capable peers (Lantolf & Thorne, 2006).
- **Genres for L2 gaming.** Recommendations were to play strategy, role play, interactive fiction, adventure, and simulation games for a variety of overlapping reasons. Games that did not penalize taking enough time to read were mentioned, which ruled out first person shooters and action or timed games. Hidden object and simulation games were mentioned as good for vocabulary, and adventure games were recommended because they were story based with interesting plots and they incorporated a lot of dialogue. Role play games were useful because "they force you to pay attention because you need to respond and click the relevant dialogue options to progress so you can't just skip through" (User TF, Reddit 2). Role play and adventure games had mixed reviews regarding vocabulary, since themes and topics in those games can be fantasy-based and full of neologisms and jargon specific only to the game. One user (HB, Reddit 2) noted that "it does feel like a lot of the words you learn from it aren't very useful in any context though, even at a higher level. Words like alliance rarely, if ever, come up" (although an argument could be made that 'alliance' is in fact not that uncommon compared to other terms in games, like names for monsters or fantasy place names). For this reason, others noted, one should really want to play the game and enjoy doing so. Reflecting this disposition, User SM (Reddit 2)

noted that although "the vocabulary I picked up wasn't really useful in every day life, … it was nice for a sense of immersion for a few hours".

- **Design features that support L2 gaming.** Many users offered advice on what game mechanics or features were helpful for L2 gaming. For example, the aforementioned genres are more likely to include texts, stories, and dialogues that are central rather than peripheral to successful gameplay. As User SL (Duolingo) put it, "the fact that one must understand the texts in order to achieve the goals obliged me and made me remember, learn and practice my English". Any mechanic that allows association of the name and function of a game item is useful. Features that allow one, without penalty, to pause, repeat dialogues, watch cut-scenes with captions, ask non-player characters the same question repeatedly, or otherwise repeat actions are useful. Users praised simple interface features that game designers might not normally consider, like having cut-scene captions remain on a screen long enough for slow and repeated reading, and allowing pausing, or having audio and subtitles perfectly synched.
- **Strategies for L2 gaming.** Other strategies mentioned by the users were practical and focused on how to engage in productive, self-directed L2 learning practices. For example, users recommended using dictionaries, using contextual clues, using *Google* Translate only as a last resort, making vocabulary lists, mimicking pronunciations, reading books and watching movies related to the game theme (e.g., *Star Wars* or *Harry Potter*), and watching *Twitch* streams. Some recommended socializing, trying to communicate with other players, joining a clan or guild, and teaming up with other learners.

## 4 Discussion and Implications

If one wants to learn or practice an L2 through a vernacular videogame, the word online, so to speak, is to choose a familiar title from a genre like role play, action-adventure, simulation, or strategy, where stories and language must be understood in order to play; to set the interface to the L2 and to use captioning, pause, and repeat features strategically; and to find the courage to interact with other players and to engage in attendant socio-literacy practices related to the game. In short, choose the right game, play it learnfully, and interact with others through and around it – three suggestions that are often the implications of much descriptive research on learnful L2 gaming in the wild. The genres and titles suggested are ones whose mechanics and designs afford association of linguistic form, meaning, and function, regardless of whether their themes and settings have anything to do with the traditional culture of study.

It is interesting to note the suggestions align with L2 pedagogical frameworks that promote contextualized and narrative-based learning – to learn through situated experience and participation in communities of practice (Lave & Wenger, 1991). In addition, recommendations to interact with other players align with current and well-established implications from SLA research that effective L2 learning requires

social interaction (Long, 1983; Lantolf & Thorne, 2006), as well as with the notion that control over one's own input makes it comprehensible (Krashen, 1985). In spite of this alignment, it is assumed (though not certain) that these suggestions came from grounded experience and wisdom learned through trial-and-error in the wild, rather than by reading and drawing implications from SLA and L2 pedagogy research. It is also doubtful they came from using commercial CALL apps and websites, since those apps' designs often present decontextualized vocabulary and focus on individual memorization and achievement.

The suggested strategies are practical and helpful with regards to self-directed learning, but they also encourage a gameful disposition and to game just as one normally would but in the L2. As one user put it, "I personally don't like going too much out of my way to immerse myself. Rather, I like doing what I would've done anyway, but in my target language … Do I feel like playing Assassin's Creed? Hey, might as well change the language to German/Spanish" (User AM, Reddit 1). Successful L2 gamers need to balance gameful and learnful dispositions and goals – gameful in that the activity involves games and is thus playful, goal-oriented, and rule-governed, and learnful in that the learning affordances in the activity of gameplay are intentionally acted upon (or not) when recognized. To see and act on them may require knowledge of how to play the game, and at the same time, of the basic principles of, and useful strategies for, effective L2 learning. When learner-players are L2 gaming successfully, balancing learnful and gameful dispositions, they are autonomous, insofar as they feel they have total agency or control over the game experience, thus perceiving a sense of flow and engagement (Sykes & Reinhardt, 2012). This may mean focusing on rules, story, and or language separately and sequentially during gameplay, or simultaneously, or alternating between focii. While interacting with the game and other players, agency and a sense of control over what to focus on and how, when, and why to do so is thus crucial to maintaining a sense of autonomy.

One common, definitive quality of games is that they are engaged in voluntarily, unlike non-game activities (e.g., work) that are compulsory, and in fact, if one is playing a game involuntarily, it is questionable whether one would define it as gameful. In informal, vernacular gameplay of well-designed games, players are never asked to learn anything that is not integrated with the game rules or narratives. If the player is told they must learn something, and that knowledge has no bearing on gameplay direction, it really no longer feels like a game to them, but rather, like another gameless learning activity – in other words, like too many educational games. Since activity in informal contexts tends to be more voluntary than in formal ones, as the locus of control is with the learner-player, autonomy and its benefits thus seem to be more forthcoming in informal, self-directed gaming (see Benson, 2011).

Implications for formal pedagogy are to promote both learnfulness and gamefulness by allowing learner-player choice as much as possible in gameful instruction, to encourage critical play and evaluation of all games and their designs, and to discuss what makes a game appropriate for L2 learning purposes and how to play it learnfully. Practically speaking, this means letting learners choose their own games

to play and how to play them, although instructors might suggest games of the appropriate proficiency level that incorporate language use and can be played socially. An entire class might play a single title together, projected in the front of the room, with discussion and reflection tasks to do before and after play (see Reinhardt, 2019a). These might draw attention to the rules and narratives of the game in the L2, and encourage learnful gameplay strategies, for example, taking notes and noting new vocabulary, guessing meanings, using dictionaries only when needed so as not to interrupt play, using subtitles judiciously, and pausing and repeating play – in short, deliberately practicing the language in, around, and about the game (Sykes & Reinhardt, 2012) when desired.

By raising awareness, formal activities that model intentional, learnful approaches to informal, everyday, and vernacular activities like gaming, fandom practices, and social media use can develop various digital literacies, which may serve as capital for participation and resources for investment in global cultural practices (Blume, 2019; Darvin, 2016). They can also make formal instruction relevant to extramural life. It has been argued that informal gaming might serve as a gateway practice for players to learn new languages (Godwin-Jones, 2014), a point those concerned with dropping foreign language enrollments should consider. When an L2 learner sees their game avatar use the L2, even if it is in a fantasy world, they are empowered to imagine themselves doing the same, and realize that what they may already be doing in the wild, that is, playing games, may have a productive purpose after all. As the above data show, many who L2 game in learnful ways are already wise to the affordances.

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# Apps for Informal Autonomous Language Learning: An Autoethnography


**Antonie Alm**

**Abstract** The suitability of mobile apps for language learning finds increasing recognition in the field of language education. Recent research investigates the new learning experiences apps provide, taking the perspective of the language learner. This chapter seeks to contribute to this new line of autoethnographic research. As researcher-participant, I explored over the period of one year a wide range of different language apps and features from my mobile phone to learn Spanish. My aim was to experience language learning with apps from a learner's perspective and to increase my awareness of learning opportunities in an informal learning context. With the use of a journaling app, I documented my observations and reflections on my learning experiences. I adopted Schumann's (Learning as foraging. In: Dörnyei Z, Schmidt R (eds) Motivation and second language acquisition, pp 21–28, 2001) five-dimensional stimulus appraisal model as an explanatory framework to discuss my progression through four apps. The study shows that rather than searching for the perfect app, learners need to select and adapt apps to address specific learning needs that change over time.

**Keywords** Apps · Autonomy · Informal learning · Autoethnography

## 1 Introduction

According to Preston (2019), a staff writer of the online magazine *Tech Advisor*, "[t]here has never been a better time to learn a language" (n.p.). Language learners are indeed spoilt for choice in times where international travel is available to many, where social media connects people from all parts of the globe and where an abundance of language learning resources is freely available online. The opportunities for language learning have never been greater, catering for a wide range of language

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learners and their individual and specific motivations, abilities and goals. Preston, however, is concerned with one particular technology: language apps. His recommendations include Duolingo, a gamified app, which claims to be as efficient as a university language course; Lea Knows, a dictionary app that turns looked-up words and phrases into flashcards; Tandem, which matches language partners; and Hi Native, designed to ask people questions about their languages and cultures. Millions of people around the globe have joined these app-based learning communities, providing access to a large variety of language learning experiences. This suggests indeed that there has never been a better time for *autonomous* language learning and for language learners to take control of their learning.

In this chapter, I discuss my own experiences as a novice learner of Spanish, exploring the affordances of apps for informal autonomous language learning. I start with an overview of the autonomy literature, focusing on the conditions of self-initiated and self-directed language learning in a digital context. Drawing on Schumann's (2001) Stimulus Appraisal model, which I chose to address the affective component in my decision-making processes, I analyse and discuss my one-year long learning trajectory.

## *1.1 Autonomy*

The ability to take control of one's learning has long been considered the core characteristic of learner autonomy. For Holec (1981), taking control relates mainly to technical and methodological skills of learning management, such as determining learning objectives, selecting methods, and monitoring and evaluating learning outcomes. Focusing on the learner's psychological relationship to the learning process, Little (1991) defines learner autonomy as a capacity for independent action, decision-making and critical reflection (p. 4). Benson (2011) maintains furthermore that learners should not only be able to control how they learn but also what they learn and determine freely the content of their learning. In light of the growing accessibility to language resources, including apps, Benson (2013) has more recently suggested that learner control should also include "learning that takes place outside the context of formal instruction" (p. 840). Shifting the learning activity into the personal sphere of the learner, however, does not only expand learning opportunities. More importantly, it reflects a change in what Benson (2013) calls the *locus of control* in autonomous language learning; from *other-initiated* in formal learning contexts where learners are provided with access to learning resources and autonomy training, to *self-initiated* in informal settings where learners are in charge of finding their own resources and creating their own support structure.

Following up on Benson's (2013) distinction, Lai (2019) argues that autonomous learning in formal contexts, which she describes as "intentional, other-initiated or other-directed", and informal autonomous learning, defined as "voluntary, self-initiated and self-directed, interest-driven" (p. 53), present into two distinct research areas. Investigations into the formal area of autonomy and technology focus on the

role and impact of technology on language learning and autonomy development as a "teacher-initiated technology-mediated learning experience" (p. 53). In contrast, autonomy in informal learning, which Lai (2019) identifies as an emerging field of research, has developed from observations of independent learning engagement embedded in everyday life experiences beyond the language classroom. Guided by the affordances of their digital devices and online resources, rather than by established pedagogical principles, self-initiated and self-directed language learning in online environments has also been described as learning *in the wild* (Godwin-Jones, 2019; Little & Thorne, 2017; Sauro & Zourou, 2019). The term reflects unconventional learning behaviours and furthermore, from a research perspective, an unexplored learning territory in which informal language learners operate, for which new explanatory frameworks based on complexity and ecological learning theories have been applied (Godwin-Jones, 2019; Kusyk, 2017; Sockett & Toffoli, 2012).

Studies in the area of informal autonomous language learning so far have given insights into three areas: (1) the reasons why language learners engage in informal language learning (Alm, 2015; Sockett, 2014), (2) the type of activities they choose (Benson & Chan, 2010; Godwin-Jones, 2011; Rosell-Aguilar, 2017; Sockett & Toffoli, 2012), and (3) how external and internal factors shape learning experiences (Lai, 2019).

Concerning the use of apps for informal learning, it has been found that language learners reach for apps to either complement or compensate for formal learning. Survey studies have shown that language students predominantly use dictionary and reference apps (Steel, 2012) or vocabulary apps (Alm & Daniel, 2019) to complement formal language study. Informally, apps are used instead of language classes. In fact, Duolingo claims on its website to have 300 million users, making it "the world's most popular way to learn languages online". The easy access to the app – it is free and available on all devices, for people of all ages, regardless of their academic qualification – make it seem an attractive option to traditional classroom language study. Guillén, Sawin, and Springer (2018) point out that the lingo of startups, such as *Memrise*'s slogan "We make learning languages and vocab so full of joy and life, you'll laugh out loud", reflects their attempts to position themselves as the better alternative to formal language education, which is characterised as unmotivating, irrelevant, and not exposing people to "the real thing" (p. 200). Needless to say, many apps do not live up to the learners' expectations (see, for example, Freedman, 2018), and as Guillén et al.'s (2018) study reveals, many of their claims are not substantiated.

Regarding the second area of investigation, the types of activities informal learners choose, it has been shown that they prefer to practice receptive rather than productive language skills. This might well translate to app-based learning, as using a five-minute flashcard vocabulary activity that is more easily integrated into a learner's daily routine than an online conversation with a native speaker.

Thirdly, individual differences (Dörnyei, 2005) and external factors will significantly impact on a person's engagement with apps and their learning outcomes. Godwin-Jones (2019) has pointed out that "opportunities for SLD [second language development] only become genuine affordances when the time and place are right"

(p. 14). The ability to initiate and select appropriate apps and to adjust informal autonomous learning experiences to personal needs depends largely on a learner's perceived *locus of control*.

The psychological concept of *locus of control* refers to the degree to which individuals believe in their ability to control themselves (Rotter, 1990). People with an internal *locus of control* perceive that an event is related to their own behaviour, whereas people with an external *locus of control* make external forces beyond their control, such as luck, fate, or powerful others responsible for an outcome of their behaviour (Yang et al., 2017). Studies have investigated the effect of *locus of control* on smartphone and app use (Li et al., 2015) and it could be argued that apps, by providing control over life and learning situation, have the potential to strengthen a person's sense of control, or their *internal locus of control*. This would be in line with Malone and Lepper's (1987) observation that the "mere illusion of control" significantly improves motivation and academic performance (p. 238). Tannenbaum, Beard, McNall, and Salas (2010) suggests that learners with an internal *locus of control* are more likely to consciously engage in informal learning experiences, as they are more likely to believe that they can improve their ability through their own efforts and to seek out learning opportunities and in Schumann's (2001) words to "forage for information, knowledge, and skill" (p. 21).

## *1.2 Foraging and Stimulus Appraisal*

Schumann's (1997) neurobiological approach to motivation adds another dimension to informal (self-initiated and self-directed) language learning with apps by assessing the role of emotions in decision making.

The concept of *foraging* is of particular interest in the context of informal learning, where learners navigate on their own through learning opportunities. Foraging describes the hunting behaviour of animals, and by analogy, the process of information gathering (Pirolli & Card, 1999). Schumann (2001) picked up the concept long before language learning researchers investigated language learning experiences *in the wild.* He introduced it into the field of second language acquisition (SLA), linking it to the fundamental human impulse to learn. He argued that any foraging, be it for food, information gathering, or learning is guided by "the same neurobiological mechanisms for transforming motivation into action […] the same dopaminergic responses to stimulus appraisal, and […] the same kinds of decision making" (Schumann, 2001, p. 21). Schumann's (2001) neurobiological approach to learning, stimulus appraisal theory, lends itself to explaining the emotional and cognitive basis for the uptake of apps, and their dismissal in favour of other competing activities that interfere with the learner's short-term attention. The decision to use a resource or to move to another one depends, according to Schumann (2001), on the learner's ongoing assessment as to "whether or not the effort expended generates an adequate rate of learning" (p. 25). This efficiency factor is also expressed in the *optimal foraging theory*, which postulates that foragers seek maximal results for

minimal effort. For example, the instant feedback mechanisms which are characteristic of language apps can give learners a rewarding sense of accomplishment and therefore of efficient learning. Critics warn about the double-edged sword of this effect, as addictive design strategies can adversely lead to dependency and addiction (Gardner & Davis, 2013; Neyman, 2017). Schumann's (2001) model explains how apps can captivate our attention at a primal level. He proposes that the assessment of an activity is mediated via dopamine signals. In a learning situation, a person appraises the stimuli predictive of reward and therefore worthy of continued attention, with respect to five factors: *novelty* (degree of unexpectedness/familiarity), anticipated *pleasantness*, *goal/need significance* (whether the stimulus is instrumental in satisfying needs or achieving goals), *coping potential* (whether the individual expects to be able to cope with the event), *self-concept and social norms* (whether the event is compatible with social norms and the individual's self-concept) (Dörnyei, 2005, p. 93). Schumann (1997) further argues that autobiographies of language learners provide indirect evidence for foraging and the role of stimulus appraisal in SLA.

## *1.3 Autoethnographies*

Intrigued by their potential for language learning, some researchers have explored language apps for their own personal use and documented their learning trajectories. Using diaries as tools to record their impressions, observations and reflections, these self-investigations follow, as pointed out by some authors, a long-established tradition of diary studies (Bailey, 2015). Clark and Gruba (2010), for example, refer to a number of diary studies in CALL, which have given valuable insights into the personal use of emerging technologies. Chik and Ho (2017) talk about the use of diaries to document self-study. The authors point out that these accounts primarily focus on challenges language learners experience, supporting Schumann's (2001) claim that diary studies are "accounts of the learner's preferences and aversions, likes and dislikes concerning their language learning" (p. 104). In fact, Schumann (1997) refers to learner diaries as *chronicles of stimulus appraisal*, as they "report the learner's perceptions of novelty, pleasantness, goal/need significance, coping potential, and self and social image with respect to the language learning situation" (p. 104), revealing the reasons why a learner persists or withdraws from (autonomous) language study (p. 170). In the case of Jones (1994), as reported in Chik and Ho (2017), it was his "*endurance* to reach the threshold beyond the first 2000 words in vocabulary [that] enabled him to start *enjoying* reading authentic text" (p. 163, my emphasis). Language teachers and researchers engaging in informal language learning with apps also face the additional challenge of having to reassess established beliefs about language learning, impacting on their perceptions of self and social image. In their role as language learners, they experiment with learning practices afforded by the informal setting (e.g. digital learning environment, quality of app), developing an understanding of a different learning culture enabled by an

arguably disruptive technology (Godwin-Jones, 2017). In that sense, their trajectories are not just about themselves, but "about searching for understanding for others (culture/society) through self" (Chang, 2008, pp. 48–49), a core characteristic of autoethnographic research.

An autoethnographic approach to language learning with technology allows CALL researchers to explore the affordances and constraints of learning technologies for themselves and re-evaluate established language learning practices in light of their individual learning experiences. Their combined insights will help shape the emerging field of autonomous informal language learning. The next section presents the approach and findings of five autoethnographic studies. The first two examples report on the use of language learning social networking sites, which are, in the second case, also available as an app. The other three focus on one or several individual language apps used by the researchers.

## *1.4 Autoethnographic Studies on Language Apps*

Clark and Gruba (2010) used an autoethnographic approach to examine the now defunct social networking site *Livemocha*. The two researchers focused on the learning experiences of one of them, Clark, who studied Korean for a period of 4 weeks. A learner diary and peer debriefing constituted the basis of their reflective interpretation of the experiment. They identified three themes of the analysis – motivation, frustration and demotivation – reflecting the authors' perspective as experienced language teachers. Altogether, frustrations about outdated teaching approaches outweighed positive communicative learning experiences. The authors give an evaluative account of the programme and provide suggestions for improving the pedagogy of the language learning site, such as providing a wider range of tasks, integrating a chatting component and contextualising vocabulary to minimise frustration.

Álvarez Valencia's (2016) study focuses on his experiences as a pre-intermediate learner of French on the social networking site for language learning Busuu. He used the site for 10 weeks and recorded his "reactions, feelings, and reflections" (p. 585). Álvarez Valencia's (2016) study was motivated by his personal experiences of the social networking site as a language learner. One of the reasons for conducting an autoethnography study was the difficulty of collecting data from other users. Like Clark and Gruba (2010), he criticises the pedagogical approach, which he describes as "audiolingualism with some elements of the Grammar Translation Method" (Álvarez Valencia, 2016, p. 860). His analysis of the site, drawing on methodological principles of multimodality, suggests that the underlying views of language used in Busuu (structural, interactional and ecological) are in conflict with each other. His pedagogical recommendations include the adoption of a functional and situational syllabus (Brown, 1995). More concretely, he suggests a stronger communicative orientation for the activities and test contents and a better alignment of activities within a learning unit.

Osborne (2013), an interactive materials designer and developer, was motivated to learn Italian with an app to inform his professional practice. His starting point was his iPhone, which he used to search for a suitable word card app. He explored the unnamed app for 2 weeks and recorded his experiences. The exploratory nature of his approach is reflected in his method of allowing themes to "emerge in as natural a way as possible" (Osborne, 2013, p. 298) instead of looking for predetermined ideas and expected outcomes. Similar to Clark and Gruba (2010), (de)motivation and non-intuitive interface design negatively affected his learning experiences. He also found that the materials, the content and the didactic approach of an individual app determined its quality. Shortcomings in app design and pedagogy, he suggests, can be compensated by applying appropriate learning strategies, which extend the developers' original intentions. Osborne (2013), who approached his experience from the perspective of a language learner, concludes with recommendations for app designers (greater variety of interaction types, reward system) and suggestions for strategy training for learners.

The study of Isbell, Rawal, Oh, and Loewen (2017) involved three student researchers and their professor in a 12-week long experience of learning Turkish with Duolingo. This timeframe allowed them to replicate the learning conditions of the study by Vesselinov and Grego (2012), which claimed that 34 hours of language study with Duolingo was equivalent to one semester of an in-person university language course. From a learner perspective, the participants were interested in finding out if their experience of Duolingo would bear similar results on "learner persistence, motivation, and program efficacy" (Isbell et al., 2017, p. 1). Drawing on the methods of researcher narrative, they recorded their individual learning experiences, which they then discussed and analysed as a group. As in the previous studies, (de)motivation was an emerging theme. The researcher-participants felt that their Turkish learning outcomes were limited, and their interest in studying with the app waned over time. Recommended measures to overcome demotivation are the establishment of a social support system for learners, and the creation of a learning environment which provides meaningful feedback to learners. As a stand-alone resource, Duolingo was only perceived to be "helpful for establishing basic form-meaning connections in vocabulary learning" (Isbell et al., 2017, p. 18). In relation to language learning strategies, the study found that organised note-taking in particular led to better learning results.

The study of Chik and Ho (2017) similarly involved a small group of researcher-participants. The three participants had a personal interest in recreational online language learning and formally recorded their experiences in 2010 and 2015. Drawing on this data, they examined how language learners learn a language on their own for free and how learning choices change over time. The three learners chose different languages to each other in both time periods. To document their learning progress and to comment on each other's experiences, blogs were used in 2010, and a closed Facebook group in 2015, which was perceived as preferable as it facilitated easier and faster communication. Other more efficient recording tools included the use of screenshots instead of handwritten notes. The participants found that changes in learning choices depended on language level, changes in the digital

environment and personal time commitments (which had increased by 2015). In 2015, they also showed a preference for structured, non-formal materials (as language learning social networking sites) over informal authentic resources (as for examples L2 websites and YouTube videos), which were more extensively used in the earlier period. The preference for the learning space also changed over time. They relied less on mobile learning opportunities in the later period, preferring quiet spaces (at home) and personal times (after work). The authors relate the differences of the two periods to the change in life-style of the participants, yet it should also be noted that the observed practices (e.g. use of Facebook groups over blogs, screenshots) reflect common social practices in 2015. The strength of this study lies in its focus on a learner perspective. They were described as creative in the way they optimised learning opportunities. Interestingly, the use of Duolingo influenced one participant in her attitude towards the role of grammar in language learning, preferring a more naturalistic approach after the learning experience.

The five autoethnographies illustrate individual learning stories, leading to different outcomes and conclusions. While the starting points might have been similar, an interest in a new learning tool, the purpose of their investigations differs. Clark and Gruba (2010) and Álvarez Valencia (2016) position themselves as experienced language teachers and CALL researchers. They focus on one specific app (a language learning social networking site), which they criticise for their pedagogical shortcomings. Consequently, their interest wanes (the co-author of the first study quits Livemocha after a short period of time). From a teacher's perspective, they provide recommendations to improve the learning tool. The authors of the last three studies, on the other hand, assume a learner's perspective. Rather than seeking to improve the app, they suggest and employ strategies to overcome its shortcomings (Osborne, 2013; Isbell et al., 2017) or describe how they optimised the learning experience for themselves (Chik & Ho, 2017).

## 2 Methodology

### *2.1 The Aim of the Study*

The aim of my study is to explore the affordances of apps for language learning from a learner's perspective. Rather than evaluating individual apps for their educational merit, I was interested in finding out how individual apps met my learning needs and how affordances unfolded as I progressed through my learning journey. To reflect this dynamic process, I drew on Schumann's (1997, 2001) Stimulus Appraisal model and investigated (1) the process of establishing an informal learning environment and (2) my response to specific apps at different stages of my learning trajectory.

## 2.2 The Resources

I used my iPhone 5, which enabled me to use general (non-language) apps in Spanish and to download language apps from the App Store. In my analysis, I focus on the following four apps:

- Memrise is a free vocabulary learning app, using spaced repetition. It has both official and learner-generated courses with different testing modes. In 2016, users were able to create mnemonics, or mems, for items. The premium version has additional learning features.
- Busuu is a language learning social networking site. The free version allows users to do vocabulary sections and dialogues, written or oral, with native speaker correction. For the paid version, users have access to grammar sections, including explanations and exercises.
- Duolingo is a free app, using gamification for translation activities.
- HelloTalk is a tandem learning platform. Translation and correction tools help learners support each other's learning.

I chose to report on these four apps as they illustrate my developing and evolving learning needs.

To record my learning experiences, I used the journaling app Day One.

## 2.3 Method

I drew on Canagarajah (2012), Chang (2008), and Ellis, Adams, and Bochner (2011) to inform my methodological approach. According to these authors, autoethnographical research is defined by its focus on self, its cultural orientation, or as Chang (2008) phrased it, the search "for understanding for others (culture/society) through self" (p. 49), and its narrative, which is shaped by the analysis of the experience. In an autoethnography, issues of reliability, validity and generalisability refer to the narrator's credibility, the verisimilitude of their described experiences and their effect on the readers who ultimately validate (and generalise) the narrative as they are drawn into making comparisons between their own and the narrator's experiences (Ellis et al., 2011, pp. 282–283).

My study is an autoethnographic account of my experiences as a novice learner of Spanish exploring the affordances of apps in an informal autonomous learning environment. A native speaker of German, I started learning English and French in high school and gained proficiency in both languages when I later lived in France, the United States, in Australia and New Zealand, pursuing first language study and later a career in language education. After 25 years of language teaching, I decided to learn Spanish with the dual purpose of acquiring a new skill and exploring the conditions for language learning in a digital environment. A researcher-participant, I went 'native' by becoming a digital language learner, trying to put behind me

assumptions about language learning and the role of technology in this process. In other words, I adopted an attitude of *epistemological humility*, that is, "an acknowledgment that my own perspective on the world [and the way languages are learned] is not the only, or even necessarily the best, one" (Pegrum, 2011, p. 24), opening me up to new experiences which I might not have anticipated, and leading to different, possibly transformative ways of using technologies for language learning. My personal learning experiences, which I have elaborated through the thorough analysis of my journal might resonate with readers who have had similar experiences or encourage them to engage in their own learning journey. Just as my experiences shape the culture of informal autonomous language learning, theirs will contribute to this growing field of research.

## *2.4 Data Collection and Analysis*

### 2.4.1 Journal

To better understand and to be able to reflect on my digital learning practices critically, I kept a journal to record my activities, observations and reflections about my learning experiences. I started off using Word on my laptop but switched after 3 weeks to a journaling app, Day One, that I could access from my phone. The app gave me the flexibility to write my entries either straight after a learning episode or as I thought about my experiences during the day. I started taking screenshots to record and illustrate my learning. The tagging feature encouraged me to think about tags for my entries as I wrote them, establishing initial categories for the analysis. The data could be sorted by time, place, favourite or tags, and be exported as pdfs. It also synced automatically to my other devices, which allowed me to process my data later on the larger screen of my computer.

### 2.4.2 Data Analysis

For the analysis procedures, I drew on Mackey and Gass (2015). To process the data from my journal, I imported my earlier notes from Word into Day One, resulting in 183 entries from December 2015 to December 2016. Once combined, I reiterated the coding process to ensure consistent labelling of the categories. The tagging feature on the app enabled me to display all entries with a specific tag, which helped me to look for variations between individual categories. As I became increasingly familiar with the data, I was also able to see connections between categories. A year later, in January 2018, I reassessed the categories. The last round of coding allowed me to approach the data with more distance towards my learning experiences and my preconceived ideas about language learning with apps and reconsider immediate reflections on learning behaviours. I kept the unambiguous categories, such as 'apps', which included any mention of an app (e.g. searching, discovery, special

feature, learning, problem), 'grammar', which I divided in sub-categorised for individual grammar points, or 'useful phrases' of which I kept a large collection, taken from readings on Facebook, practice on Duolingo or conversations I had on Hello Talk. The category 'reflecting about learning', on the other hand, included a wide range of themes that I reassessed as I reiterated the coding process. Some themes include 'planning', 'goal setting', 'strategy use', 'problem solving', 'grammaring', 'making progress'. The category 'reflecting about apps' included 'enjoying app', 'optimising app', and 'changing view'.

I prepared my narrative by selecting examples from themes that illustrate the process I went through to create my learning environment. Direct quotes and reference to my journal are indicated with the date of the entry in brackets (day/month). In the first part of my narrative, I describe how I adapted my phone and my digital routines to make language learning part of my everyday life. In the second part, I discuss my use of the language apps which I used over time, using Schumann's (2001) Stimulus Appraisal model as an analytical framework for my experiences.

## 3 Findings

### *3.1 Adapting My Phone for Language Learning*

During my one-year Spanish learning journey, my phone played a central role in my life. I used it to expose myself to Spanish, to study and to record my learning experiences. As I became increasingly familiar with its customizable features, I developed new routines and engaged in new learning practices.

Firstly, I changed the phone language settings to Spanish. This seemed to be an easy transition since the layout of my phone remained the same. However, I was surprised to see as many new words, *reloj*, *calendario*, *notas*, *mapas* (clock, calendar, notes, maps) (11/3). I checked the forecast more often than usual to learn the terms on my weather app. I enjoyed getting street directions on Google Maps in Spanish and decided to routinely use these, even when I knew my way (25/3). I also started using Facebook in Spanish. I was "surprised how foreign the page looks" (6/1), and I felt limited in my ability to navigate the site but found it increasingly useful as my language skills increased.

Adding the Spanish keyboard enabled me to use Spanish voice recognition and the voice assistant on my phone. I could now speak out words and phrases instead of typing them. For example, setting up Siri allowed me to ask her about the weather or street directions and also to set my alarm, "*Siri, despiértame manana a las 7.30*" (Siri, wake me up tomorrow at 7.30) (11/4).

From this time onwards, I kept my phone physically closer to me and developed the habit of going over a few Spanish apps in the morning before I got up and in the evenings before I went to sleep. Over the day, I also carried my phone with me to take advantage of planned and unexpected waiting periods such as in the doctor's

office, while waiting in a queue, at the supermarket, at the coffee shop or at the bank. Initially, I turned the volume off and only did the written parts of the activities. After a while, I started using headphones, which also helped me with close listening practice. I liked the idea of using dead time; however, I also felt self-conscious about it, "I feel a bit awkward, pressure not to use phone in public" (6/1). Finally, I also created some new habits to give myself some quiet space to do some app practice. For example, I started staying a little bit longer in my car. After I turned the engine off, I reached for my phone and did a few activities before I carried on with my non-Spanish daily routines.

## *3.2 Foraging for Apps*

Over the period of 12 months, I used over 20 apps (Fig. 1). My search for new apps continued throughout my learning journey. I looked for apps on the App Store (a lot!), found app recommendations in online learning communities, I checked out top-ten lists on Google, and I talked to language learners and language teachers around me. On the one hand, I wanted to be open and aware of any new options and

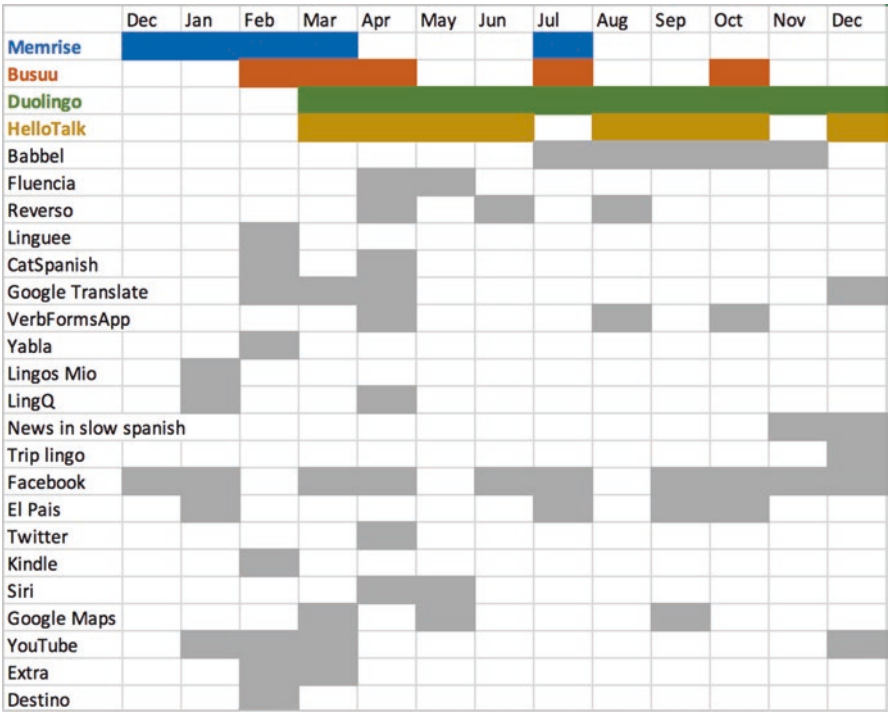


**Fig. 1** Timeline of apps used from December 2015 until December 2016

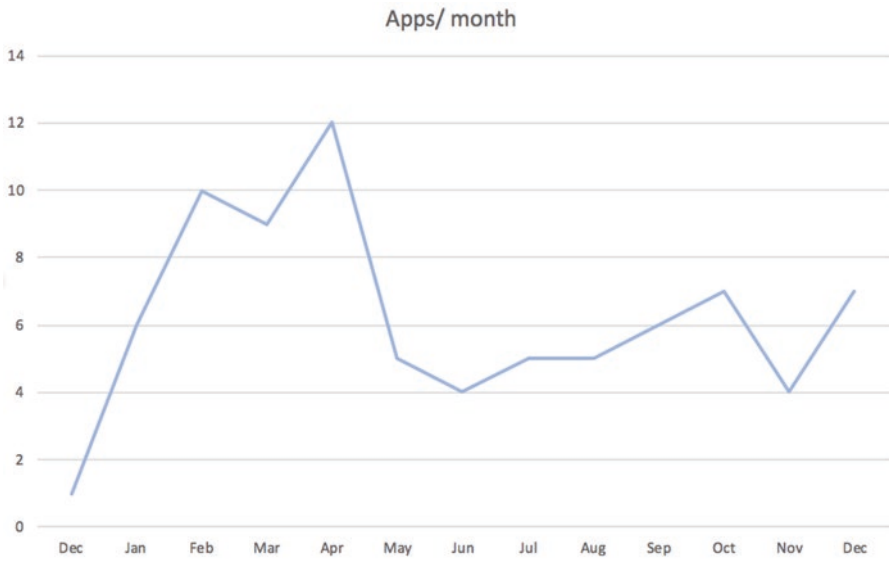


**Fig. 2** Overview of number of apps used each month

developments, while on the other hand I secretly looked for the magical app that in some intuitive way responded perfectly to my language learning needs, giving me an optimal return for my efforts. Over time I realised that I required several apps to address my learning needs. These changed over time, and the composition of these apps shifted accordingly. I used Memrise, Busuu, Duolingo and HelloTalk sequentially and concurrently as they responded to my developing learning needs/goals (Fig. 2).

### 3.2.1 Memrise

*Goal/need significance*: My first goal was to build up my Spanish vocabulary. I was familiar with the web version of Memrise and decided to download the app. I selected a user-generated *1500-word* list. While I was not sure if the words on this list were high frequency words, I was confident that a knowledge of 1500 words would give me a good base to get me started. I worked quickly through the list and received a 50% discount as an incentive to purchase the full version of the app.

*Novelty*: I took up the promotional offer and had now access to a wider range of features, such as special units to revise "difficult words". I also received regular updates about my progress, which encouraged me to increase my daily goal from 15 to 45 minutes, aiming to "learn 100 words a day" (17/12). I noticed my name on top of the leader board and caught myself checking my status. I was surprised that I enjoyed this competitive element. I continuously worked on my 1500-word

list, as well as on a few additional shorter lists, partly because I doubted the relevance of the words on the list, but also because I needed some variation to keep my interest up.

*Pleasantness*: I liked the design, the layout and the colours of the app and found it intuitive to use. The only feature I had to get used to was the letter-reduced keyboard (to fit the small screen). I enjoyed the ease of drag and drop (thus avoiding keyboard use), but I realised that my retention improved if I typed out words. As various input options came up, I was happy to be able to do both. Also, I enjoyed the subtle sound that played when a word was deemed to be memorised.

*Coping challenges*: The short learning units of Memrise worked well for me, and I made quick progress. I took advantage of the *mems* (mnemonics added by users) and the audio (added by list creators). I felt that mems, from others and my own, helped me memorise new words, "[s]ome are really helpful and I feel how I first focus on the image and then let go of the keyword" (4/1). However, the unevenness of the sound quality and the randomness of the accents (recorded by native speakers of different regions) created some problems for me and were one of the reasons I moved on to another app.

*Impact on self-image*: The 45 minutes I spent every day on the app gave me some time to myself and it felt like I was engaging in a new hobby. I enjoyed my progress at learning new words but also learning new things about myself, namely that I liked games and that I had a competitive nature.

By mid-February, 2 months into my Spanish learning journey, I felt that I needed more context and more consistent instruction to progress. I had completed my 1500-word list and decided it was time to move on. Still, I hung onto Memrise for another month for daily revisions of my lists. When it came to cancelling my subscription, I felt "a bit guilty for abandoning it. Like betraying a loyal friend" (11/3).

### 3.2.2 Busuu

*Goal/need significance*: After I built up my core vocabulary, I felt the need to get a structural grounding to actively use Spanish. I decided to subscribe to Busuu, which offered grammar explanations and exercises in its premium section (13/2). I also hoped that the contextualised vocabulary (with sample sentences and dialogues) would help me with my own ability to produce sentences.

*Novelty*: I enjoyed discovering the features of Busuu and finding the grammar explanations I was looking for. Initially, I was stimulated by the structural progression of the activities, gradually increasing in difficulty. In particular, I liked the final writing sections as they gave me the opportunity to use the language I had learned.

*Pleasantness*: Before I subscribed to Busuu, I checked out *Babbel* and *Fluencia*, but I decided on Busuu because I preferred the layout. In addition, I was impressed by the sound quality, and I liked the voices and the consistent pronunciation.

*Coping challenges*: I started from the beginner's level but could have started at a higher level if I had taken the placement test. The units seemed initially well structured; however, by the time I reached the B1-level, I felt that the units progressed too fast and that "the writing sections are getting too hard" (11/4). I persevered but also found that the structure required me to spend "more time to get into the units" (30/5). At that stage, I had discovered Duolingo and preferred the shorter units, which enabled me to fit in some language practice during the day.

*Impact on self-image*: I particularly enjoyed the writing section because it allowed me to express myself in Spanish and, as texts were corrected by other members, to receive helpful and positive feedback. I was amazed at how quickly these corrections were made, usually in a few minutes. This immediacy also had a positive impact, as it gave me the impression of being attended to. I also liked helping others by correcting their texts in English, German or French, and displaying my own language skills. Altogether I valued the sense of community and mutual support.

### 3.2.3 Duolingo

*Goal/need significance*: I had briefly used Duolingo in 2013. Back then, I was confused by the design and not inclined to use it again. I shared the view of many of my CALL colleagues who considered Duolingo as an inferior language resource, based on outdated language learning methodology (Heringer, 2015; Lotherington, 2018; Vetromille Castro & Berres Hartmann, 2018). However, I changed my mind after a conversation with another language learner. "I met a friend at the airport last week who happens to learn Spanish as well to prepare for a trip to Argentina. […] We exchanged our ideas on learning Spanish and he showed me his Duolingo". (4/3). I was intrigued by his interest and willing to check it out again. A few days later, I admitted to myself, "[a]gainst my expectations I really like *Duolingo*. I like that it is bite-sized and that I have to produce sentences, even if they are sometimes a bit awkward" (25/3). Also, I liked that I had to translate whole sentences, "Duolingo has some useful phrases, I like it that I can review vocab with a context, *Mi perfil no es public*" (19/5). Duolingo fitted well into my daily routine of several apps (including Memrise and Busuu) and gave me the extra practice I needed to consolidate my knowledge. I set up a daily 10-minute practice goal, and I steadily progressed from unit to unit until I completed the Duolingo tree on 25 April.

*Novelty*: I enjoyed discovering new features, such as the grammar information that could be accessed by hovering over a link. I was particularly impressed with the bots when they were introduced in early October 2016, "I like the new bots in Duolingo! The dialogues are well chosen, take the direction of your answers and provide help with chunks" (19/10). In addition, I liked using the voice recognition of my Spanish keyboard with bots (a strategy I used previously with Google

translate and for the English to Spanish translations in Duolingo) to mimic a spoken conversation. Duolingo added this feature later on.

*Pleasantness*: Apart from its appealing design, I enjoyed the sense of humour, the funny drawings and, at times, awkward sentences, which kept me interested (25/3). The existence of the Twitter account "Shit Duolingo says: Linguistic gold provided by Duolingo" (followed by over 46,000 people) shows that I am not the only one enjoying this linguistic creativity. Also, Duolingo accepted a wider variety of responses, and small errors, such as typos or missing accents which were corrected but not marked as wrong. Another feature that reinforced this encouraging and non-punitive approach to language learning was the predictive text activated through the Spanish keyboard. I compared the auto-completion function to an "interlocutor finishing words for you … the kind of feedback you would get in an oral conversation" (25/4).

*Coping challenges*: It took me a while to get my head around the structural organisation of Duolingo and the translation of verbs in different tenses (instead of the infinitive). I was initially irritated that 'to be' should be translated with '*será*', until I noticed that I was in the future tense unit. Once I figured it out, I happily accepted the way the information was presented. When I was confused, I resorted to my *Spanish verb forms app* or Google if I wanted a quick response. I increasingly used other apps to complement Duolingo. For example, I looked up phrases on Reverso to check their idiomaticity before I wrote them down in my diary.

*Impact on self-image*: I found learning with Duolingo rewarding because it gave me a sense of achievement and entertained me at the same time. I liked the non-punitive approach. Again, it made me feel good about learning Spanish and about myself. I surprised myself taking this U-turn on my view of Duolingo to a point where I became defensive of the app when talking to more critical colleagues at conferences, especially when they had just explored the first few units which they criticised for the simple translation matching exercises.

### 3.2.4 HelloTalk

*Goal/need significance*: The idea of using my phone for chatting in Spanish appealed from the beginning of my journey. I had occasional text conversations with friends who also learned Spanish. I also liked the idea of chatting with an app and was excited when I discovered the chat feature in CatSpanish, and later the chatbot in Duolingo. I hoped to get some practice, preparing me with the appropriate phrases for real conversations. So when I came across a recommendation for HelloTalk on Facebook I downloaded the app straight away.

*Novelty*: While I liked the idea of chatting with Spanish native speakers, I felt too self-conscious to initiate a conversation and made up excuses for not using the app, "[t]oday I have downloaded HelloTalk. […] I didn't go online, thinking midday/midnight might be a bit awkward, but mainly I didn't feel confident enough. At least it's on my phone now and I can use it when I am ready" (25/3).

However, I was contacted by two Spanish speakers, "[s]ince yesterday I have had two conversations on HelloTalk, yeah. The chat with G was very short, but I noticed him using the present continuous '*Estoy terminando una maestria*'. This came up again in my other conversation with O" (26/3). Having experienced real conversations, I lost interest in the more prescriptive writing activity in Busuu (10/4).

*Pleasantness*: After the initial excitement and anxiety, I started enjoying my chats. The free version gave me all the features I needed; translations, the ability to save sentences, corrections, and access to the transcript (26/3). This latter feature allowed me to go over my chats which I found varied significantly from partner to partner (25/6). Overall, I perceived HelloTalk as pleasant because it provided efficient support features, but mainly because I enjoyed interacting with Spanish speakers.

*Coping challenges*: The inbuilt translation feature helped check for meaning, but to compose my own sentences I preferred using the translation app Reverso. This involved going back and forth between apps, but I felt that the app allowed me to produce more idiomatic sentences. I also used Reverso to work out phrases from my interlocutors (19/4). With this support, I enjoyed writing about my daily activities in Spanish and helped my partners with their German. This made me feel less limited in my ability to express myself (19/5). At times, however, I felt reluctant to initiate conversations, "I went on HelloTalk in the morning but none of my friends were there and I didn't feel like approaching somebody new" (9/4), hoping for others to contact me. Once contacts were established, I could be frustrated by the lack of interaction, doubting my ability to maintain contacts, "I emailed myself the transcripts of the conversations to review phrases but also to have a closer look at the nature of the interactions. Some stopped after a short while and I don't really know why" (25/6). I was not able to work out why some interactions stopped, and others continued, other than an incompatibility in expectations and interests. Different communication styles and modes might also have been the reason for discomfort. One interlocutor, S, irritated me with her excessive use of emojis. However, I warmed to her after a while when I found that it expressed her way of establishing an emotional connection with me. Something I did not warm to, however, were voice messages. S sent these in both German (very slowly) and in Spanish (very fast), and I only reluctantly responded (30/10).

*Self-image*: The HelloTalk experience affected my self-image most since it involved communication with people. On the one hand, I felt vulnerable by exposing my imperfect Spanish, and on the other, I felt empowered by being able to communicate in my native language. I dreaded using voice messages, not only because I was afraid of making mistakes, but also because I felt it would give away my age. Most of the people on HelloTalk were younger than me, which made me feel self-conscious about my age and the appropriateness of being a member of this group.

## 4 Discussion

I first explored the adaptability of my phone for informal language study. I wanted to find out to what extent I could use my phone to learn Spanish and how this would shape my learning practices. During the one-year period of my Spanish learning journey, my 'relationship' with my phone changed significantly. Not only did I use it more extensively, but I also kept it physically closer to me to take advantage of spontaneous learning opportunities. This led me to adopt new learning practices, firmly anchored in my daily routines. The assessments of the learning situations I experienced were strongly guided by emotional reactions. I embraced using general apps in Spanish, such as the weather app, as they gave me a taste of my aspired identity as a speaker of Spanish. My motivation to engage in specific practices increased when I perceived an activity as emotionally pleasant and worthy of my time and efforts. The L2 settings, L2 apps and voice recognition enabled me to focus on language use. I actively sought to acquire language skills that helped me interact initially with my apps and later with Spanish native speakers.

I have presented my experiences of learning Spanish with apps through the lens of Schumann's (1997, 2001) Stimulus Appraisal theory. This framework has helped me better understand how my choices of apps were triggered by specific learning needs and goals and how apps shaped these goals. For example, my initial goal of building up a large core vocabulary with Memrise might have partly been motivated by my assumption that apps are best for vocabulary learning. Once I started using the app, I revised my goals, following the incentives provided by the app. My initial goals for using Busuu, context and grammar, also shifted when I realised that I was most interested in applying my written language skills. This was supported by the feedback I received from other learners and the positive feeling of belonging to a learning community. The influential role of others was also highlighted in my decision to take up Duolingo. There was no particular goal associated with this app other than curiosity after having talked to a friend who enjoyed using it. In the case of Duolingo, this app helped me set concrete goals and ensured 10 minutes of language practice every day. This goal suited my overarching goal of effectively incorporating language practice into my daily routines and my need for variation. With HelloTalk, I had a clearer goal in mind, interaction with Spanish native speakers. While the app provided me with contacts and writing tools, it provided no incentives to follow up on my goal and interact regularly with my partners.

My descriptions of the dimensions of novelty and pleasantness showed that I was stimulated by new experiences, which either related to specific apps or app features or my intervention of using additional external features, such as voice recognition. The chatting experience of HelloTalk was entirely new to me and initially put me out of my comfort zone. It was only after I had a positive experience that I started looking for learning partners. With growing familiarity, I was able to enjoy my chatting episodes. Pleasant experiences included both design features of the app (intuitive use of features, good sound quality) and positive reactions towards the learning situation (such as good learning support).

Regarding coping challenges, I have been able to adapt both my phone and the apps to my evolving learning needs. I developed learning routines that took external influences into consideration and thus managed to overcome learning barriers. I optimised learning situations by exploiting options offered by apps, and additionally applied my own strategies (such as voice repetition, note-taking, screenshots for revision). I also resorted to other apps for problem-solving, and for a more varied exposure to vocabulary.

The fifth dimension of the stimulus appraisal model allowed me to establish how my learning experiences affected my self-concept as a language learner, and to an extent my sense of self. Memrise and Duolingo increased my confidence as a language learner. I strongly felt that Memrise enhanced my ability to memorise new words. Encouraged by my progress I increased my daily study sessions. This feeling of success affected my self-esteem positively. With Duolingo, I was able to use vocabulary, especially verb forms, in context and learned to produce sentences. The positive reinforcements I received made me feel good about my learning and about myself. The correlation between self-confidence and language learning is well documented in the L2 literature (Arnold, 1999; Horwitz & Young, 1991; Rubio, 2007). The gamification strategy of Duolingo manages to attract and keep users because it makes them feel better about themselves, as Jorge Mazal, vice president of product at Duolingo, explained in an interview. "That's really what people are going for. That's what we try to give them" (in Wise, 2019). Duolingo remained a principal ingredient in my daily app diet throughout my Spanish learning journey, providing me with stimulating language practice, including moments when I needed an emotional lift.

Busuu and HelloTalk touched my self-image at a deeper level. I used both apps to communicate (in writing) with native speakers of Spanish. I felt valued by the personal corrections I received (as opposed to the automated responses I encountered in Memrise and Duolingo) and empowered by helping others in their learning journey. This heightened self-image stands in contrast with the feeling of anxiety that many language learners experience (Rubio, 2007). According to Horwitz and Young (1991), language anxiety is caused by the experienced disparity between the learner's 'true' L1 self and the more limited L2. The ability to take on a dual position as both L2 learner and native speaker might have helped me overcome language anxiety, and also increase my willingness to communicate/write in Spanish (MacIntyre et al., 1998). My experiences with HelloTalk, which is also based on this exchange basis, were similar. However, my difficulties in using HelloTalk were of a different nature. To some extent, I felt self-conscious about my non-proficiency, but more importantly, I felt uncomfortable contacting other people on the site. Even once a contact was established (when I was contacted), I had the feeling of not belonging due to my age. I felt cognitively ready, yet I struggled with an emotional barrier that reduced my ability to engage fully in the HelloTalk experience. I expect that I would have been just as reluctant to initiate contacts in my native language, highlighting the extent to which individual differences impact on self-selected learning choices.

## 5 Conclusion

My Spanish journey has been a highly satisfying experience. Not only am I now able to hold a conversation in Spanish, but I have also gained new insights into language learning and feel confirmed in some prior assumptions. Clearly, with a background in language learning, teaching and research, assuming *epistemological humility* (Pegrum, 2011) is a challenge, and my approach will have undoubtedly been influenced and shaped by previous life and learning experiences. My exposure to a new learning experience (taking the role of the learner, in a new learning environment) has heightened my awareness of my own learning preferences and dislikes, my strengths and my weaknesses. This has increased my empathy for other language learners (in particular my students) but also reminded me of the need to consider individual differences in learners. I understand that my story is one of many, and while others might learn from it, their learning trajectories will be shaped by their preferences and dislikes.

Language apps can help learners to initiate and maintain language study in an informal learning context. Apps can support the human impulse to learn, but it is up to the learner to draw on the affordances of apps to learn effectively. In that sense, there is no perfect app and no best practice. It is up to learners to adjust the learning potential of apps to their own context, which changes over time as language skills progress and personal situations take new shapes.

My experience has shown the benefit of using multiple apps. Instead of focusing on one app, and expecting that it would address all my learning needs, I combined apps horizontally by using several apps concurrently to get a more varied practice with wider context and problem-solving, and vertically by changing the composition of my app bundles over time to adjust to new learning needs. The parallel use of apps is a practice that has been observed amongst informal language learners and labelled as 'app-smashing' (Rosell-Aguilar, 2017). These experiences indicate that, to take charge of one's learning, autonomous learners have to be able to make a range of learning choices and assess their individual learning needs. To prepare students for this flexibility Sockett and Toffoli (2012) suggest that training students in their development of communication and media skills is more beneficial than guidance on specific tools. Similarly, Rosell-Aguilar (2017) underlines the importance of developing capabilities for critical evaluation of resources in both teachers and students. Preparing language learners with these skills will equip them to make use of apps for their personal language study and any resources that the future might bring.

Finally, I would like to encourage both language teachers and learners to engage in their own autoethnographic study of informal autonomous language learning to increase their awareness of their personal learning potential to enrich this fascinating field of inquiry further. For me, there has never been a better time to learn a language – and I am curious to find out about the experiences of others.

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## *Apps*

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# Afterword


**Melinda Dooly, Mirjam Hauck, and Carolin Fuchs**

**Abstract** In this afterword, the editors reflect on new research avenues for learner autonomy in technology-mediated language learning an teaching contexts. They point to key areas where adjustment to or enhancing of learning opportunities are required in the light of technological advancements.

In the late 1960s, Carl Rogers (1969) declared humans might easily "do away with teaching. People would get together if they wished to learn" (p. 154). Now, more than half a century later (year 2021) and during a global pandemic that has had a profound impact on teaching and learning, we can see that, to some degree, this statement has been fulfilled. That is not to say that schools and formal learning have dropped by the wayside – far from it – but as can be seen in these pages, alternative approaches, including fully self-instructed language learning, have emerged and are gaining enthusiasts. Even formal education is expanding the boundaries of what constitutes learning in terms of content, context and process, as more and more classes include technology-supported interaction with human and non-human resources outside classroom boundaries. This is also in line with a call for reduced tuition costs, as is the case in the United States, for instance, and more student flexibility in the European Union. All of this is facilitated through technological advancements and requires, in many cases, increased learner autonomy and subsequent relinquishing of control associated with 'traditional' teacher roles.

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While it is recognised that learner autonomy has always, to varying degrees, permeated education, today's (language) learners are irrefutably no longer constrained to permanent spaces. This raises the question of how to best support technology-mediated innovation that amplifies learner choice and direction. Against the backdrop of the aforementioned pandemic, this seems increasingly important so as to close the gap between those learners who are able to self-direct and those learners who are not. Moreover, notwithstanding the current situation, there is clearly a need for further research to sustain and promote what has been called 'strategic learning' (cf. Cohen, 1998; Ellis & Sinclair, 1989; O'Malley & Chamot, 1990; Oxford, 1989). As Alm (this volume) describes, fully self-instructed learning can lead the individual down many different paths – including some dead ends. In such instances, critical self sufficiency – one of the key factors for learner autonomy – becomes indispensable to recover from pitfalls and failure. There is a need for research-informed didactic materials and teaching practices that provide adequate reinforcement and encourage and sustain learner self-direction in online contexts, whether these are fully instructed, semi-instructed or self-instructed. More research into teacher education as well as studies on materials and curriculum development would further the progress that has been made in this area thus far.

Furthermore, studies on the development of techniques that help learners 'learn to learn': the ability to analyse challenges related to how they learn, setting objectives, making plans and evaluating progress; all of these would help produce key contributions for autonomous technology-enhanced language learning. As the pioneer in language learning Krashen (1982) argued, there is a distinction to be made between conscious learning and acquisition, which he considered to be unconscious. This points to the need for further research into 'everyday' practices, in particular those that are considered 'outside' of formal language learning contexts, in order to better understand where learners are starting from and where 'unconscious' language acquisition may be taking place. Language learners are surrounded by multifaceted, multimodal and multilingual input on a daily basis. New and increasingly sophisticated technological opportunities also materialise on a daily basis. In some instances, language learning input may be actively sought out by the learner, in many other instances, potential language learning resources may be invisible to them unless they are brought to their attention and their usefulness is brought to the fore.

According to Holec (1981), language-learning autonomy is not an innate quality. Yet, further studies into learners' awareness of their own autonomy in different digitally-supported environments largely remain a *desideratum*. Zou (2011), conceptualises autonomous learning as a gradual process of self-awareness in relation to learning contexts, learners' different metacognitive abilities and levels, and their ability to reflect on their learning experiences; this includes a growing understanding of the variegated factors that influence the learning processes. As it has been discussed in this volume, some digital contexts require significant learner autonomy (virtual exchanges, self-instructed language learning apps, etc.) reflected, for example, in self-organisation when working in teams (or at times alone), over a distance and with a variety of tools. Clearly there is a need for more investigation into how

teachers and learners can raise awareness of how to appropriately "identify, access, manage, integrate, evaluate, analyse and synthesise digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process" (Martin, 2005, p. 136). As Kukulska-Hulme, Lee, and Norris (2017) point out, technology is blurring the lines between formal, informal and lifelong learning thereby requiring not only effective learning design (which, in turn, necessitates proficient application of pedagogical theory with adept technical criteria), but also more self-determination – and one might add – more self-awareness on behalf of the learners themselves.

Another compelling line of future research is the very concept of technology-enhanced learner autonomy. It is already a challenge to comprise the myriad of factors such as personal growth, learner orientation, access to learning materials, and the learner's mental and psychological characteristics such as flexibility, creativity, and risk-taking. Now the almost breathtaking advances made in technology on a seemingly day-to-day basis need to be added to the mix. Note for instance, the increasing capacities of artificial intelligence systems that are able to provide progressively more personalised education, not only on an individual level but also on far larger scales, based on massive learner data (Reiland, 2017). As the number of learning contexts multiply and learning scenarios shift, so too will the role of learner autonomy wherein incremental non-human participation, big data and other technological developments must be taken into account.

A core element of learner autonomy in technology-infused contexts is critical digital literacy. This is an area of research that has recently attracted the attention of language learning and teaching scholars and which deserves further attention in technology-enhanced environments. Critical digital literacy is about noticing how power operates in digital spaces and shapes ways of thinking and doing that perpetuate social and cultural inequalities (Darvin, 2017). Building on Freire's (1972) work on critical pedagogy and social justice, we argue that critical digital literacy and social justice curriculum must start from a clear understanding of the relationship between people, places, opportunities, media and poverty. It is also about experiencing how we find our voice online and how we can help others have a voice online (Hauck, 2019). Examining linguistic and non-linguistic features of digital media and becoming aware of biases and assumptions and their impact are part of acquiring critical digital literacy skills (Darvin, 2017); all of which are likely to have an impact on the degree of autonomy (language) learners can ultimately exercise in digital spaces. Core to this line of research is the acknowledgement that digital spaces and therefore also (language) learning environments such as those used in telecollaboration or virtual exchange, for example, are not ideologically neutral – just as studies have long shown that inequities in education have a direct correlation to poverty and social injustice (cf. Comber, 1997; Connell, 1993; Freire, 1972; Lipman, 2011). As Fairclough (2013) reminds us, there is a "widespread underestimation of the significance of language in the production, maintenance, and change of social relations of power," and there is a need to "increase consciousness of how language contributes to the domination of some people by others, because

consciousness is the first step to emancipation" (p. 1). Like face-to-face contexts, digital spaces steer learners to normative behaviours and meanings (Knight et al., 2020). In her work on online environments, Helm (2019) underscores how the digital context shapes the way in which learners position each other, how they perform identities, and how information is legitimated and distributed. Critical digital literacy can help the learner understand the manner in which technologies are used in situated and enculturated ways – including (language) learning and teaching – and how the material dimensions of digital environments can be indicative of dominant ideologies, economies, and institutions (Knight et al., 2020).

At the same time, it is necessary to interrogate potential hidden agenda underlying the syllabi of critical digital literacy. In many cases, literacy can be framed as "both the problem and the solution to educational inequities" (Comber, 2015, p. 360), in particular when it is promoted through "ruthless economic rationalist and neoliberal approaches […] which assume that hardworking literate individuals will always be guaranteed well-paid work." Moreover, as Ross, Dooly, and Hartsmar (2012) highlight, the very concept of 'equality' is anything but straightforward; similarly, there have been many ways put forth to explain and sometimes justify educational inequities. "These different ideologies have led to conflicting policy arguments about the responsibility for tackling social inequality […]" (Ross et al., 2012, p. 120).

Clearly these issues – which have long been at the heart of debate regarding social and educational inequality – have a key role in the "intersection between critical literacy and digital activism" (Amgott, 2018, p. 329). The argument can be put forth that this is an ideal time for socio-politically engaged educators and researchers, along the lines of the critical pedagogues of the late 1960s and 1970s, to prompt autonomous learners towards the practice of "critical literacy and digital activism" (Amgott, 2018, p. 333). Godwin-Jones (2019) observed that "[r]iding the digital wilds successfully involves learner choices and actions, along with the further development of internal attributes of initiative, persistence, and creativity" (p. 19). Drawing on Schmenk (2008), Godwin-Jones (2019) also argues that "respect for the autonomous choices of others" implies understanding learner autonomy as ultimately a social action that involves participation and collaboration with others: [t]hrough social participation, individual autonomy is enhanced, language skills are developed, and personal identity is expanded" (Godwin-Jones, 2019, p. 19).

Finally, but not least important, in a seeming onslaught of non-stop technological progress, there is a need for more studies in what is often referred to as 'low-tech' environments or contexts. Egbert and Yang (2004) define low-tech context as generally limited access to technology (e.g. computers) with little to no Internet access and software (or else old and outdated software). Hockly and Dudeney (2018) state, "[a]ccess is often considered to be one of the greatest barriers to the use of digital technologies in language teaching and learning; a term often associated with this unequal access to technology is 'digital divide'" (p. 165). However, as these authors also point out, this division is far more nuanced than at first glance.

> Although access to digital technologies and infrastructure is linked to economic issues such as purchasing power, this is not the only factor. Increased access to mobile devices in low resource contexts has enabled previously underserved populations to access cheap or freely available digital English language learning materials. (Hockly & Dudeney, 2018, p. 165)

Egbert and Yang (2004) proposed a framework that aimed to support the development of language learning tasks in "limited technology contexts." They focus on how effective language learning experiences can be provided in such environments (and plausibly, in some way, contributing to disruption of these very inequalities), rather than trying to ameliorate socio-economic challenges that may be insurmountable for individual teachers or learners. Likewise, Lamy and Pegrum (2012) in their guest edited special issue of "Language Learning & Technology" on hegemonies and computer-assisted language learning (2012) present critical perspectives from international contributors who "problematize the workings of hegemonies, examining their complex effects on language students, teachers, and classrooms in a variety of linguistic and cultural settings, and considering what it means to resist them" (p. 1). As Fuchs (2016) suggests, based on empirical data from a U.S.-Turkey exchange where social media use was disrupted due to political tensions, there is a need for participants – especially in teacher education – to situate the technological constraints and affordances of their teaching and learning environments in their larger sociopolitical contexts. Conceivably, these are the contexts in which the need for learner autonomy is even greater due to a general lack of accessibility to the numerous resources discussed in our volume. And given the noticeably fewer studies on technology-enhanced language learning in these environments, this is visibly an area of research that deserves more attention.

These are only a few of the stimulating areas of potential research as regards technology-enhanced language learner autonomy. As our understanding of learning evolves and as technology continues to advance in both capabilities and permeation into our everyday lives, new and exciting facets for investigation will emerge. Familiar technological learning 'ecologies' will change, leading to new relationships with and between learners and teachers, increased at-distance collaboration and engagement with humans and non-human agents. This expanded collective knowledge-building will inevitably have an impact on learner autonomy, setting the groundwork for more studies such as the ones presented in this volume.

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